

# PROJECT MANUAL

## RECONSTRUCTION OF THAMES STREET WALL AT ELECTRIC BOAT

### CITY OF GROTON, CONNECTICUT



November 22, 2019

**BID NO. 19-11-01**

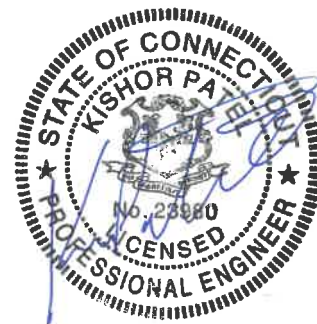
*Prepared for:*

City of Groton  
295 Meridian Street  
Groton, CT 06340

*Prepared by:*

Milone & MacBroom, Inc.  
99 Realty Drive  
Cheshire, Connecticut 06410

 **MILONE & MACBROOM**



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**INVITATION TO BID**

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# CITY OF GROTON

295 Meridian Street  
Groton, Connecticut 06340-4040  
Purchasing Department

## **CITY OF GROTON INVITATION TO BID RECONSTRUCTION OF THAMES STREET WALL AT ELECTRIC BOAT CITY OF GROTON, CT**

The City of Groton will receive sealed bids at the Office of the Purchasing Agent, 295 Meridian Street, Groton, Connecticut 06340, until 10:00 A.M. on **December 12, 2019**.

The project generally consists of cast-in-place concrete retaining wall construction, including roadway and sidewalk restoration, and maintenance and protection of traffic described in the Contract Documents.

The bid documents (Project Manual along with the Construction Plans) may be downloaded from the City of Groton website: <http://www.cityofgroton.com/> or paper copies may be obtained at the Finance Department, 295 Meridian Street, Groton, Connecticut 06340, between 8:00 A.M. and 4:00 P.M. Monday through Friday. There is a fifty (\$50.00) charge payable by cash or check to the City of Groton.

Contractors bidding this work must be pre-qualified by the Connecticut Department of Transportation.

Contractor responsible for payment of not less than the prevailing wage rates specified in the Contract Documents.

Each bid must be accompanied by a certified check of the bidder, or a bid bond, payable to the City of Groton, for five percent (5%) of the amount of the total bid.

Each bidder is expected to sign a sworn non-collusion affidavit certifying that the Bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor. The City of

Groton reserves the right to accept or reject any or all bids and to award the contract to the bidder deemed to be for its best interest.

**A Mandatory Pre-Bid Meeting is scheduled for 10:00 A.M. on December 3, 2019, at the intersection of Thames Street and Eastern Point Road, Groton Connecticut.**

CITY OF GROTON

Ron Yuhas  
Finance Director

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**GENERAL BID REQUIREMENTS**

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**CITY OF GROTON  
INVITATION TO BID  
RECONSTRUCTION OF THAMES STREET WALL AT ELECTRIC BOAT  
CITY OF GROTON, CT**

**GENERAL BID REQUIREMENTS**

**1. TERMINATION:**

Following implementation, should the Director of Finance find that the firm has failed in any material respect to perform its agreed upon obligation under the agreement, the agreement shall be canceled by the City as being in the best interest of the City of Groton. In the event of termination of this agreement as a result of breach by contractor hereunder, the City shall not be liable for any fees and may at its sole option, award an agreement for the same services to another qualified firm with the best proposal or call for new proposals and award the agreement thereunder. The contractor shall be responsible for direct and consequential damages as a result of its breach, including but not limit to, extra costs required under the new agreement of similar services.

**2. INDEMNIFICATION:**

To the fullest extent permitted by law, the Provider, its subcontractor, agents, servants, officers or employees shall indemnify and hold harmless the City of Groton including but not limited to, their respective elected and appointed officials, officers, employees and agents, from any and all claims brought by any person or entity whatsoever, arising from any act, error, or omission of the provider during the Provider's performance of the Agreement or any other agreements of the Provider entered into by reason thereof. The Provider shall indemnify and defend the City of Groton, including but not limited to their respective elected and appointed officials, officers, employees and agents, with respect to any claim arising, or alleged to have arisen from negligence, and/or willful, wanton or reckless acts or omissions of the Provider, its subcontractor, agents, servants, officers or employees and any and all losses or liabilities resulting from any such claims, including but not limited to, damage awards, costs and reasonable attorney's fees. This indemnification shall expressly apply to any failure to comply with state, federal and/or municipal laws, statutes, ordinances, rules and regulations. This indemnification shall not be affected by any other portions of the Agreement relating to insurance requirements. The Provider agrees that it will procure and keep in force at all time at its own expense insurance in accordance with these specifications.

**3. INSURANCE:**

The Provider shall provide a certificate of insurance in the minimum amounts as specified herein. City of Groton is to be listed as additional insured on Commercial General Liability and Excess/Umbrella Liability coverage. Insurance requirements are also included in the Specifications Package, General Conditions and Supplemental Conditions. In the case of conflicting coverage limits etc. the higher amount/coverage will be required.

- A. Workers Compensation - limits as required per State of Connecticut statute, with employer liability limits of \$500,000/500,000/500,000.
- B. Commercial General Liability
  - \$1,000,000 per occurrence
  - \$2,000,000 general aggregate
  - \$1,000,000 personal/advertising injury
  - \$2,000,000 products/completed operations aggregate
- C. Commercial Automobile
  - \$1,000,000 combined single accident for owned, non-owned, and hired autos
- D. Excess/Umbrella Liability (over commercial general liability and automobile liability coverage)
  - \$1,000,000 per occurrence
  - \$2,000,000 general aggregate
- E. Professional Liability - \$10,000,000 per claim/annual aggregate. Coverage shall be maintained for the duration of the contract and for two (2) years following completion.

**4. OTHER INSURANCE PROVISION:**

The policies are to contain, or be endorsed to contain, the following provisions:

A. Workers' Compensation and Employers' Liability Coverage:

- 1. The insurer shall agree to waive all rights of subrogation against the City of Groton for losses arising from the work performed by the contractor for the City.
- 2. If State statute does not require the contractor to obtain Worker's Compensation insurance, then the contractor shall furnish the City with adequate proof of the self-employment status. The contractor shall agree to waive all rights of claims against the City for losses arising from the work performed by the contractor for the City. In the event that during the contract period this self-employment status should change, the contractor shall immediately furnish proper notice to the City and a certificate of insurance indicating that Worker's Compensation insurance and Employer's Liability coverage has been obtained by the contractor.

**5. ACCEPTABILITY OF INSURANCE:**

- 1. Insurance is to be placed with insurers with an A.M. Best's rating of no less than A/VIII.
- 2. Insurance companies must be licensed to do business in the State of Connecticut.



**6. VERIFICATION OF COVERAGE:**

The contractor shall furnish with its proposal the City with certificates of insurance effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be received and approved by the City before work commences. Renewal of expiring certificates shall be filed thirty days (30) prior to expiration. The City of Groton reserves the right to require completion of all required policies, at any time.

**7. PROFESSIONAL LIABILITY**

The Contractor must have professional errors and omissions coverage with a liability limit of \$1,000,000 per occurrence (or claim) and \$1,000,000 aggregate. The professional firm must provide proof that these limits are available under the policy depicted in the Certificate of Insurance. The professional is responsible for the payment of any deductible associated with any claim made against this policy. The firm must state whether the coverage is occurrence-form or claims-made coverage. If the coverage is claims-made it is the Contractor's responsibility to assure that the coverage remains in force not only concurrently with the project dates but as per the terms of the Contract specifications.

The Certificates of Insurance must be received by the City of Groton prior to the signing of any Contract documents.

**8. DRUG AND ALCOHOL TESTING PROGRAM**

The City of Groton, is obligated by law/regulation to assure that all contractors providing services to the City of Groton involving driving commercial vehicles with a gross vehicle weight of more than 26,000 pounds (inclusive of a towed unit with a gross vehicle weight of more than 10,000 pounds), or are used in the transportation of hazardous materials in a quantity requiring "placarding" be in compliance with substance abuse testing requirements, and when applicable, alcohol testing requirements.

The contractor to whom the work is awarded and all contractors that provide driving services must be able to deliver evidence that they and their subcontractors are in compliance with this part of this contract/purchase order. For those Contractors/Subcontractors who do not have a Drug and Alcohol Testing Program in place, the City of Groton will make available to the Contractor/Subcontractor at an additional cost, it's Program Administrator to put the Contractor/Subcontractor in compliance with the state and/or federal laws and regulations regarding drug and/or alcohol testing as determined by the City of Groton or it's designee.

**9. BONDING REQUIREMENTS**

A BID BOND must be furnished, as bid security, must be duly executed by the bidder as principal. It must be in the amount equal to five percent (5%) of the total estimated bid, as guarantee that, in the case the contract is awarded to the bidder, the bidder will, within 15 days thereafter, execute such contract and furnish a Performance Bond and Payment Bond.

A PERFORMANCE BOND in an amount equal to one hundred percent (100%) of the CONTRACT price recorded in the proposal form of the CONTRACT as executed and a PAYMENT BOND in like amount, will be required from the successful BIDDER for the City of Groton and executed by a surety company authorized to transact business in the State of Connecticut, and accompanied by power of attorney for the type of bond submitted.

OR

In lieu of a PERFORMANCE BOND and PAYMENT BOND, a security in a form acceptable to the City (for example, a letter of credit or an assigned passbook) in the amount of one hundred percent (100%) of the CONTRACT may be substituted for each.

#### **10. NON-COLLUSION**

The undersigned bidder, having fully informed themselves regarding the accuracy of the statements made herein, agrees to abide by the conditions set forth in the attached bid document, and certifies that:

- a. The bid has been arrived at by the bidder independently and has been submitted without collusion and without any agreement, understanding, or planned common course of action designed to limit independent bidding or competition, with any other vendor of materials, supplies, equipment or services described in the invitation to bid.
- b. The bidder has submitted this bid without collusion with the City of Groton, any of its affiliated companies, or any employee thereof, and is unaware of any direct, personal pecuniary interest of any employee of the City of Groton or any of its affiliated companies in the outcome of this bid.
- c. The bidder has not communicated the contents of the bid to its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid, and will not be communicated to any such person prior to the official opening of the bid.
- d. The contractor has not been debarred, suspended or excluded from any publicly funded projects or programs.

#### **11. GENERAL**

Any variations from specifications and/or recommended options must be clearly indicated and/or explained and the final decision of acceptance or rejection is that of the City Purchasing Agent.

The City of Groton reserves the right to accept any quotation or to reject any bid or any part of any bid should it deem it to be in its own best interest to do so.

The City of Groton is an Equal Opportunity Employer: Minority/Women's Business Enterprises are encouraged to Bid.

If delivery time exceeds the delivery time stated in your quotation, the City of Groton reserves the right to require written and/or verbal confirmation from the supplier and/or manufacturer.

It is the City's intent to award this Contract to the lowest responsible and qualified bidder. The City reserves the right, for any reason or for no reason, to reject any Bid or all Bids, to negotiate with any or all Bidders, to waive any informalities, irregularities or omissions in any bids received or to afford any Bidder an opportunity to remedy any informality or irregularity if in the opinion of the City it is in the best interest of the City to do so.

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**INSTRUCTION TO BIDDERS**

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## **INSTRUCTION TO BIDDERS**

### **1. PROPOSAL**

Proposals are being sought for the **Reconstruction of Thames Street Wall at Electric Boat** project in the City of Groton, CT. All work shall be done in full accordance with the plans and specifications.

### **2. RECEIPT AND OPENING OF BIDS**

Separate sealed bids will be received at the Finance Department, 295 Meridian Street, Groton, Connecticut 06340, until the time and date stated in the INVITATION TO BID.

All bids shall be completed and submitted in accordance with the Contract Specifications.

### **3. PREPARATION OF PROPOSALS**

The Proposal must be made upon the Bid Proposal and Bid Schedule forms provided in the contract specifications. The blank spaces in the Proposals must be filled in correctly where indicated. The Bidder must state, both in words and in numerals, written or printed in ink, the price for which it proposes to do the work contemplated. In case of discrepancy between the words and the numerals, the words shall govern. Ditto marks are not considered writing or printing and shall not be used. The Bidder shall sign its Proposal correctly. If the Proposal is made by an individual, their name and post office address must be shown. If made by a firm, partnership, or corporation, the Proposal must be signed by an official of the firm, partnership, or corporation authorized to sign contracts, and must show the post office address of the firm, partnership, or corporation.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the Bidder, the Bidder's address, and name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to: Finance Department, 295 Meridian Street, Groton, Connecticut 06340.

Following the bid opening and subsequent review of all submitted bids, but prior to award of the project, the City will ask that the following forms noted below and included in the Bid Proposal Forms section be completed and submitted to the City by the apparent low bidder.

1. Contractor's Proposed Progress Chart –Construction Bar Chart
2. Certificate of Compliance with Connecticut General Statute Section 31-57b
3. DBE Participation Approval Request (including the use of a DBE as a material supplier)
4. Anticipated Source of Material
5. Certificate of Insurance (CON-32)
6. Affirmative Action Program Certification

**4. FAMILIARITY WITH LAWS, SITE CONDITIONS, AND DOCUMENTS**

Each bidder is required to be familiar with and to comply with the terms and conditions of the specifications and all other Bid Documents and with all Federal, State, and local laws, ordinances, or regulations which in any manner relate to the performance of the work in accordance with the Contract. The Contractor agrees to give requisite notices to the proper authorities and to pay all proper and legal fees and charges without reimbursement from the City.

**5. BID BOND**

Each proposal must be accompanied by a bid bond in the amount equal to at least five percent (5%) of the amount of the sum of the Bid. The bid bond shall be either in the form of a certified check or a bond issued from a surety company either licensed or approved by the State of Connecticut Insurance Commissioner. The successful Bidder, upon its failure or refusal to execute and deliver the Contract, certificates of insurance, or bonds required after it has received notice of the acceptance of the bid, shall forfeit to the City the bid bond.

**6. PERFORMANCE, LABOR AND MATERIALS PAYMENT BONDS**

Performance, Labor and Materials Payment bonds in the amount of one hundred percent (100%) of the amount bid are required. Within ten calendar days following notice of any award, the Contractor shall furnish Performance, Labor and Materials Payment bonds to the City of Groton for the duration of the contract, covering faithful performance of the contract and payment of obligations arising hereunder. Such bonds shall be equal to one hundred percent (100%) of the full amount of the contract as a guarantee that the terms of the contract shall be complied with in every particular. These bonds shall be issued from a surety company either licensed or approved by the State of Connecticut Insurance Commissioner and which has an A.M. Best's rating of A-VII or better. These bonds shall clearly state that on default by the Contractor the surety company shall pay all payables associated with this job that are outstanding.

**7. INSURANCE**

The General and Supplemental Conditions require the Contractor to maintain in force during the performance of the work policies of Workmen's Compensation Insurance and Public Liability and Property Damage Insurance, covering the operations of the Contractor, subcontractors, and the agents of any of them, the use of any motor vehicles employed by the Contractor, subcontractors, and the agents of any of them.

**8. ERRORS, INTERPRETATIONS, AND ADDENDA**

Should a Bidder find any omissions, discrepancies or errors in the Specifications or other Bid Documents or should he be in doubt as to the meaning of the Specifications or other Bid Documents, he should immediately notify the Owner who may correct, amend, or clarify such documents by a written interpretation or addendum. No oral interpretations

shall be made to any Bidder and no oral statement of the Owner shall be effective to modify any of the provisions of the Bid Documents.

Every request for such interpretation shall be in writing by email to Kishor Patel at kpatel@mminc.com. To be given consideration, such requests must be received at least seven (7) calendar days prior to the date fixed for the opening of bids. Addenda shall be issued at least two (2) calendar days prior to the date fixed for the opening of bids.

**9. SUBCONTRACTORS**

All contracts made by the Contractor with subcontractors shall be covered by the terms and conditions of the prime contract. The Contractor shall see to it that his subcontractors are fully informed in regard to these terms and conditions.

**10. EXECUTION OF CONTRACT**

If notified of the acceptance of this proposal within the acceptance period of sixty (60) days, the Bidder agrees to execute the Contract and all related documents for this work within five (5) working days of the "NOTICE OF AWARD." No work shall begin until a City Purchase Order is in place.

**11. TIME REQUIREMENTS**

Time is a major factor for the completion of this Contract. All work must be completed within the time limitations stipulated in the Supplemental Conditions. Failure to complete the work will result in the payment of liquidated damages as stipulated in the Supplemental Conditions. This amount is not a penalty but is a fixed liquidated damage which the owner will suffer by reason of such default, time being of the essence of the contract and a material consideration thereof.

**12. RIGHT OF THE OWNER TO TERMINATE CONTRACT**

In the event that any of the provisions of this Contract are violated by the Contractor, or by any of his subcontractors, the Owner may serve written notice upon the Contractor of its intention to terminate the Contract, such notices to contain the reasons for such intention to terminate the Contract, and unless within five (5) days after the serving of such notice upon the Contractor, such violation or delay shall cease and satisfactory arrangement for correction be made, the Contract shall, upon expiration of said five (5) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve written notice thereof upon the Contractor.



**13. PAYMENTS**

Monthly estimates and/or invoices shall be furnished to the City Engineer for verification and approval of the amount of work done and the amount earned by the Contractor. An amount of 95% of the estimated amount due, less any payments previously made and/or any monies to be held will be paid to the Contractor monthly. The balance will be retained by the Owner until final completion of the work. Final payment will not be made until final completion and acceptance by the City of Groton of all work covered by the Contract. The Contractor agrees that he will indemnify and save the Owner harmless for all claims growing out of the lawful demands of subcontractors, laborers, suppliers, and assignees.

Payment for the work associated with this bid shall be made within thirty (30) days by the City, following the completion of all work invoiced to the satisfaction of the City, as determined by inspection of the completed project by the City or its designated agent, and upon submission of an invoice to the City of Groton Finance Department, Attn: Ronald Yuhas, 295 Meridian Street, Groton, Connecticut 06340. Payment for materials shall only be for materials already used or for materials stored on site at the job location. Frequency of invoices shall not exceed one per month. Payment for all items shall be made at the contract unit price for the actual amount of work required, performed and accepted.

**14. DBE PARTICIPATION**

All Bidders to this Contract are advised that it is the intent of the City of Groton to encourage the participation of disadvantaged business enterprise contractors and/or suppliers. It will be the prime Contractor's responsibility to provide all necessary and required documentation to demonstrate compliance with this Contract requirement.

**15. PRE-BID MEETING**

Attendance at the pre-bid meeting to be held on December 3, 2019, at 10:00 A.M. to review the project is mandatory. The meeting will be held at the site at the intersection of Thames Street and Eastern Point Road, Groton, Connecticut 06340. This will be the only meeting to review the project with City of Groton officials and the City Engineer. Each bidder is responsible for any information discussed or presented at the pre-bid meeting.

**16. SALES TAX**

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

**17. COMPLIANCE WITH FEDERAL AND STATE REGULATIONS**

The contractor shall be responsible for full compliance with any Federal and/or State laws, regulations and standards, as applicable to any project fully or partially funded by State and/or Federal funding agency. Construction materials and methods shall comply with State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, 2016 and supplements as amended herein.

**18. PRE-QUALIFICATION**

Contractors bidding this work must be pre-qualified by the Connecticut Department of Transportation in the following work classifications:

- Group No. 3 – Concrete Restoration
- Group No. 6 – Road Construction and rehabilitation: Local Roads & Street and non-freeways
- Group No. 20 – Incidental Construction: Temporary traffic control

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**BID PROPOSAL FORMS**

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**BID PROPOSAL**

TO: City of Groton, CT  
295 Meridian Street  
Groton, Connecticut 06340-4040  
Finance Department

PROPOSAL OF: NAME: \_\_\_\_\_

STREET: \_\_\_\_\_

CITY: \_\_\_\_\_

**FOR: RECONSTRUCTION OF THAMES STREET WALL AT ELECTRIC BOAT**

The undersigned Bidder, in compliance with the invitation for bids for the "**Reconstruction of Thames Street Wall at Electric Boat**" in Groton, Connecticut, having examined the Contract Plans and Project Manual dated November 22, 2019, related documents, and the site of the proposed work, and being familiar with the conditions surrounding the construction related to the project, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein. He will contract with the City to perform all the work required by the Bidding Documents after notification of award of the contract and he will take in full payment, therefore, the unit price applicable to each item of the work as stated in the following schedule.

The respondent hereby acknowledges receipt of the Addenda listed below and further acknowledges that the provisions of each Addendum have been included in the preparation of this Bid:

<b>Addendum No.</b>	<b>Dated</b>	<b>Addendum No.</b>	<b>Dated</b>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**BID SCHEDULE:****BIDDER'S NAME:**

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ITEM NO.	ITEM/ DESCRIPTION	UNIT	QTY	UNIT PRICES BID		AMOUNT IN FIGURES
				IN FIGURES	IN WRITING	
0201013	Removal of Existing Fence	LF	400			
0201030A	Clearing and Grubbing (Site No. 1)	LS	1			
0201031A	Clearing and Grubbing (Site No. 2)	LS	1			
0202502	Removal of Concrete Pavement	SY	200			
0202529	Cut Bituminous Concrete Pavement	LF	180			
0203000	Structure Excavation - Earth (Complete)	CY	260			
0203100	Structure Excavation - Rock (Complete)	CY	5			
0209001	Formation of Subgrade	SY	90			
0213050	Bank Run Gravel	CY	30			
0214000	Compacted Gravel Fill	CY	15			
0216000	Pervious Structure Backfill	CY	40			
0216011A	Flowable Fill	CY	3			
0219001	Sedimentation Control System	LF	215			

ITEM NO.	ITEM/ DESCRIPTION	UNIT	QTY	UNIT PRICES BID		AMOUNT IN FIGURES
				IN FIGURES	IN WRITING	
0219002	Sedimentation Control Hay Bale System	LF	42			
0304002	Processed Aggregate Base	CY	15			
0406010-1	Bituminous Concrete - Class 1	Ton	45			
0406010-2	Bituminous Concrete - Class 2	Ton	17			
0406236	Material for Tack Coat	Gal	30			
0406267	Milling of HMA (0"-4")	SY	295			
0601201A	Class 'F' Concrete	CY	50			
0601445A	Embankment Wall (Site No. 1)	LS	1			
0602006	Deformed Steel Bars (Epoxy Coated)	LB	5,000			
0703013A	Special Riprap	CY	30			
0708001	Dampproofing	SY	45			
0728014	3/4" Crushed Stone	CY	30			
0728016	3" Crushed Stone	CY	215			
0815001	Bituminous Concrete Lip Curbing	LF	175			
0822001	Temporary Precast Concrete Barrier Curb	LF	180			
0905018A	Rebuild Stone Wall	CY	3			
<b>ITEM</b>	<b>ITEM/</b>	<b>UNIT</b>	<b>QTY</b>	<b>UNIT PRICES BID</b>		<b>AMOUNT</b>

NO.	DESCRIPTION			IN FIGURES	IN WRITING	IN FIGURES
0913968A	Protective Fence (8'-0" High)	LF	300			
0922001	Bituminous Concrete Sidewalk	SY	75			
0944001	Furnishing and Placing Topsoil	SY	100			
0950005A	Turf Establishment	SY	100			
0969060A	Construction Field Office, Small	Mo	3			
0971001A	Maintenance & Protection of Traffic	LS	1			
0974001	Removal of Existing Masonry	CY	3			
0975002	Mobilization and Project Closeout	LS	1			
1210101	4" White Epoxy Resin Pavement Markings	LF	400			
1210102	4" Yellow Epoxy Resin Pavement Markings	LF	400			
<u>Total Bid (in words)</u>						
				\$ _____		
					(in Dollars)	

By Submission of this Bid, each bidder certifies that his Bid has been arrived at independently, without consultation, communication, or agreement as to any matter related to this Bid with any other Bidder or with any competitor.

The Bidder, by submittal of this Bid, agrees with the Owner that the amount of the bid security deposited with this Bid fairly and reasonably represents the amount of damages the Owner will suffer due to the failure of the Bidder to fulfill his agreements as above provided.

By: \_\_\_\_\_  
(Signature and Title of Authorized Representative)

\_\_\_\_\_  
Business Name

\_\_\_\_\_  
Street

\_\_\_\_\_  
City, State, and Zip Code

Date: \_\_\_\_\_



**BID BOND**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

\_\_\_\_\_, as Principal, and  
(Name of Principal)

\_\_\_\_\_, as Surety,  
(Name of Surety)

are held and firmly bound unto the CITY OF GROTON, CONNECTICUT, hereinafter called the  
"CITY", in the penal sum of \_\_\_\_\_

\_\_\_\_\_ DOLLARS, (\$\_\_\_\_\_),

lawful money of the United States, for the payment of which sum will and truly to be made, we bind  
ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly  
by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT

WHEREAS, the Principal, has submitted the Accompanying Bid dated \_\_\_\_\_

20 \_\_\_\_\_, for \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the period specified, therein after the opening of the same, or, if no period be specified, within thirty days after the said opening, and shall within the period specified therefore, or if no period be specified, within ten days after the prescribed forms are presented to him for signature, enter into a written contract with the City in accordance with the Bid, as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract; or in the event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bond within the time specified, if the Principal shall pay the City the difference between the amount specified in said Bid and the Amounts for which the City may procure the required work or supplies or both, if the latter be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

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

\_\_\_\_\_  
(Principal) (L.S.)

\_\_\_\_\_  
(Surety)

BY: \_\_\_\_\_

## **BIDDER'S QUALIFICATION STATEMENT**

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

1. Name of Bidder.
2. Permanent main office address.
3. When organized.
4. If a corporation, where incorporated.
5. How many years have you been engaged in the contracting business under your present firm or trade name?
6. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion.)
7. General character of work performed by your company.
8. Have you ever failed to complete any work awarded to you?  
If so, where and why?
9. Have you ever defaulted on a contract?  
If so, where and why?
10. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed.
11. List your major equipment available for this Contract.
12. List your experience in work similar to this project.
13. List the background and experience of the principal members of your organization, including officers.
14. List the work to be performed by subcontractors and summarize the dollar value of each subcontract.
15. Credit available.
16. Give bank reference.

17. Will you, upon request, fill out a detailed financial statement and furnish any information that may be required by the City?
18. The undersigned hereby authorizes and request any person, firm or corporation to furnish any information requested by the City in verification of the recitals comprising this Statement of Bidder's Qualifications.

Date \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
(Name of Bidder)

By \_\_\_\_\_

Title \_\_\_\_\_

State of \_\_\_\_\_ )

)ss.

County of \_\_\_\_\_ )

\_\_\_\_\_ being duly sworn deposes

and says that he is \_\_\_\_\_ of \_\_\_\_\_

\_\_\_\_\_  
(Name of Organization)

and that the answers to the foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn to before me

this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
(Notary Public)

My commission expires \_\_\_\_\_, 20\_\_\_\_\_.





- (a) No proposed subcontractor shall be disapproved by the City of Groton except for cause.
- (b) The Contractor shall be fully responsible to the City of Groton for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.
- (c) The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to require compliance by each subcontractor with the applicable provisions of this Contract for \_\_\_\_\_
- (d) Nothing contained in this Contract shall create any contractual relationship between any subcontractor and the City of Groton.

#### OTHER CONTRACTS

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

## **APPARENT LOW BIDDER FORMS**

Following the bid opening and subsequent review of all submitted bids, but prior to award of the project, the City will ask that the following forms noted below and included herein be completed and submitted to the City by the apparent low bidder.

1. Contractor's Proposed Progress Chart – Highway Construction Bar Chart
2. Certificate of Compliance with Connecticut General Statute Section 31-57b
3. DBE Participation Approval Request (including the use of a DBE as a material supplier)
4. Anticipated Source of Material
5. Certificate of Insurance (CON-32)
6. Affirmative Action Program Certification





**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)*



**CONNECTICUT DEPARTMENT OF TRANSPORTATION  
(OFFICE OF CONSTRUCTION)  
BUREAU OF ENGINEERING AND HIGHWAY OPERATIONS**

This affidavit must be completed by the State Contractor's DBE notarized and attached to the contractor's request to utilize a DBE supplier or manufacturer as a credit towards its DBE contract requirements; failure to do so will result in not receiving credit towards the contract DBE requirement.

State Project No.

Federal Aid Project No.

Description of Project

I, \_\_\_\_\_, acting in behalf of \_\_\_\_\_  
(Name of person signing Affidavit) (DBE person, firm, association or corporation)  
of which I am the \_\_\_\_\_ certify and affirm that \_\_\_\_\_  
(Title of Person) (DBE person, firm, association or corporation)

is a certified Connecticut Department of Transportation DBE. I further certify and affirm that I have read and understand 49 CFR, Sec. 26.55(e)(2), as the same may be revised.

I further certify and affirm that \_\_\_\_\_ will assume the actual and  
(DBE person, firm, association or Corporation)

for the provision of the materials and/or supplies sought by \_\_\_\_\_  
(State Contractor)

If a manufacturer, I produce goods from raw materials or substantially alter them before resale, or if a supplier, I perform a commercially useful function in the supply process.

I understand that false statements made herein are punishable by Law (Sec. 53a-157), CGS, as revised).

(Name of Corporation or Firm)

(Signature & Title of Official making the Affidavit)

Subscribed and sworn to before me, this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_.

Notary Public (Commissioner of the Superior Court)

My Commission Expires

**CERTIFICATE OF CORPORATION**

I, \_\_\_\_\_, certify that I am the  
(Official)

of the Corporation named in the foregoing instrument; that I have been duly authorized to affix the seal of the Corporation to such papers as require the seal; that \_\_\_\_\_, who signed said instrument on behalf of the Corporation, was then of said corporation; that said instrument was duly signed for and in behalf of said Corporation by authority of its governing body and is within the scope of its corporation powers.

\_\_\_\_\_  
(Signature of Person Certifying)

\_\_\_\_\_  
(Date)

ANTICIPATED SOURCE  
OF MATERIAL

REV. 8/98  
PRINTED ON RECYCLED PAPER

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
P.O. BOX 317546  
NEWINGTON, CT 06111-7546

PROJECT NUMBER
TOWN

MATERIALS	SOURCE OF SUPPLY AND MAILING ADDRESS
AGGREGATES:	
Coarse	
Fine	
BITUMINOUS CONCRETE	
BITUMEN:	
Asphalt Cement	
Asphalt Cutbacks	
Emulsion	
Tar	
BRICK	
CEMENT - PORTLAND	
Type I	
Type II	
Type 1A	
Type IIA	
TYPE OF DELIVERY:	
Truck	
R.R. Car	
CONCRETE BLOCKS	
CONCRETE, PORTLAND CEMENT	
CURING MATERIAL:	
Mats	
Paper	
Compound	
Other	
DAMP-PROOFING and/or WATERPROOFING:	
Primer	
Seal	
Fabric	
FENCE:	
Property or Wire	
Posts: Steel	
Wood	
Chain Link	
Fittings for Chain Link	
GRAVEL	
GUIDE RAIL:	
Wire Rope	
Fittings	
Posts:	
Metal	
Wood	
JOINT FILLER	
JOINT SEALER	
LOAD TRANSFER UNIT	
METAL FLASHING	
METAL BEAM TYPE RAIL (BRIDGE)	
METAL BEAM TYPE RAIL	
METAL BRIDGE RAIL	
OVERHEAD SIGN SUPPORTS	
PAINT:	
2nd Prime Coat (Field)	
1st Field Coat	

MATERIALS	SOURCE OF SUPPLY AND MAILING ADDRESS PG. 2 of 2
PILING:	
Sheets	
Bearing	
Pipe	
Wood (Pressure Treated)	
Precast, Prestressed	
PIPE:	
C,C.M.	
Cast Iron	
Reinf. Concrete	
Vitrified Clay	
PRECAST, PRESTRESSED UNITS	
STEEL:	
Bar Mat Fabric and/or Wire Mesh	
Metal Cribbing	
Reinforcement	
Scuppers	
SHEAR CONNECTORS:	
Spiral	
Welded	
STRUCTURAL (BRIDGES)	
STRUCTURAL (Side mounted sign supports)	
	CONTRACTOR
	SIGNED BY
	DATE

NOTE: Items not listed above shall be listed below.

CON-32 REV. 11/07  
STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION

**CERTIFICATE OF INSURANCE**

This is to certify that the Insurance Company named herein has issued to the named insured the policies listed below, that these policies are written in accordance with the Insurance Company's standard policies and endorsements, except as indicated below or as noted in the attachments hereto, which policies and endorsements will be made available to the Department of Transportation upon request, that they provide coverages and limits of liability shown with respect to the hazards indicated, that they are in force on this date, and that this Certificate is furnished in accordance with and for the purpose of satisfying the requirements of the Department of Transportation in connection with the award and the performance of any contract or agreement, or the issuance of any permit or authorization by the Transportation Commissioner or duly authorized agent.

The Insurance Company has a right and duty to defend the insured against any suit seeking damages (or under Workers' Compensation benefits) to which the referenced insurance policy applies and may investigate and settle any claim or suit as they deem appropriate. The Insurance Company's duty to defend or settle any claim or suit ends when the applicable limit of liability has been exhausted in the payment of judgments or settlements.

NAME OF INSURED \_\_\_\_\_  
ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_

HAZARDS	POLICY NUMBER	EFFECTIVE DATE	EXPIRATION DATE	COVERAGES AND LIMITS OF LIABILITY BODILY INJURY LIABILITY AND PROPERTY DAMAGE LIABILITY	
				ALL PERSONS / ALL DAMAGES EACH ACCIDENT or OCCURRENCE	AGGREGATE
<b>A</b> OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY FOR AND IN THE NAME OF THE STATE OF CONN. (1)(2) SEE BELOW					
<b>*B</b> COMMERCIAL GENERAL LIABILITY (1) SEE BELOW					
<b>*C</b> EXPLOSION, COLLAPSE, OR UNDERGROUND DAMAGE LIABILITY (1) SEE BELOW					
<b>*D</b> AUTOMOBILE LIABILITY OWNED AUTOMOBILES HIRED AUTOMOBILES NON-OWNED AUTOMOBILES (1) SEE BELOW					
<b>*E</b> RAILROAD PROTECTIVE LIABILITY (1) (2) SEE BELOW					
<b>*F</b> EXCESS/UMBRELLA LIABILITY (1) SEE BELOW					
<b>G</b> VALUABLE PAPERS and RECORDS	XXXXXXXXXXXX	XXXXXXX	XXXXXXX	POSSESSION	ALL OTHER
VALUABLE PAPERS and RECORDS					
<b>H</b> BLASTING (1) SEE BELOW					
<b>I</b> ** WORKERS' COMPENSATION				STATUTORY COVERAGES AND LIMITS	
<b>J</b>					

\* State of Connecticut Is Named as Additional Insured.

\*\* Compensation Commissioner's Certificate shall be supplied herewith by self-insured party.

Note: If Excess/Umbrella Liability Insurance is needed to meet the Agreement/Contract, etc. minimum requirements, complete Section F above.

**Check**

This Certificate is issued in accordance with the terms of:

- Construction Contracts       Lease Agreement Rights of Way       Demolition Contracts  
 Permit Work No. \_\_\_\_\_  Project No. \_\_\_\_\_  Agree No. \_\_\_\_\_  
 Engineering      \_\_\_\_\_  Other Specify & including all operations incidental thereto.

PARTY FOR NOTICE Bureau: \_\_\_\_\_ Unit: \_\_\_\_\_ Name: \_\_\_\_\_

(1) It is agreed that the herein named Insurance Company will not use the defense of sovereign immunity in the adjustment of claims or in the defense of any suit brought against the State, unless requested to do so in writing by the State.

(2) It is agreed that the Insurance Company will bill premiums and audit charges earned under the protective liability policy(ies) to the above named insured; however, if named insured is different from the vendor, consultant, contractor or party of record, the vendor, consultant, contractor or party of record will be billed.

IN THE EVENT OF ANY REDUCTION IN LIMITS, CANCELLATION OF OR FAILURE TO RENEW ANY ONE OR MORE OF SAID POLICIES THE \_\_\_\_\_ (INSURANCE COMPANY) SHALL GIVE NOT LESS THAN THIRTY DAYS WRITTEN NOTICE TO THE PARTY FOR NOTICE TO WHOM THIS CERTIFICATE IS ISSUED OF SUCH REDUCTION IN LIMITS, CANCELLATION, OR FAILURE TO RENEW.

DATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_

\_\_\_\_\_  
(Insurance Company)

ISSUED TO: CONNECTICUT DEPARTMENT OF TRANSPORTATION  
CONTRACT ADMINISTRATION  
2800 BERLIN TURNPIKE  
NEWINGTON, CT 06111

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Agency)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Authorized Agent's Name & Signature)

AFFIRMATIVE ACTION PROGRAM CERTIFICATION

City/Town of \_\_\_\_\_  
\_\_\_\_\_

Firm Name: \_\_\_\_\_  
\_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Project Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Bid Amount: \_\_\_\_\_

Date: \_\_\_\_\_

I \_\_\_\_\_ of \_\_\_\_\_

(Name of Person)

(Name of Firm)

intend to honor our Affirmative Action Program on file with the Connecticut Department of Transportation, Office of Contract Compliance. I further certify that our Affirmative Action Program is current and that the last approval was on (Date) \_\_\_\_\_, 20\_\_\_\_ and it expires on (Date) \_\_\_\_\_, 20\_\_\_\_.

Signed By: \_\_\_\_\_

Title: \_\_\_\_\_

EEO Officer: \_\_\_\_\_



Department of Revenue Services  
 State of Connecticut  
 Attn: Discovery Unit  
 25 Sigoumey Street  
 Hartford CT 06106-5032  
 (New 09/03)

## Form AU-766 Guarantee Bond



**Purpose:** A nonresident contractor working in Connecticut and a surety company licensed to do business in Connecticut use **Form AU-766** to post a guarantee bond with the Department of Revenue Services (DRS) for a specific project in the state. The guarantee bond ensures that all taxes due to the State of Connecticut from the contractor are paid to DRS. Read the instructions on the reverse side before you complete this form. If you need help, call **860-541-3280**, Monday through Friday, 8:00 a.m. to 5:00 p.m., and choose Option 7.

<b>Part I: Nonresident Contractor Information</b>			
Name		Connecticut Tax Registration No.	
Address (Street or PO Box, City, State, and ZIP Code)			
<b>Part II: Person Doing Business With a Nonresident Contractor Information</b>			
Name		Connecticut Tax Registration No., Federal ID No., or SSN	
Address (Street or PO Box, City, State, and ZIP Code)			
<b>Part III: Surety Company Information</b>			
Name		Bond No.	Amount of Bond
Address (Street or PO Box, City, State, and ZIP Code)			
<b>Part IV: Project Information</b>			
<input type="checkbox"/> Check the box if this bond is for a change order			
Physical Location of Project (Street, City or Town)		Name of Project	
Commencement Date	Completion Date for Nonresident Contractor	Total Contract Price or Amount of Change Order	Amount of Deposit
Conditions of the obligation for the project detailed above: <ul style="list-style-type: none"> <li>The nonresident contractor has entered into a contract related to real property at a Connecticut location.</li> <li>The nonresident contractor and the surety company are posting a bond of 5% of the total contract price, including any change orders and add-ons, with DRS to ensure that all taxes that become due and owing during the period of the contract will be paid.</li> <li>A bond must be posted within 120 days of the commencement of the contract for contracts lasting 120 days or more. If the deadline for the person doing business with a nonresident contractor to withhold and remit a deposit to DRS is before the deadline for the nonresident contractor to post a bond, DRS will accept the earlier of the deposit or the bond.</li> <li>If the nonresident contractor pays all taxes, interest, and penalties within three years, one month, and one day after completion of the contract, the bond expires; otherwise the obligation remains in full force.</li> <li>This bond jointly and severally binds the nonresident contractor and the surety company, their heirs, executors, administrators, successors, and assigns for payment of this obligation.</li> </ul>			
<b>Declaration:</b> I, the nonresident contractor named above or its authorized agent, declare under the penalty of law that I have examined <b>Form AU-766</b> and, to the best of my knowledge and belief it is true, complete, and correct. I understand that the penalty for willfully delivering a false document or return to DRS is a fine of not more than \$5,000, or imprisonment for not more than five years, or both.			
Print Name		Title	
Authorized Signature		Date	
<b>Declaration:</b> I, an authorized agent of the surety company named above, declare under the penalty of law that I have examined this <b>Form AU-766</b> and, to the best of my knowledge and belief it is true, complete, and correct. I understand that the penalty for willfully delivering a false document or return to DRS is a fine of not more than \$5,000, or imprisonment for not more than five years, or both.			
Seal:			
Print Name		Title	
Authorized Signature		Date	

## General Instructions

**Form AU-766, Guarantee Bond**, must be executed by a nonresident contractor and a surety company licensed to do business in Connecticut. A power of attorney for the person signing the bond on behalf of the surety company **must** be attached to the bond, carry the corporate seal of the surety company, and bear the same date as the execution date of the bond.

A nonresident contractor has the option of filing a guarantee bond with DRS instead of the customer making a deposit with DRS under Conn. Gen. Stat. §12-430(7)(b)(i). Under this option, the nonresident contractor has 120 days from the commencement of the contract to file a guarantee bond with DRS.

If the deadline for the customer to withhold and remit a deposit to DRS is before the deadline for the nonresident contractor to post a bond, DRS will accept the earlier of the deposit or the bond. See **Special Notice 2003(20), Legislation Affecting Contracts With Nonresident Contractors**, for more information.

A *nonresident contractor* is a contractor who does not maintain a regular place of business in this state. A *regular place of business* means any bona fide office, factory, warehouse or other space in Connecticut at which a contractor is doing business in its own name in a regular and systematic manner, and which place is continuously maintained, occupied, and used by the contractor in carrying on its business through its employees regularly in attendance to carry on such contractor's business in the contractor's own name. A regular place of business does not include a place of business for a statutory agent for service of process or a temporary office whether or not it is located at the site of construction. A regular place of business also does not include locations used by the contractor only for the duration of the contract, such as short-term leased offices, warehouses, storage facilities, or facilities that do not have full time staff with regular business hours. An office maintained, occupied, and used by a person affiliated with a contractor is not a regular place of business of the contractor.

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

## Specific Instructions

**Part I:** Enter the name and complete address of the nonresident contractor furnishing the bond. Include the nonresident contractor's Connecticut tax registration number. The name and address of the nonresident contractor appearing on the bond must agree with the name and address on **Form REG-1, Business Taxes Registration Application**, filed with the Department of Revenue Services (DRS). (If the information originally provided on Form REG-1 is now incorrect, you must notify the DRS Registration Unit in writing of the correct information.) If the nonresident contractor is a corporation, the corporate name

appearing on the bond must be the same shown in the records of the Office of the Secretary of State, or similar agency of another state if the nonresident contractor is not a Connecticut corporation.

**Part II:** Enter the name and complete address of the person doing business with the nonresident contractor. If the nonresident contractor is the general contractor, enter the name and address of the owner of the property. If the nonresident contractor is a subcontractor, enter the name and address of the general contractor.

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

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

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

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

Enter the commencement date of this project or change order. The commencement date is the date the contract is signed or the date the nonresident contractor begins work, but it is never later than the date the nonresident contractor begins work.

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

Enter, in words and figures, the total amount to be paid to the nonresident contractor under the contract. Indicate if this amount is an estimate. If this is a bond for a change order, enter the additional amount of the bond for the change order.

Multiply the total contract price or the amount of the change order by 5% (.05) and enter the result on this line.

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

Return **Form AU-766** to:

Department of Revenue Services  
State of Connecticut  
Discovery Unit  
25 Sigourney Street  
Hartford CT 06106

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**CONTRACT FORMS**

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**NOTICE OF AWARD**

TO: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PROJECT DESCRIPTION: Reconstruction of Thames Street Wall at Electric Boat**

In response to your Bid submitted on \_\_\_\_\_, 2019, for the above described work, you are hereby notified that your Bid has been accepted for the unit prices quoted.

You are required by the Information for Bidders to execute the Agreement and furnish the required Contractors Performance Bond, Labor and Materials Bond, Certificates of Insurance and other required documents within five (5) working days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said Bonds within five (5) working days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 2019.

City of Groton

By \_\_\_\_\_  
Mayor Keith Hedrick

**ACCEPTANCE OF NOTICE**

Receipt of the above Notice of Award is hereby acknowledged by

\_\_\_\_\_

this \_\_\_\_\_ day of \_\_\_\_\_, 2019.

By \_\_\_\_\_  
(Please Print)

Title \_\_\_\_\_

**FORM OF AGREEMENT**

THIS AGREEMENT made this \_\_\_\_\_ day of \_\_\_\_\_, 2019, by and between \_\_\_\_\_ organized and existing under the laws of the State of Connecticut (hereinafter called the "Contractor") and the City of Groton (hereinafter called the "City").

WITNESSETH, that the Contractor and the City for considerations stated herein, mutually agree as follows:

ARTICLE 1: Statement of Work: The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment, and services and perform and complete all work required for construction of **Reconstruction of Thames Street Wall at Electric Boat**, City Bid No. 19-11-01. Work shall be performed in strict accordance with the Contract Specifications. The Contractor shall commence work upon a written "Notice to Proceed" from the City and the Contractor shall fully complete this Contract within sixty (60) calendar days from the date of the written "Notice to Proceed."

ARTICLE 2: The Contract Price: The City will pay the Contractor for performance of the Contract in current funds in accordance with the bid proposal for the total work performed. The City before making payment may require the Contractor to furnish releases or receipts from any or all persons performing work and supplying material or services to the Contractor, or any subcontractor for work under this Contract, if this is deemed necessary to protect its interest.

ARTICLE 3: The Contract: The executed Contract Documents, as prepared by the design consultant, Milone & MacBroom, Inc., shall consist of the following. These constitute the entire understanding and agreement between the parties:

- a) This Form of Agreement and required contract forms
  - b) Invitation to Bid
  - c) Instruction to Bidders
  - d) Signed copy of the Bid Proposal, with all attachments required for bidding
  - e) General Conditions
  - f) Supplemental Conditions
  - g) Special Provisions
  - h) General Contract Provisions
  - i) Prevailing State Wage Rates
  - j) Addenda
  - k) Certificate of Insurance
- n) Contract Plans entitled "**Reconstruction of Thames Street Wall at Electric Boat**," dated **November XX, 2019**

<u>Sheet No.</u>	<u>Title</u>
01	Title Sheet
02	General Notes, Boring Logs & Typical Roadway Section
03	Detour Plan
04	Sediment & Erosion Controls

05 Proposed Plan  
06-07 Structural Details  
08-11 Cross Sections

ARTICLE 4: Notices: Notices shall be deemed to have sufficiently been given if in writing and delivered either personally or by certified mail to the authorized representative of the other party.

From the City to the Contractor:	From the Contractor to the City:
Authorized Representative	Mayor Keith Hedrick
Contractor	City of Groton
Address	295 Meridian Street
City, State Zip Code	Groton, CT 06340

THIS AGREEMENT, together with other documents enumerated in ARTICLE 3, which said other documents are as fully a part of this Contract as if hereto attached or herein repeated, form the Contract between the parties hereto.

THIS AGREEMENT shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors and assigns.

THIS AGREEMENT, may only be modified, amended, supplemented or canceled by a duly written instrument signed by both parties.

THIS AGREEMENT shall be deemed to include all terms and requirements imposed by law including, but not limited to, all applicable provisions of the State of Connecticut for the performance of the work on the project.

In the event of any inconsistencies between applicable general laws and the Contract Documents, the applicable general laws shall prevail.

In the event that any provision hereof is found invalid or unenforceable pursuant to judicial decree or decision, the remainder of this Agreement shall be valid and enforceable according to its terms.

The validity, interpretation and enforcement of this Agreement shall be governed by the laws of the State of Connecticut. Neither party shall be deemed to be the author of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in two (2) original copies on the day of the year first above written.

\_\_\_\_\_  
(Contractor)

ATTEST:

\_\_\_\_\_  
BY \_\_\_\_\_  
Mayor Keith Hedrick  
(Print or type all names under signature.)

CERTIFICATIONS

I, \_\_\_\_\_, certify that I am the  
\_\_\_\_\_ of the corporation  
named as Contractor herein; that \_\_\_\_\_  
\_\_\_\_\_ who signed this Agreement on  
behalf of the Contractor, was then \_\_\_\_\_  
of said corporation; that said agreement was duly signed for and on behalf of said corporation by  
authority of its governing body and is within the scope of its corporate powers.

\_\_\_\_\_ CORPORATE

\_\_\_\_\_ SEAL

**PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_ a \_\_\_\_\_  
(Corporation, Partnership, Individual)  
hereinafter called "Principal," and \_\_\_\_\_, of \_\_\_\_\_,  
State of \_\_\_\_\_, hereinafter called the "Surety,"  
are held firmly bound unto the City of Groton, Connecticut 06340, hereinafter called the "City," in  
the penal sum of \_\_\_\_\_  
DOLLARS (\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which sum well  
and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly  
and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, Principal entered into a certain Contract with the City, dated the \_\_\_\_\_  
day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto attached and made a  
part hereof for the construction of:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and  
agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to  
the work to be performed thereunder of the Specifications accompanying the same shall in any  
way affect its obligation on this Bond, and it does hereby waive notice of any such change,  
extension of time, alteration, or addition to the terms of the Contract or to work of the  
Specifications.



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

IN WITNESS WHEREOF, this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal)

\_\_\_\_\_  
(Principal) Secretary  
(SEAL)

BY: \_\_\_\_\_ (s)

\_\_\_\_\_  
(Witness as to Principal)

\_\_\_\_\_  
(Address - Zip Code)

\_\_\_\_\_  
(Address - Zip Code)

\_\_\_\_\_  
(Surety)

ATTEST:

\_\_\_\_\_  
(Surety) Secretary  
(SEAL)

BY: \_\_\_\_\_  
(Attorney-in-fact)

\_\_\_\_\_  
(Witness as to Surety)

\_\_\_\_\_  
(Address - Zip Code)

\_\_\_\_\_  
(Address - Zip Code)

**NOTE:** Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all Partners should execute Bond.

**PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_ a \_\_\_\_\_  
(Name of Contractor) (Corporation, Partnership, Individual)  
hereinafter called "Principal," and \_\_\_\_\_, of \_\_\_\_\_,  
State of \_\_\_\_\_, hereinafter called the "Surety," are held firmly bound  
unto the City of Groton, Connecticut, 06340, hereinafter called the "City," in the penal  
sum of \_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_ )  
in lawful money of the United States, for the payment of which sum well and truly to be made, we  
bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by  
these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, Principal entered into a certain Contract with the City, dated the  
\_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_, a copy of which is hereto attached and made a part  
hereof for the construction of:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms,  
subcontractors, and corporations furnishing materials for or performing labor in the prosecution of  
the work provided for in such Contract, and any authorized extension or modification thereof,  
including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on  
machinery, construction of such work, and all insurance premiums on said work, or otherwise, then  
this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder of the Specifications accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to work of the Specifications.

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

IN WITNESS WHEREOF, this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal)  
\_\_\_\_\_  
(Principal) Secretary  
(SEAL) BY: \_\_\_\_\_ (s)  
\_\_\_\_\_  
(Address - Zip Code)  
\_\_\_\_\_  
(Witness as to Principal)  
\_\_\_\_\_  
(Address - Zip Code)  
\_\_\_\_\_  
(Surety)

ATTEST:

\_\_\_\_\_  
(Surety) Secretary  
(SEAL) BY: \_\_\_\_\_  
\_\_\_\_\_  
(Attorney-in-fact)  
\_\_\_\_\_  
(Witness as to Surety)  
\_\_\_\_\_  
(Address - Zip Code)  
\_\_\_\_\_  
(Address - Zip Code)

**NOTE:** Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all Partners should execute Bond.

**NOTICE TO PROCEED**

DATE: \_\_\_\_\_

TO: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PROJECT DESCRIPTION: Reconstruction of Thames Street Wall at Electric Boat**

You are hereby notified to commence work in accordance with the Agreement dated \_\_\_\_\_, 2020, on or before \_\_\_\_\_, 2020, and you are to complete the work as indicated in the Supplemental Conditions section, "Time of Completion."

City of Groton

By \_\_\_\_\_  
Mayor Keith Hedrick

**ACCEPTANCE OF NOTICE**

Receipt of the above Notice to Proceed is hereby acknowledged by

\_\_\_\_\_

this \_\_\_\_\_ day of \_\_\_\_\_, 2020.

By \_\_\_\_\_  
(Please Print)

Title \_\_\_\_\_

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## **GENERAL CONDITIONS**

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## GENERAL CONDITIONS

### 1. DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

- Addenda: Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the bidding documents or the Contract Documents.
- Agreement: The written agreement between the City and the Contractor covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.
- Application for Payment: The form accepted by the Engineer which is to be used by the Contractor in requesting progress or final payment and which is to include such supporting documentation as is required.
- Bid: The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- Bonds: Bid, performance, and payment bonds, and other instruments of security.
- Change Order: A written order to the Contractor signed by the City Engineer authorizing an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after the effective date of the Agreement.
- Contract Documents: The Agreement, Addenda (which pertain to the Contract Documents), the Contractor's Bid (when attached as an exhibit to the Agreement), the Bonds, these General Conditions, the Supplemental Conditions, the Specifications, the Drawings (as the same are more specifically identified in the Agreement), together with all Modifications issued after the execution of the Agreement.
- Contract Price: The moneys payable by the City to the Contractor under the Contract Documents as stated in the Agreement.
- Contract Time: The number of days or the date stated in the Agreement for the completion of the Work.
- Contractor: The person, firm, or corporation with whom the City has entered into the Agreement.
- Drawings: The drawings which show the character and scope of the Work to be performed, and which have been prepared or approved by the Engineer, and are referred to in the Contract Documents.

Effective Date	The date indicated in the Agreement on which it becomes effective, but if no of the Agreement: such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
Engineer:	The City Engineer or Milone & MacBroom, Inc. as the authorized representative of the City Engineer.
Field Order:	A written order issued by the Engineer which orders minor changes in the Work.
Notice of Award:	The written notice by the City to the apparent successful Bidder stating that upon compliance by the apparent successful Bidder with the conditions precedent enumerated therein, within the time specified, the City will sign and deliver the Agreement.
Notice to Proceed:	A written notice given by the City to the Contractor fixing the date on which the Contract Time will commence to run and on which the Contractor shall start to perform his obligation under the Contract Documents.
Shop Drawings:	All drawings, diagrams, illustrations, schedules, and other data which are specifically prepared by the Contractor, a subcontractor, manufacturer, fabricator, supplier, or distributor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other information prepared by a manufacturer, fabricator, supplier, or distributor and submitted by the Contractor to illustrate material or equipment for some portion of the Work.
Specifications:	Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.
Subcontractor:	An individual, firm, or corporation having a direct contract with the Contractor or with any other subcontractor for the performance of a part of the Work at the site.
Substantial Completion:	The work (or a specific part thereof) has progressed to the point where, in the opinion of the Engineer, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it was intended.
Work:	The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor, and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.



## **2. GENERAL MATTERS**

### **Delivery of Bonds:**

When the Contractor delivers the executed Agreements to the City, the Contractor shall also deliver to the City such Bonds as the Contractor may be required to furnish.

### **Copies of Documents:**

The City shall furnish the Contractor with sufficient copies of the Contract Documents as are reasonably necessary for the execution of the Work.

### **Preconstruction Conference:**

Before the Contractor starts the Work at the site, a conference may be required by the Engineer for review and acceptance of the schedules, to establish procedures for handling Shop Drawings and other submittals, for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

### **Commencement of Contract Time; Notice to Proceed:**

The Contract Time will commence to run on the effective date of the Agreement, or, if a Notice to Proceed is given on the day indicated in the Notice to Proceed.

### **Starting the Project:**

The Contractor shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

### **Before Starting Construction:**

Before undertaking each part of the Work, the Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. The Contractor shall promptly report in writing to the Engineer any conflict, error, or discrepancy, which the Contractor may discover.

Within ten days after the effective date of the Agreement, the Contractor shall submit to the Engineer for review and acceptance an estimated progress schedule indicating the starting and completion dates of the various stages of the Work, a preliminary schedule of Shop Drawing submissions, and a preliminary schedule of values of the Work.

Before any Work at the site is started, the Contractor shall deliver to the Engineer certificates of insurance, which the Contractor is required to purchase and maintain and the City shall deliver to the Contractor certificates of insurance requested by the Contractor, which the City is required to purchase and maintain.

### **3. CONTRACT DOCUMENTS; INTENT AND REUSE**

#### **Intent:**

The Contract Documents comprise the entire Agreement between the City and the Contractor concerning the Work.

The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If, during the performance of the Work, the Contractor finds a conflict, error, or discrepancy in the Contract Documents, he shall report it to the Engineer in writing at once and before proceeding with the Work affected thereby.

It is the intent of the Specifications and Drawings to describe a complete project to be constructed in accordance with the Contract Documents. Any Work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. When words, which have a well-known technical or trade meaning are used to describe Work, materials, or equipment, such words shall be interpreted in accordance with such meaning. Reference to standard specifications, manuals, or codes of any technical society, organization, or association, or to the code of any governmental authority, whether such reference be specified or by implication, shall mean the latest standard specification, manual, or code in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual, or code (whether or not specifically incorporated by reference in the Contract Documents) shall change the duties and responsibilities of the City, the Contractor, or the Engineer, or any of their agents or employees from those set forth in the Contract Documents. Clarifications and interpretations of the Contract Documents shall be issued by the Engineer.

The Agreement shall be governed by the laws of the State of Connecticut.

#### **Reuse of Documents:**

Neither the Contractor nor any subcontractor, manufacturer, fabricator, supplier, or distributor shall have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of the Engineer, and they shall not reuse any of them on any other project without written consent of the City and the Engineer and specific written verification by the Engineer.

### **4. AVAILABILITY OF LANDS, PHYSICAL CONDITIONS, REFERENCE POINTS**

#### **Availability of Lands:**

The City shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way for access thereto, and such other lands which are designated for the use of the Contractor. The Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

**Unforeseen Physical Conditions:**

The Contractor shall promptly notify the Engineer in writing of any subsurface or latent physical conditions at the site or in an existing structure differing materially from those indicated or referred to in the Contract Documents. The Engineer will promptly review those conditions and determine if further investigation or tests are necessary. If the Engineer finds that the results of such investigations or tests indicate that there are subsurface or latent physical conditions which differ materially from those intended in the Contract Documents, and which could not reasonably have been anticipated by the Contractor, a Change Order shall be issued incorporating the necessary revisions.

**Reference Points:**

The City shall provide engineering surveys for construction to establish reference points, which in its judgment are necessary to enable the Contractor to proceed with the Work. The Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points, and shall make no changes or relocations without the prior written approval of the City. The Contractor shall report to the Engineer whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations and shall be responsible for replacement or relocation of such reference points by professionally qualified personnel.

**5. BONDS AND INSURANCE****Performance and Other Bonds:**

The Contractor shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all the Contractor's obligations under the Contract Documents. All Bonds shall be in the forms prescribed by the bidding documents and be executed by such Sureties as are licensed to conduct business in the State of Connecticut and are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570, amended by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

If the Surety on any Bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in Connecticut or it ceases to meet the requirements of the above paragraph, the Contractor shall within five days thereafter substitute another Bond and Surety, both of which shall be acceptable to the City.

**Contractor's Liability Insurance:**

The Contractor shall purchase and maintain such commercial general liability and other insurance as will provide protection from claims set forth below which may arise out of or result from the Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether such performance is by the Contractor, by any subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

Claims under worker's or workmen's compensation, disability benefits, and other similar employee benefit acts;

Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

Claims for damages insured by personal injury liability coverage, which are sustained by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or by any other person for any other reason;

Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and

Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle.

Claims for property damages due to explosion, collapse or underground exposure.

The insurance required by this paragraph shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplemental Conditions, or required by law, whichever is greater. The commercial general liability insurance shall include completed operations insurance. All such insurance shall contain a provision that the coverage afforded will not be canceled, materially changed, or renewal refused until at least thirty days' prior written notice has been given to the City and the Engineer. All such insurance shall remain in effect until final payment and at all times thereafter when the Contractor may be correcting, removing, or replacing defective Work.

**Contractual Liability Insurance:**

The commercial general liability insurance required above will include contractual liability insurance applicable to Contractor's obligations.

**Umbrella (Excess) Liability Insurance:**

The Contractor shall purchase and maintain an Umbrella (Excess) Liability policy.

**City's Liability Insurance:**

The City shall be responsible for purchasing and maintaining its own liability insurance and, at its option, may purchase and maintain such insurance as will protect the City against claims which may arise from operations under the Contract Documents.

**Property Insurance:**

Unless otherwise provided in the Supplemental Conditions, the City shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplemental Conditions or required by law). This insurance shall include the interests of the City, the Contractor, and

subcontractors in the Work, shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism, and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplemental Conditions, and shall include damages, losses, and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including fees and charges of engineers, architects, attorneys, and other professionals.

The City shall not be responsible for purchasing and maintaining any property insurance to protect the interests of the Contractor or subcontractors in the Work to the extent of any deductible amounts. If the Contractor wishes property insurance coverage within the limits of such amounts, the Contractor may purchase and maintain it at his own expense.

**Waiver of Rights:**

The City and the Contractor waive all rights against each other and the subcontractors and their agents and employees and separate contractors (if any) and their subcontractors' agents and employees, for damages caused by fire or other perils to the extent covered by insurance provided or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by the City as trustee. The Contractor shall require written waivers from each subcontractor; each such waiver will be in favor of all other parties enumerated in this paragraph.

**Receipt and Application of Proceeds:**

Any insured loss under the policies of insurance required shall be adjusted with the City and made payable to the City as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause. The City shall deposit in a separate account any money so received, and he shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order.

The City as trustee shall have power to adjust and settle any loss with the insurers, unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to the City's exercise of this power. If such objection be made, the City as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach.

**Acceptance of Insurance:**

If the City has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by the Contractor on the basis of its not complying with the Contract Documents, the City will notify the Contractor in writing thereof within ten days of the date of delivery of such certificates to the City. If the Contractor has any objection to the coverage afforded by or other provisions of the policies of insurance required to be purchased and maintained by the City on the basis of their not complying with the Contract Documents, the Contractor will notify the City in writing thereof within ten days of the date of delivery of such certificates to the Contractor. The City and the Contractor will each provide to the other such additional information in respect to insurance provided by him as the other may

reasonably request. Failure by the City or the Contractor to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by the other as complying with the Contract Documents.

**Partial Utilization - Property Insurance:**

If the City finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the work, such use or occupancy may be accomplished; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or lapse on account of any such partial use or occupancy.

**6. CONTRACTOR'S RESPONSIBILITIES**

**Supervision and Superintendence:**

The Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.

The Contractor shall assign to the project a competent field superintendent. The superintendent shall spend sufficient time at the site as necessary to ensure that work is proceeding efficiently and in accordance with the Contract Documents.

The superintendent shall not be replaced, except on a temporary basis because of sickness, vacations, etc. without written notice to the Engineer.

The superintendent shall be the Contractor's representative at the site and shall have authority to act on behalf of the Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor.

**Labor, Materials, and Equipment:**

The Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. The contractor shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Supplemental Conditions, all Work at the site shall be performed during regular working hours, and the Contractor will not permit overtime work or the performance of work on Saturday, Sunday, or any legal holiday without the Engineer's written consent.

The Contractor shall furnish all materials, equipment, labor, transportation, construction, equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and

sanitary facilities, and all other facilities and incidentals necessary for the execution, testing, initial operation, and completion of the Work.

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by the Engineer, the Contractor shall furnish satisfactory evidence (including reports or required tests) as to the kind and quality of materials and equipment.

All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier, or distributor, except as otherwise provided in the Contract Documents.

**Equivalent Materials and Equipment:**

Whenever materials or equipment are specified or described in the Drawings or Specifications by using the name of a proprietary item or the name of a particular manufacturer, fabricator, supplier, or distributor, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other manufacturers, fabricators, suppliers, or distributors may be accepted by the Engineer if sufficient information is submitted by the Contractor to allow the Engineer to determine that the material or equipment proposed is equivalent to that named. The procedure for review by Engineer will be as follows:

Requests for review of substitute items of material and equipment will not be accepted by the Engineer from anyone other than the Contractor. If the Contractor wishes to furnish or use a substitute item of material or equipment the Contractor shall make written application to the Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified, and be suited to the same use and capable of performing the same function as that specified. The application will state whether or not acceptance of the substitute for use in the Work will require a change in the Drawings or Specifications to adapt the design to the substitute. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair, and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the Engineer in evaluating the proposed substitute. The Engineer may require the Contractor to furnish at the Contractor's expense additional data about the proposed substitute. All materials incorporated into the project shall be approved by the Connecticut Department of Transportation Division of Research and Materials. The Engineer will judge of acceptability, and no substitute will be ordered or installed without the Engineer's and Connecticut Department of Transportation's prior written acceptance.

The Engineer will record time required by the Engineer and the Engineer's consultants in evaluating substitutions proposed by the Contractor and in making changes in the Drawings or Specifications occasioned thereby. Whether or not the Engineer accepts a proposed substitute, the Contractor shall reimburse the City for the charges of the Engineer and Engineer's consultants for evaluating any proposed substitute.

**Concerning Subcontractors:**

The Contractor shall not employ any subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom the City may have reasonable objection. A subcontractor or other person or organization identified in writing to the City by the Contractor prior to the Notice of Award will be deemed acceptable to the City. Acceptance of any subcontractor, other person, or organization by the City shall not constitute a waiver of any right of the City to reject defective Work. If the City or Engineer after due investigation has reasonable objection to any subcontractor, other person, or organization proposed by the Contractor after the Notice of Award, the Contractor shall submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued. The Contractor shall not be required to employ any subcontractor, other person, or organization against whom the Contractor has reasonable objection.

The Contractor shall be fully responsible for all acts and omissions of his subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that the Contractor is responsible for the acts and omissions of persons directly employed by the Contractor. Nothing in the Contract Documents shall create any obligation on the part of the City to pay or to see to the payment of any moneys due any subcontractor or other person or organization, except as may otherwise be required by law. The City or the Engineer may furnish to any subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to the Contractor on account of specific Work done.

**Patent Fees and Royalties:**

The Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. The Contractor shall indemnify and hold harmless the City and the Engineer and anyone directly or indirectly employed by either of them from and against all claims, damages, losses, and expenses (including attorneys' fees) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work, and shall defend all such claims in connection with any alleged infringement of such rights.

**Permits:**

Unless otherwise provided in the Supplemental Conditions, the Contractor shall obtain and pay for all construction permits and licenses. The Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work. The Contractor shall pay all charges of utility service companies for connections to the Work.

**Laws and Regulations:**

The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations, applicable to the Work. If the Contractor observes that the Specifications or Drawings are at variance therewith, the Contractor shall give the Engineer prompt written



notice thereof, and any necessary changes shall be adjusted by an appropriate Change Order. If the Contractor performs any Work knowing or having reason to know that it is contrary to such laws, ordinances, rules, and regulations, and without such notice to the Engineer, the Contractor shall bear all costs arising therefrom.

**Use of Premises:**

The Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment.

During the progress of the Work, the Contractor shall keep the premises free from accumulation of waste materials, rubbish, and other debris resulting from the Work. At the completion of the Work, the Contractor shall remove all waste materials, rubbish, and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by the City. The Contractor shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

The Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

**Taxes:**

No amount shall be included in the bid price for Connecticut State Sales Tax or for Federal Excise and Transportation Taxes.

**Record Documents:**

The Contractor shall keep one record copy of all Specifications, Drawings, Addenda, Modifications, Shop Drawings, and samples at the site in good order and annotated to show all changes made during the construction process. These shall be available to the Engineer for examination and shall be delivered to the Engineer upon completion of the Work.

**Safety Protection:**

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. The Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

all employees on the Work and other persons who may be affected thereby,

all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and

other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The Contractor shall notify the City of adjacent property and utilities when prosecution of the Work may affect them. All damage, injury, or loss to any property caused directly or indirectly, in whole or in part, by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by the Contractor. The Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed.

The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Engineer.

**Emergencies:**

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or the City, is obligated to act to prevent threatened damage, injury, or loss. The Contractor shall give the Engineer prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby.

**Shop Drawings and Samples:**

After checking and verifying all field measurements, the Contractor shall submit to the Engineer for review and approval, in accordance with the accepted schedule of Shop Drawing submissions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which shall have been checked by and stamped with the approval of the Contractor and identified as the Engineer may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and like information to enable the Engineer to review the information as required.

The Contractor shall also submit to the Engineer for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of the Contractor and identified as the Engineer may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction, and like information to enable the Engineer to review the information as required.

The Contractor shall also submit to the Engineer for review an approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of the Contractor, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended.

At the time of each submission, the Contractor shall in writing call the Engineer's attention to any deviations that the Shop Drawings or samples may have from the requirements of the Contract Documents.

The Engineer will review and approve with reasonable promptness Shop Drawings and samples, but the Engineer's review and approval shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to measurements, dimensions, means, methods, sequences, techniques, or procedures of construction or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. The Contractor shall make any corrections required by the Engineer and shall return the required number of corrected copies of Shop Drawings and resubmit new samples for review and approval. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Engineer on previous submittals. The Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to the Engineer that the Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog number, and similar data or assumes full responsibility for doing so, and that the Contractor has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents.

Where a Shop Drawing or sample is required by the Specifications, no related Work shall be commenced until the submittal has been reviewed and approved by the Engineer.

The Engineer's review and approval of Shop Drawings or samples shall not relieve the Contractor from responsibility for any deviations from the Contract Documents, unless the Contractor has in writing called the Engineer's attention to such deviation at the time of submission and the Engineer has given written concurrence and approval to the specific deviation, nor shall any concurrence or approval by the Engineer relieve the Contractor from responsibility for errors or omissions in the Shop Drawings.

**Continuing the Work:**

The Contractor shall carry on the Work and maintain the progress schedule during all disputes or disagreements with the City. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the Contractor and the City may otherwise agree in writing.

**Indemnification:**

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the City and the Engineer and their agents and employees from and against all claims, damages, losses, and expenses including but not limited to attorney's fees arising out of the performance of the Work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

In any and all claims against the City or the Engineer or any of their agents or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation of the amount of type of damages, compensation, or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts.

**7. WORK BY OTHERS**

The City may perform additional work related to the Project by itself, or have additional work performed by utility service companies, or let other direct contracts therefor which shall contain General Conditions similar to these. The Contractor shall afford the City, utility service companies, and the other contractors who are parties to such direct contract reasonable opportunity for the introduction and storage of materials and equipment and the execution of work and shall properly connect and coordinate his Work with theirs.

If any part of the Contractor's Work depends, for proper execution or results, upon the work of any such other Contractor or utility service company, the Contractor shall inspect and promptly report to the Engineer in writing any patent or apparent defects or deficiencies in such work that render it unsuitable for such proper execution and results. The Contractor's failure to so report shall constitute an acceptance of the other work as fit and proper for integration with the Contractor's Work except for latent or non-apparent defects and deficiencies in the other work.

The Contractor shall do all cutting, fitting, and patching of his Work that may be required to make its several parts come together properly and integrate with such other work. The Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of the Engineer and the others whose work will be affected.

If the performance of additional work by other contractors or utility service companies or the City was not noted in the Contract Documents, written notice thereof shall be given the Contractor prior to starting any such additional work.

**8. CITY'S RESPONSIBILITIES**

The City shall issue all communications to the Contractor through the Engineer.

The City shall furnish the data required of the City under the Contract Documents promptly and shall make payments to the Contractor promptly after they are approved in accordance with the provisions of the Supplemental Conditions.

**9. ENGINEER'S STATUS DURING CONSTRUCTION**

**City Representative:**

The Engineer shall be the City's representative during the construction period. The duties and responsibilities and the limitations of authority of the Engineer as the City's representative

during construction are set forth in the Contract Documents and shall not be extended without written consent of the City and the Engineer.

**Visits to Site:**

The Engineer shall be on site of the project full time when the contractor is performing work. In addition, the Engineer shall examine the sediment and erosion controls measures at a minimum of weekly intervals.

**Clarifications and Interpretations:**

The Engineer shall issue with reasonable promptness such written clarifications or interpretations of the Contract Documents (in the form of Drawings or otherwise) as the Engineer may determine necessary.

**Rejecting Defective Work:**

The Engineer shall have authority to disapprove or reject Work which is defective and shall also have authority to require special inspection or testing of the Work whether or not the Work is fabricated, installed, or completed.

**Decisions on Disagreements:**

The Engineer shall be the interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes, and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the Work shall be referred to the Engineer in writing with a request for a formal decision in accordance with this paragraph, which the Engineer shall render in writing within a reasonable time.

**Limitations on the Engineer's Responsibilities:**

Neither the Engineer's authority to act under the Contract Documents nor any decision made by the Engineer in good faith either to exercise or not exercise such authority shall give rise to any duty of responsibility of the Engineer to the Contractor, any subcontractor, any manufacturer, fabricator, supplier, or distributor, or any of their agents or employees, or any other person performing any of the Work.

Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," or "reasonable," "suitable," "acceptable," "proper," or "satisfactory" or adjectives of like effect or import are used, to describe requirement, direction, review, or judgment will be solely to evaluate the Work for compliance with the Contract Documents. The use of any such term or adjective never indicates that the Engineer shall have authority to supervise or direct performance of the Work or authority to undertake responsibility contrary to the provisions of the following:

The Engineer will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto.

The Engineer will not be responsible for the acts or omissions of the Contractor or of any subcontractors, or of the agents or employees of any Contractor or subcontractor, or of any other persons at the site or otherwise performing any of the Work.

## **10. CHANGES IN THE WORK**

Without invalidating the Agreement, the City may at any time or from time to time, order additions, deletions, or revisions in the Work; these will be authorized by Change Orders. Upon receipt of a Change Order, the Contractor shall proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made.

The Engineer may authorize minor changes in the Work not involving an adjustment in the Contract Price or the Contract Time, which are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and shall be binding on the City and also on the Contractor who shall perform the change promptly. If the Contractor believes that a Field Order justifies an increase in the Contract Price or Contract Time, he shall notify the Engineer promptly in writing.

Additional Work performed without authorization of a Change Order will not entitle the Contractor to an increase in the Contract Price or an extension of the Contract Time, except in the case of an emergency.

If notice of any change affecting the general scope of the Work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it will be the Contractor's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. The Contractor shall furnish proof of such adjustment to the City.

## **11. CHANGE OF CONTRACT PRICE**

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to the Contractor for performing the Work. All duties, responsibilities, and obligations assigned to or undertaken by the Contractor shall be at his expense without change in the Contract Price.

The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered to the City and the Engineer within fifteen days of the occurrence of the event-giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within forty-five days of such occurrence unless the Engineer allows an additional period of time to ascertain accurate cost data. All claims for adjustment in the Contract Price shall be reviewed by the Engineer and after reviewing the Engineer's recommendation and any other related information, the City shall determine and approve any appropriate change in the Contract Price. Any change in the Contract Price resulting from any such claim shall be incorporated in a Change Order.

The value of any work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.

By mutual acceptance of a lump sum.

On the basis of the Cost of the Work plus a Contractor's Fee for overhead and profit (determined as follows):

**Cost of the Work:**

The term Cost of the Work means the sum of all costs necessarily incurred and paid by the Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by the City such costs shall be in amounts no higher than those prevailing in the locality of the Project and shall include only the following items:

Payroll costs for employees in the direct employ of the Contractor in the performance of the Work under schedules of job classifications agreed upon by the City and the Contractor. Payroll costs for employees not employed full-time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Sunday or legal holidays, shall be included in the above to the extent authorized by the City. When in the opinion of the Engineer it becomes necessary to perform work outside regular working hours or to employ additional labor in order to maintain the Contractor's progress schedule, the Contractor shall do so without extra compensation.

Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturers' field services required in connection therewith. All discounts, rebates and refunds, and all returns from sale of surplus materials and equipment shall accrue to the City, and the Contractor shall make provisions so that they may be obtained.

Payments made by the Contractor to the subcontractors for Work performed by subcontractors. If required by the City, the Contractor shall obtain competitive bids from subcontractors acceptable to the Contractor and shall deliver such bids to the City who will then determine, with the advice of the Engineer, which bids will be accepted. If a subcontract provides that the subcontractor is to be paid on the basis of Cost of the Work plus a fee, the subcontractor's Cost of the Work shall be determined in the same manner as the Contractor's Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents in so far as applicable.

Costs of special consultants (including, but not limited to engineers, architects, testing laboratories, and surveyors) employed for services specifically related to the Work.

Supplemental costs including the following:

The proportion of necessary transportation, travel, and subsistence expenses of the Contractor's employees incurred in discharge of duties connected with the Work.

Cost, including transportation and maintenance of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the site and hand tools not owned by the workmen, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of the Contractor.

Rentals of all construction equipment and machinery and the parts thereof whether rented from the Contractor or others in accordance with rental agreements approved by the Engineer, and the costs of transportation, loading, unloading, installation, dismantling, and removal thereof - all in accordance with terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

The cost of utilities, fuel, and sanitary facilities at the site.

Cost of premiums for additional Bonds and insurance required because of changes in the Work.

The term Cost of the Work shall not include any of the following:

Payroll costs and other compensation of the Contractor's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing, and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by the Contractor whether at the site or in his principal or a branch office for general administration of the Work - all of which are to be considered administrative costs covered by the Contractor's Fee.

Expenses of the Contractor's principal and branch offices other than the Contractor's office at the site.

Any part of the Contractor's capital expenses, including interest on the Contractor's capital employed for the Work and charges against the Contractor for delinquent payments.

Cost of premiums for all Bonds and for all insurance whether or not the Contractor is required by the Contract Documents to purchase and maintain the same (except for additional Bonds and insurance required because of changes in the Work).

Costs due to the negligence of the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials, or equipment wrongly supplied and making good any damage to property.



Other overhead or general expense costs of any kind and the costs of any item not specifically included.

**Contractor's Fee:**

The Contractor's Fee allowed to the Contractor for overhead and profit shall be determined as follows:

A mutually acceptable fixed fee; or if none can be agreed upon, a fee based on the following percentages of the various portion of the Cost of the Work:

for Payroll and material costs, the Contractor's Fee shall be ten percent (10%),

for subcontractor costs, the Contractor's Fee shall be five percent (5%); and if a subcontract is on the basis of Cost of the Work plus a Fee, the maximum allowable to the subcontractor as a fee for overhead and profit shall be ten percent (10%), and no fee shall be payable on the basis of any other costs.

The amount of credit to be allowed by the Contractor to the City for any such change which results in a net decrease. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

**Adjustment of Prices:**

Whenever the cost of any Work is to be determined pursuant to the above paragraphs, the Contractor will submit in for acceptable to the Engineer an itemized cost breakdown together with supporting data.

**Cash Allowances:**

It is understood that the Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such subcontractors, manufacturers, fabricators, suppliers, or distributors and for such sums within the limit of the allowances as may be acceptable to the Engineer. Upon final payment, the Contract Price shall be adjusted as required and an appropriate Change Order issued. The Contractor agrees that the original Contract price includes such sums as the Contractor deems proper for costs and profit on account of cash allowances. No demand for additional cost or profit in connection therewith will be valid.

**12. CHANGE OF THE CONTRACT TIME**

The Contract Time may only be changed by a Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to the Engineer within fifteen days of the occurrence of the event-giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within forty-five days of such occurrence, unless the Engineer allows an additional period of time to ascertain more accurate data. All claims for adjustment in the Contract Time shall be reviewed by the Engineer and after reviewing the Engineer's recommendation and any other related information, the City shall determine and

approve any appropriate change in the Contract Time. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.

The Contract Time may be extended in an amount equal to time lost due to delays beyond the control of the Contractor if a claim is made therefor. Such delays may include, but not be limited to, acts or neglect by the City or to fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God.

All time limits stated in the Contract Documents are of the essence of the Agreement.

**13. WARRANTY AND GUARANTEE; TESTS AND INSPECTION; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK**

**Warranty and Guarantee:**

The Contractor warrants and guarantees to the City and the Engineer that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to the Contractor. All defective Work, whether or not in place, may be rejected, corrected, or accepted.

**Access to Work:**

The Engineer and the Engineer's representatives, other representatives of the City, testing agencies, and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspection, and testing. The Contractor shall provide proper and safe conditions for such access.

**Test and Inspections:**

The Contractor shall give the Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals.

If any law, ordinance, rule, regulation, code, or order of any public body having jurisdiction requires any Work (or part thereof) to specifically be inspected, tested, or approved, the Contractor shall assume full responsibility therefore, pay all costs in connection therewith and furnish the Engineer the required certificates of inspection, testing, or approval. The Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with the City's or the Engineer's acceptance of a manufacturer, fabricator, supplier, or distributor of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to the Contractor's purchase thereof for incorporation in the Work.

All inspections, tests, or approvals other than those required by law, ordinance, rule, regulation, code or order of any public body having jurisdiction shall be performed by organizations acceptable to the Engineer and the Contractor.

If any Work that is to be inspected, tested, or approved is covered without written concurrence of the Engineer, it must, if requested by the Engineer, be uncovered for observation. Such uncovering shall be at the Contractor's expense unless the Contractor has given the Engineer

timely notice of the Contractor's intention to cover such Work and the Engineer has not acted with reasonable promptness in response to such notice.

Neither observations by the Engineer nor inspections, tests, or approvals by others shall relieve the Contractor from his obligations to perform the Work in accordance with the Contract Documents.

**Uncovering Work:**

If any Work is covered contrary to the request of the Engineer, it must, if requested by the Engineer, be uncovered for the Engineer's observation and replaced at the Contractor's expense.

If the Engineer considers it necessary or advisable that covered Work be observed by the Engineer or inspected or tested by others, the Contractor, at the Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as the Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, the Contractor shall bear all the expenses of such uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction, including compensation for additional professional services.

**City May Stop the Work:**

If the Work is defective, or the Contractor fails to supply sufficient skilled workmen or suitable materials or equipment, the Engineer may order the Contractor to Stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the City to Stop the Work shall not give rise to any duty on the part of the City to exercise this right for the benefit of the Contractor or any other party.

**Correction or Removal of Defective Work:**

If required by the Engineer, the Contractor shall promptly, without cost to the City and as specified by the Engineer, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by the Engineer, remove it from the site and replace it with nondefective Work.

**One-Year Correction Period:**

If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, the Contractor shall promptly, without cost to the City and in accordance with the City's written instructions, either correct such defective Work, or if it has been rejected by the City, remove it from the site and replace it with non-defective Work. Where it is required for the Contractor to repair, replace, resurface, reseed, replant or to modify, alter, add, or remove hardware, parts, components, or related accessories for the purpose of ensuring proper appearance, performance, or operation, such operations shall be done as required by the Contractor until such time as acceptable performance has been established. Problems which occur shall be corrected in an appropriate fashion under guarantee. The Contractor shall be responsible to attend to and remedy such items within a reasonable amount of time.

Appropriate logs, schedules, and reports shall be maintained to reflect these items and their redress. If the Contractor does not promptly comply with the terms of such instruction, or in an emergency where delay would cause serious risk of loss or damage, the City may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by the Contractor.

**Acceptance of Defective Work:**

If, instead of requiring correction or removal and replacement of defective Work, the City prefers to accept it, the City may do so. In such case, if acceptance occurs prior to final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; if the acceptance occurs after such final payment, an appropriate amount shall be paid by the Contractor to the City.

**City May Correct Defective Work:**

If the Contractor fails within a reasonable time after written notice of the Engineer to proceed to correct defective Work or to remove and replace rejected Work as required by the Engineer, or if the Contractor fails to perform the Work in accordance with the Contract Documents (including any requirements of the progress schedule), the City may, after seven days' written notice to the Contractor, correct and remedy any such deficiency. In exercising its rights under this paragraph the City shall proceed expeditiously to the extent necessary to complete corrective and remedial action, the City may exclude the Contractor from all or part of the site, take possession of all or part of the Work, and suspend the Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the site or for which the City has paid the Contractor but which are stored elsewhere. The Contractor shall allow the City, the City's representatives, agents and employees such access to the site as may be necessary to enable the City to exercise its rights under this paragraph. All direct and indirect costs of the City in exercising such rights shall be charged against the Contractor in an amount verified by the Engineer, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Contract Price. Such direct and indirect costs shall include, in particular but without limitation, compensation for additional professional services required and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of the Contractor's defective Work. The Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the work attributable to the exercise by the City of the City rights hereunder.

**14. PAYMENTS TO CONTRACTOR AND COMPLETION**

**Schedules:**

At least ten days prior to submitting the first Application for a progress payment, the Contractor shall submit to the Engineer a progress schedule, a final schedule of Shop Drawing submission, and where applicable, a schedule of values of the Work. These schedules shall be satisfactorily in form and substance to the Engineer. The schedule of values shall include quantities and unit prices aggregating the Contract Price and shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payment during

construction. Upon acceptance of the schedule of values by the Engineer, it shall be incorporated into a form of Application for Payment acceptable to the Engineer.

**Application for Progress Payment:**

At least ten days before each progress payment falls due (but not more often than once a month), the Contractor shall submit to the Engineer for review an Application for Payment filled out and signed by the Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents and also as the Engineer may reasonably require. Each subsequent Application for Payment shall include an affidavit of the Contractor stating that all previous progress payment received on account of the Work have been applied to discharge in full all of the Contractor's obligations reflected in prior Applications for Payment. The amount of retainage with respect to progress payments will be as stipulated in the Contract Documents.

**Contractor's Warranty of Title:**

The Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for payment, whether incorporated in the project or not, will pass to the City at the time of payment free and clear of all liens, claims, security interests, and encumbrances.

**Review of Applications for Progress Payment:**

The Engineer will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to the City or return the Application to the Contractor indicating in writing the Engineer's reasons for refusing the recommend payment. In the latter case, the Contractor may make the necessary corrections and resubmit the Application.

The Engineer may refuse to recommend the whole or any part of any payment if, in his opinion, it would be incorrect to make such representations. He may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended to such extent as may be necessary in the Engineer's opinion to protect the City from loss because:

the Work is defective, or completed Work has been damaged requiring correction or replacement,

written claims have been made against the City in connection with the Work,

the Contract Price has been reduced,

the City has been required to correct defective Work or complete the Work,

of the Contractor's unsatisfactory prosecution of the Work in accordance with the Contract Documents, and/or

the Contractor's failure to make payment to subcontractors, or to make payment for labor, materials, or equipment.

**Substantial Completion:**

When the Contractor considers the entire Work ready for its intended use the Contractor shall, in writing to the Engineer, certify that the entire Work is substantially complete and request that the Engineer issue a certificate of Substantial Completion. Within a reasonable time thereafter, the Contractor and Engineer shall make an inspection of the Work to determine the status of completion. If the Engineer does not consider the Work substantially complete, the Engineer will notify the Contractor in writing giving his reasons therefor. If the Engineer considers the Work substantially complete, the Engineer will prepare certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a list of items to be completed or corrected before final payment.

The City shall have the right to exclude the Contractor from the Work after the date of Substantial Completion, but the City shall allow the Contractor reasonable access to complete or correct items on the list.

**Partial Utilization:**

Use by the City of completed portions of the Work may be accomplished prior to Substantial Completion of all the Work subject to the following:

The City at any time may request the Contractor in writing to permit the City to use any part of the Work which the City believes to be substantially complete and which may be so used without significant interference with construction of the other parts of the Work. If the Contractor agrees, the Contractor will certify to the City and the Engineer that said part of the Work is substantially complete and request the Engineer to issue a certificate of Substantial Completion for that part for the Work. Within a reasonable time thereafter, the Contractor and Engineer shall make an inspection of that part of the Work to determine its status of completion. If the Engineer does not consider that part of the Work to be substantially complete, the Engineer will notify the Contractor in writing giving his reasons therefor. If the Engineer considers that part of the Work to be substantially complete, the Engineer will execute and deliver to the Contractor a certificate to that effect, fixing the date of Substantial Completion as to that part of the Work, attaching thereto a list of items to be completed or corrected before final payment.

In lieu of the issuance of a certificate of Substantial Completion as to part of the Work, the City may take over operation of a facility constituting part of the Work whether or not it is substantially complete if such facility is functionally and separately useable; provided that prior to any such takeover, the City and Contractor have agreed as to the division of responsibilities between the City and Contractor for security, operation, safety, maintenance, correction period, heat, utilities, and insurance with respect to such facility.

**Final Inspection:**

Upon written notice from the Contractor that the Work is complete, the Engineer will make a final inspection with the Contractor and will notify the Contractor in writing of all particulars

in which this inspection reveals that the Work is incomplete or defective. The Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

**Final Application for Payment:**

After the Contractor has completed all such corrections to the satisfaction of the Engineer and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents, and other documents - all as required by the Contract Documents, and after the Engineer has indicated that the work is acceptable, the Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents and such other data and schedules as the Engineer may reasonably require, together with complete and legally effective releases or waivers (satisfactory to the City) of all claims arising out of or filed in connection with the Work. In lieu thereof and as approved by the City, the Contractor may furnish receipts or releases in full; an affidavit of the Contractor that the releases and receipts include all labor, services, material, and equipment for which a claim could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which the City or its property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment.

**Final Payment and Acceptance:**

If, on the basis of the Engineer's observation of the Work during construction and final inspection, and the Engineer's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, the Engineer is satisfied that the Work has been completed and the Contractor has fulfilled all of his obligations under the Contract Documents, the Engineer will, within ten days after receipt of the final Application for Payment, process the Application for payment. Otherwise, the Engineer will return the Application to the Contractor, indicating in writing the reasons for refusing to process final payment, in which case the Contractor shall make the necessary corrections and resubmit the Application.

**Contractor's Continuing Obligation:**

The Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the Engineer, nor the issuance of a certificate of Substantial Completion, nor any payment by the City to the Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by the City, nor any act of acceptance by the City nor any failure to do so, nor the issuance of a notice of acceptability by the Engineer, nor any correction of defective Work by the City shall constitute an acceptance of Work not in accordance with the Contract Documents or a release of the Contractor's obligation to perform the Work in accordance with the Contract Documents.

**Waiver of Claims:**

The making and acceptance of final payment shall constitute:

A waiver of claims by the City against the Contractor except for claims arising from unsettled debts, from defective Work appearing after final inspection or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; and it shall not constitute a waiver by the City of any rights in respect of the Contractor's continuing obligations under the Contract Documents, and a waiver of all claims by the Contractor against the City other than those previously made in writing and still unsettled.

**15. SUSPENSION OF WORK AND TERMINATION**

**The City May Terminate the Agreement:**

Upon the occurrence of any one or more of the following events:

- if the Contractor is adjudged a bankrupt or insolvent,
- if the Contractor makes a general assignment of the benefit of creditors,
- if a trustee or receiver is appointed for the Contractor or for any of the Contractor's property,
- if the Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws,
- if the Contractor repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment,
- if the Contractor repeatedly fails to make prompt payments to the subcontractors or for labor, materials, or equipment,
- if the Contractor disregards laws, ordinances, rules, regulations, or orders of any public body having jurisdiction,
- if the Contractor disregards the authority of the Engineer, or
- if the Contractor otherwise violates in any substantial way any provisions of the Contract Documents.

The City may after giving the Contractor and his Surety five days' written notice, terminate the services of the Contractor, exclude the Contractor from the site and take possession of the Work, incorporate in the Work all materials and equipment stored at the site or for which the City has paid the Contractor but which are stored elsewhere, and finish the Work as the City may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to the Contractor. If such costs exceed such unpaid balance, the Contractor shall pay the difference to the City. Such costs incurred by the City shall be incorporated in a Change Order, but in finishing the Work the City shall not be required to obtain the lowest figure for the Work performed.



Where the Contractor's services have been so terminated by the City, the termination shall not affect any rights of the City against the Contractor then existing or which may thereafter accrue. Any retention or payment of monies due the Contractor by the City will not release the Contractor from liability.

Upon five days' written notice to the Contractor, the City may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, the Contractor shall be paid for all Work executed and any expense sustained plus reasonable expenses.

**Contractor May Stop Work or Terminate:**

If, through no act or fault of the Contractor, the Work is suspended for a period of more than ninety days by the City or under an order of court or other public authority, or the Engineer fails to act on an Application for Payment within thirty days after it is submitted, or the City fails for sixty days to pay the Contractor any sum finally determined to be due, then the Contractor may, upon fourteen days' written notice to the City and the Engineer, terminate the Agreement and recover from the City payment for all Work executed and any expense sustained. In addition and in lieu of terminating the Agreement, if the Engineer has failed to act on an Application for Payment or the City has failed to make any payment as aforesaid, the Contractor may upon seven days' notice to the City and the Engineer Stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve the Contractor of his obligations to carry on the Work in accordance with progress schedule and without delay during disputes and disagreements with the City.

**16. MISCELLANEOUS**

**Giving Notice:**

Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice. Notice shall be deemed to have been given on the date the notice is sent.

**Computation of Time:**

When any period of time is referred to in the Contract Documents by days, it shall be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation.

**General:**

Should the City or the Contractor suffer injury or damage to his person or property because of any error, omission, or act of the other part or of any of the other party's employees or agents or others for whose acts the other part is legally liable, claim shall be made in writing to the other part within a reasonable time of the first observance of such injury or damage.

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees, and obligations imposed upon the Contractor and all of the rights and remedies available to the City and the Engineer thereunder, shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by law or contract, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph shall be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties, and guarantees made in the Contract Documents shall survive final payment and termination or completion of this Agreement.

**Non-Discrimination:**

The Contractor shall agree and warrant that in the performance of the contract, he will not discriminate or permit discrimination against any person or group of persons on the ground of race, color, religious creed, age, marital status, national origin, sex, 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 in any manner prohibited by the laws of the United States or of the State of Connecticut. The Contractor shall further agree to provide the Commission on Human Rights and Opportunities with such information requested by the Commission concerning the employment practices and procedures of the Contractor as they relate to the provisions of Section 4-11a of the Connecticut General Status as amended.

**Affirmative Action:**

If requested by the City, the Contractor shall submit details of this Affirmative Action Program. Such program shall be modified as and where necessary to meet the requirements of the City and shall remain in force throughout the contract period.

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**SUPPLEMENTAL CONDITIONS**

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## SUPPLEMENTAL CONDITIONS

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

### **1. DEFINITIONS**

- A. The Terms used in these Supplemental Conditions which are defined in the General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions.
- B. Wherever used in the Contract Documents, the following words have the meanings indicated, which are applied to both the singular and the plural thereof:

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

- Invitation to Bid
- Instruction to Bidders
- Bid Proposal Forms
- Contract Forms
- General Conditions
- Supplemental Conditions
- Special Provisions
- General Contract Provisions
- CT State Wage Rates
- Addenda

"Contract Plans" shall mean construction drawings entitled "**Reconstruction of Thames Street Wall at Electric Boat**" dated November 22, 2019.

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

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

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

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

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

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

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

## **2. THE CONTRACTOR'S INSURANCE**

The Contractor shall maintain insurance of the kinds and in at least the amounts specified hereunder in a form satisfactory to the City; such certificates shall contain a provision that the City shall be given thirty days advance written notice by registered mail of change in, or cancellation of, coverage:

- A. Workers Compensation - limits as required per State of Connecticut statute, with employer liability limits of \$500,000/500,000/500,000.
- B. Commercial General Liability
  - \$1,000,000 per occurrence
  - \$2,000,000 general aggregate
  - \$1,000,000 personal/advertising injury
  - \$2,000,000 products/completed operations aggregate
- C. Commercial Automobile
  - \$1,000,000 combined single accident for owned, non-owned, and hired autos
- D. Excess/Umbrella Liability (over commercial general liability and automobile liability coverage)
  - \$1,000,000 per occurrence
  - \$2,000,000 general aggregate
- E. Professional Liability - \$10,000,000 per claim/annual aggregate. Coverage shall be maintained for the duration of the contract and for two (2) years following completion.

All risks associated with construction equipment, machinery, and tools belonging to or used by the insured shall be assumed by the insured.

No insurance required or furnished hereunder shall in any way relieve the Contractor of or diminish any of his responsibilities, obligations, and liabilities under the Contract.

## **3. CONTRACTUAL LIABILITY INSURANCE**

The Contractual Liability required by the General Conditions shall provide coverage for not less than the following amounts:

Bodily Injury - each occurrence:	\$1,000,000
Bodily Injury – annual aggregate:	\$2,000,000
Property Damage - each occurrence:	\$1,000,000
Property Damage - annual aggregate:	\$2,000,000

**4. SCOPE OF WORK**

The work to be completed under this Contract is the construction of a cast in place concrete retaining wall and roadway reconstruction and restoration. The Contract plans and special provisions identify all work required under the contract.

**5. TIME FOR COMPLETION**

The Contractor shall commence work upon a written "Notice to Proceed" from the Owner and the Contractor shall complete, including fully opening the roadway, this Contract for Bid No. 19-11-01 within ninety (90) calendar days from the date of the written "Notice to Proceed."

**6. LIQUIDATED DAMAGES**

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

If the Contractor shall fail to complete the work within the Contract times, or extension of time granted by the City, then the Contractor and his sureties shall be liable for and shall pay to the City for each and every calendar day that he shall be in default in completing any given assignment in the time stipulated above, the sum of one thousand dollars (\$1,000.00). This sum is hereby agreed upon, not as a penalty, but as fixed liquidated damages which the Owner will suffer by reason of such default, time being of the essence of the Contract and a material consideration thereof. The Owner shall have the right to deduct the amount of any such damages from any monies due the Contractor under this Contract.

**7. PAYMENTS AND RETAINAGE**

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

An amount of 95 percent (95%) of the estimated amount due, less any payments previously made and/or any moneys to be held will be paid to the Contractor monthly. The balance will be retained by the City until final completion of the work. Final payment will not be made until final completion and acceptance by the City of all work covered by the Contract. The

Contractor agrees that he will indemnify and save the City harmless for all claims growing out of the lawful demands of subcontractors, laborers, suppliers, and assignees.

**8. PAYMENT OF WAGES**

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

The Contractor is cautioned that wage rates are continually changing, and he shall ensure himself that the enclosed schedule is the latest issue, this being his responsibility.

**9. FAIR EMPLOYMENT PRACTICES**

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

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

**10. CONTRACT PLANS**

The Contract Plans, dated November 22, 2019, for this project are as follows:

<u>Sheet No.</u>	<u>Title</u>
01	Title Sheet
02	General Notes, Boring Logs & Typical Roadway Section
03	Detour Plan
04	Sediment & Erosion Controls
05	Proposed Plan
06-07	Structural Details
08-11	Cross Sections

**11. SAFETY**

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

**12. LINES, GRADES, AND MEASUREMENTS**

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



requires such removal. The replacement of such reference marks shall be at the Contractor's expense.

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

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

**13. BLASTING AND EXPLOSIVES**

The use of explosives will only be permitted when it is absolutely necessary, with prior approval from the Owner and in accordance with the Technical Specifications.

**14. PUBLIC ACCESS**

Roads, including driveways, sidewalks, and crossings shall remain passable while work is in progress.

**15. UTILITIES**

Utilities may be located within the area and may be adjacent to the construction work.

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

The Contractor shall avail himself of the Connecticut Underground Utility Protection Plan ("Call Before You Dig"), 2040 Whitney Avenue, Hamden, CT 06517, Connecticut (Telephone Toll Free: 811) for notifications to utility companies prior to excavating.

**16. TEMPORARY UTILITIES**

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

**17. TOILET ACCOMMODATIONS AND DRINKING WATER**

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

**18. SEQUENCE OF CONSTRUCTION**

Prior to the start of construction, the Contractor shall prepare and submit a sequence of construction for approval by the Engineer.

**19. BEST MANAGEMENT PRACTICES FOR PROTECTION OF THE ENVIRONMENT**

The Contractor shall be aware that the Project is located adjacent to wetlands. The Contractor shall therefore take all necessary precautions to ensure that his operations shall not result in any degradation of the wetlands or its tributaries (including storm drains). Furthermore, the Contractor shall be held fully responsible for any degradation that does result from his operations. Any resulting corrective measures, etc. necessary due to his operations shall be completed at no additional cost to the Owner.

- a. No construction shall proceed until proper sedimentation and erosion control methods have been installed as the sequence of construction necessitates.
- b. No equipment, materials, or machinery shall be stored, cleaned, or repaired within 25 feet of any wetland or watercourse.
- c. No construction shall proceed until a method to prevent construction debris, paint, spent blast materials, or other materials from entering the wetland or watercourse has been implemented as the sequence of construction necessitates. These materials shall be collected and disposed of in an environmentally safe manner as determined by Federal, State, and local laws. The applicant shall monitor wind velocities and storm events during the conduct of such work and shall cause such activity to cease if storm or wind conditions threaten to cause deposits of materials in the waterways.
- d. No objectionable materials resulting from any clearing activity shall be disposed of in any wetland or watercourse. This includes but is not limited to stumps, tree roots, matted roots, wood chips, and other debris.
- e. No fill or materials shall be deposited in surrounding wetlands or watercourses.
- f. Where dewatering is necessary, the pump shall not discharge directly into the wetland or watercourse. Proper methods and devices shall be utilized, such as pumping the water into a temporary sedimentation basin, providing surge protection at the inlet and the outlet of pumps, or floating the intake of the pump, or other method to minimize and retain the suspended solids. If the pumping operation is causing turbidity problems, work shall cease until such time that turbidity controlling measures have been implemented.
- g. Dumping of oil or other deleterious materials on the ground is forbidden. The applicant shall provide a means of catching, retaining, and properly disposing of drained oil, removed oil filters, or other deleterious material. All oil spills shall be reported immediately to the DEP/Hazardous Materials office at (860) 424-3338. Failure to do so may result in the imposition of a fine under Section 22a-450 of the Connecticut General Statutes.

- h. Every precaution shall be used while working in the vicinity of a waterway to prevent and minimize degradations of the existing water quality. All activities shall conform and be at all times consistent with applicable water quality standards, and management practices of the Federal Clean Water Act (1972), Connecticut's Water Quality Standards and other applicable State laws, and as defined in Form 816, Section 1.10, entitled "Environmental Compliance"

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**SPECIAL PROVISIONS**

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## **INTRODUCTION TO SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS**

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, and latest supplements is hereby made part of this contract. The Standard Specifications as defined below shall apply to the various items of work which constitute the construction contemplated under this Contract except as amended, supplemented or replaced by the Special Provisions of this Contract and as described herein.

Within the Standard Specifications and Special Provisions of this Contract, the following definitions shall apply:

1. Standard Specifications: Shall mean the State of Connecticut Department of Transportation, Bureau of Highways, "Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, dated 2016, and latest supplements.

CTDOT, District, State, Department, Commissioner

City of Groton or its Engineer, Project Manager, Inspector or other authorized representative or agent of the Owner.

Inspector/Engineer

Engineer, Project Manager, Inspector or other authorized representative or agent of the Owner.

Laboratory

Contractor responsible for conducting and paying for all testing required. Laboratory shall be CTDOT approved.

2. Applicable Safety Code: Shall mean the latest edition including any and all amendments, revisions, and additions thereto of the Federal Department of Labor, Occupational Safety and Health Administration's "Occupational Safety and Health Standards" and "Safety and Health Regulations for Construction", the State of Connecticut Labor Department, "Construction Safety Code", or State of Connecticut "Building Code", whichever is the more stringent for the applicable requirement.
3. Items: Reference within the text of these Specifications to Items without a number but a title only, are Technical Specification Items within this Contract. Sections or Articles referred to with a number refer to the Standard Specifications defined above.
4. Local Regulatory Agency(ies): is defined as the governing body or authority having jurisdiction over or responsibility for a particular activity within the Scope of this Contract. They may be as specifically defined within the Special Conditions or Special Provisions, otherwise, the Contractor shall be responsible to determine same in the local area of the Contract and should be cognizant of the limit of jurisdiction within the project area.
5. These Specifications, where used in the text shall be inclusive of all Standard Specifications and Special Provisions of this Contract.

Payment will only be made for items in the Bid Proposal. Other items may be included in the Standard Specifications or Special Provisions but payment for those items not listed in the Bid Proposal will be included in the cost of other items of work. Bid Proposal Items may have alphanumeric designations consistent with applicable sections or articles in the Standard Specifications or Special Provisions.

In the case of any conflicts between the Agreement, Special Provisions, Drawings, and Standard Specifications, the order of governance in order of descending authority shall be as follows:

1. Agreement, 2. Special Provisions, 3. Drawings, 4. Standard Specifications.



## **NOTICE TO CONTRACTOR – CONTRACT TIME AND LIQUIDATED DAMAGES**

Sixty (60) calendar days will be allowed for the completion of the contract work, including fully opening the roadway. Accordingly, the liquidated damages charge to apply will be One Thousand Dollars (\$1,000.00) per calendar day.

## **NOTICE TO CONTRACTOR – WEEKLY PROGRESS MEETINGS**

The Contractor will be responsible for coordinating weekly progress meetings with the City of Groton Department of Public Works, Police Department, Fire Department and Electric Boat, as appropriate. These meetings will be held to discuss the Contractors immediate schedule and coordinate traffic operations with emergency personnel. Frequency of meetings shall be as directed by the City of Groton.

## **NOTICE TO CONTRACTOR – ELECTRIC BOAT CORPORATION**

**Site Security:** Maintaining security at Electric Boat shall be a priority of the Contractor. At no time shall the Contractor, its employees, or any subcontractors trespass beyond the limit of work as indicated on the plans. The Contractor shall take extreme care to prevent damage to the existing fences and retaining wall at Electric Boat. Any damage to the existing fence line or retaining wall shall be brought to the Engineer's attention and directly to the attention of Electric Boat immediately. The Contractor's excavation shall not in any way permit passage under existing fences, nor shall the Contractor store any equipment or material near fences in such a way as to permit facilitated access to or ability to climb over existing fences. Should the Contractor have any need to enter onto Electric Boat property beyond the limits of the project indicated on the plans, the Contractor shall do so only after obtaining all necessary approvals, clearances, and permission by Electric Boat and after having notified the City in writing of such approval, clearances or permission.

Contractor employees and subcontractors who will be accessing Electric Boat property will need to submit an Unclassified Visitor Request and associated documents per the following link:  
[http://www.gdbe.com/suppliers/8\\_visiting\\_eb\\_contractors/](http://www.gdbe.com/suppliers/8_visiting_eb_contractors/)

The Contractor shall coordinate with Electric Boat as follows:

Brian T. Bogar, PE  
D508 Facilities Engineering  
Office: 860-433-9261  
Mobile: 860-389-8490  
Email: [bbogar@gdeb.com](mailto:bbogar@gdeb.com)

**Employees:** Employees requiring access inside the property fence will require clearance by Electric Boat and must obtain the appropriate badge necessary to enter Electric Boat Corporation

property. Work within the wall easement outside of the existing interior fence will not require a badge or background check.

**Disposal of Excess Material:** Disposal of debris will consist of asphalt, rock, unpainted concrete, and soil. Electric Boat will supply containers to dispose of these materials. Contractor is to place debris into containers up to half the height of containers. Contractor shall notify Electric Boat when containers are to be removed and/or returned.

**Protection of Existing Buildings:** The Contractor shall exercise extreme care when working, excavating, backfilling, compacting, and placing concrete adjacent to the existing buildings or retaining walls. The Contractor shall limit forces applied to the buildings or retaining walls to the extent practical.

The Contractor shall take care to avoid undermining the existing retaining wall footings.

The Contractor will be responsible for any damage to the existing building or retaining wall and shall design and perform necessary repairs at no cost to the city, town, state, or property owner. Any repairs shall be approved by local officials prior to implementation.

**NOTICE TO CONTRACTOR – CONTRACTOR TRAINING REQUIREMENT FOR 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE**

In accordance with Connecticut General Statute 31-53b and Public Act No. 08-83, the Contractor is required to furnish proof that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53, 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.

Proof of compliance with the provisions of the statute shall consist of a student course completion card issued by the federal Occupational Safety and Health Administration, or other such proof as deemed appropriate by the Commissioner of the Connecticut Department of Labor, dated no earlier than five years prior to the commencement of the project. Each employer shall affix a copy of the construction safety course completion card for each applicable employee to the first certified payroll submitted to the Department of Transportation on which the employee's name first appears.

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.

This section does not apply to employees of public service companies, as defined in section 16-1 of the 2008 supplement to the General Statutes, 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.

The internet website for the federal Occupational Safety and Health Training Institute is <http://www.osha.gov/fso/ote/training/edcenters>.

Additional information regarding this statute can be found at the Connecticut Department of Labor website, <http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm>.

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."

### **NOTICE TO CONTRACTOR – WORK ON ADJACENT PROJECTS**

The Contractor is responsible for coordinating with the City of Groton for any projects being constructed concurrently within the area of this project. The Contractor is responsible for coordinating with the City of Groton to minimize disruption to traffic operations within the area. Detour operations on projects will require approval by the City of Groton.

### **NOTICE TO CONTRACTOR – PROCUREMENT OF MATERIALS**

Upon award, the Contractor shall proceed with shop drawings, working drawings, procurement of materials, and all other submittals required to complete the work in accordance with the contract documents.

### **NOTICE TO CONTRACTOR – PROTECTION 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", dial 811 or go to [www.cbyd.com](http://www.cbyd.com), for the location of public utility, in accordance with Section 16-345 of the Regulations of the Department of Utility Control, at least two full working days prior to the start of construction.

Representatives of the various utility companies shall be provided access to the work, by the Contractor. The Contractor shall notify the various utility companies a minimum of two weeks before construction activities begin.

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 City. 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 utilities and Engineer's satisfaction at no cost to the State or the Utilities, including all 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 following utility operators have facilities within and/or in the vicinity of the project limits. This list is not intended to be exhaustive, and the contractor shall maintain existing utilities subject to this Notice to Contractor.

The Contractor shall notify the utility representatives a minimum of thirty (30) days prior to the start of the road construction work.

#### **NOTICE TO CONTRACTOR – VERIFICATION OF PLAN DIMENSIONS AND FIELD MEASUREMENTS**

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

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

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

### **NOTICE TO CONTRACTOR – AS-BUILT PLANS**

The Contractor shall be responsible for furnishing as-built drawings upon completion of the project. The Contractor has an option to submit as-builts electronically or by hand and shall be maintained as the work progresses. The as-builts should clearly define any deviations from the original plans either geometrically (horizontal or vertical) or changes in materials used. **Final payment will not be released until the final as-built drawings have been furnished to the City.**

This work shall be performed on a continuing basis and shall be included in the general cost of the work. No separate payment will be made for As-Built Drawings. This information will be used by the Municipality and may serve as public information.

### **NOTICE TO CONTRACTOR – SUBMITTALS FOR IMPORTED AGGREGATES**

In accordance with the requirements in these special provisions and the CT DOT Form 817, specifically the Materials Section, the contractor is hereby notified of the requirement to provide submittals which include tests on the gradation, abrasion, soundness and any other parameters specified for the various aggregate materials proposed for use on this project. The tests must be current and based on a specific source location/pile. No material shall be imported until the Engineer issues a written approval. The Contractor shall also provide testing and documentation of the imported and stockpiled material to confirm consistency with the approved submittals and compliance with these specifications.

### **NOTICE TO CONTRACTOR – WORK ADJACENT TO EXISTING STRUCTURES**

The Contractor shall use caution when excavating adjacent to existing structures (buildings, foundations, retaining walls, etc.) to remain. If deemed necessary by the Engineer, the contractor may be required to excavate a test pit to ascertain the limits or condition of buried foundations/structures. The Contractor shall take precautions so as to not undermine existing structures adjacent to the work. The Contractor shall be responsible for repairs to any structure damaged by his operations. Any such repairs shall be at the Contractor's own expense and shall be made to the Engineer's satisfaction.

## **SECTION 1.07 - LEGAL RELATIONS AND RESPONSIBILITIES**

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

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:

### **City of Groton Public Works**

Mr. Timothy Umrysz  
Public Works Director  
295 Meridian Street  
Groton, CT 06340  
Phone: 860-446-4127  
Email: [UmryszT@cityofgroton-ct.gov](mailto:UmryszT@cityofgroton-ct.gov)

### **City of Groton Department of Public Utilities**

Mr. Ronald Gaudet  
Director of Utilities  
295 Meridian Street  
Groton, CT 06340  
Phone: 860-446-4092  
Email: [grotonutilities@yurservice.com](mailto:grotonutilities@yurservice.com)

### **Thames Valley Communication**

Mr. Richard Aspinwall,  
Facility Manager  
295 Meridian St.  
Groton, CT 06340  
Phone: 860-446-4142  
Email: [Aspinwallr@tvconnect.com](mailto:Aspinwallr@tvconnect.com)

### **The Southern New England Telephone Company dba Frontier Communications of Connecticut**

Ms. Lynne DeLucia,  
Manager - Engineering & Construction  
1441 North Colony Road  
Meriden, CT 06450-4101  
Phone: (203) 238-5000 Mobile: 860-967-4389  
Email: [Lynne.m.delucia@ftr.com](mailto:Lynne.m.delucia@ftr.com)

**Southeastern Connecticut Water Authority**

Mr. Joseph Cansler  
General Manager  
1649 Route 12 - P.O. Box 415  
Gales Ferry, CT 06335-0415  
Phone: (860) 464-0232  
Email: [j.cansler@waterauthority.org](mailto:j.cansler@waterauthority.org)

**Comcast of Connecticut, Inc**

Mr. Jim Bitzas,  
Regional Construction Director  
1110 East Mountain Road  
Westfield, MA 01085  
Phone: (413) 642-8582 Mobile: (617) 279-7485  
Email: [jim\\_bitzas@cable.comcast.com](mailto:jim_bitzas@cable.comcast.com)

**Lightower Fiber Networks I, LLC 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  
Email: [Eric.Clark@crowncastle.com](mailto:Eric.Clark@crowncastle.com)

**Yankee Gas Services Company dba Eversource Energy - Gas Distribution**

Mr. James Shea,  
Lead Engineer Gas Project Engineering  
107 Selden Street, Mail Stop NUE2  
Berlin, CT 06037  
Phone: (860) 665-3332  
Email: [james.shea@eversource.com](mailto:james.shea@eversource.com)



## **SECTION 1.08 – PROSECUTION AND PROGRESS**

**1.08.03 – Prosecution of Work:** is supplemented as follows:

The Contractor shall not be permitted to interrupt traffic for any continuous period of time until both of the following conditions are satisfied:

1. The Contractor has secured all of the required approvals from the Engineer, and,
2. The Contractor has, as much as practical, all of the required materials needed on the site or readily available for that construction which requires the interruption of traffic.

**1.08.04 – Limitation of Operations:** is supplemented by the following:

The Contractor shall schedule his construction operations, so that construction at the site in this contract does not begin, extend into or end during the period from December 1 through March 31, except as approved by the Engineer.

Start times for municipal police officers is 7:30 a.m., unless coordinated otherwise with the City of Groton Police Department.

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

### **THAMES STREET AND SIDE STREETS**

The Contractor shall not be allowed to perform any work that will interfere with the existing traffic operations on:

Monday through Friday, between 7:00 a.m. & 9:00 a.m. and between 2:30 p.m. & 6:00 p.m. and,

Saturday and Sunday, all times, unless approved otherwise by the City.

The Contractor shall follow Detour Plan on Thames Street. Emergency vehicles must be able to pass through per plans with the use of traffic cones.

### **COORDINATION WITH OTHER PROJECTS**

The Contractor shall be aware of work on adjacent projects that may be ongoing simultaneously with this project. The Contractor shall be aware of those projects so that coordination is maintained for proper traffic flow at all times on all project roadways and this coordination is acceptable to the Engineer.

## **OTHER LIMITATIONS**

Longitudinal dropdowns greater than 3 inches will not be allowed during those periods when the maximum number of lanes of through traffic are required. The Contractor shall provide a temporary 1V:4H 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 schedule operations so that pavement removal and roadway resurfacing shall be completed full width across a roadway section by the end of a work day/work night. All transverse height differentials on all roadway surfaces shall be tapered to negate any 'bump' to traffic as approved by the Engineer. Material for this taper shall be as approved by the Engineer.

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

No roadway, with the exception of transition areas, shall be open to traffic unless the appropriate pavement markings have been installed. The transition areas shall have pavement markings applied before opening to traffic.

All temporary concrete barriers, other protective systems and traffic control devices as called for by the contract or ordered by the Engineer must be on-hand and available in sufficient quantity for immediate installation prior to any stage change.

## **SECTION 4.06 - BITUMINOUS CONCRETE**

Section 4.06 is being deleted in its entirety and replaced with the following:

**4.06.01—Description:** Work under this section shall include the production, delivery and placement of a non-segregated, smooth and dense bituminous concrete mixture brought to proper grade and cross section. This section shall also include the method and construction of longitudinal joints. The Contractor shall furnish the Owner with a Quality Control Plan as required in Article 4.06.03.

Materials certificates must be submitted in accordance with CDOT Form 816. Compaction testing, as well as other required testing ordered by the Engineer, shall be performed in accordance with CDOT Form 816.

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

**Bituminous Concrete:** A concrete material that uses a bituminous material (typically asphalt) as the binding agent and stone and sand as the principal aggregate components. Bituminous concrete may also contain any of a number of additives engineered to modify specific properties and/or behavior of the concrete material. For the purposes of this Specification, references to bituminous concrete apply to all of its sub-categories.

Official Mix Designation Designation
Bituminous Concrete Class 1
Bituminous Concrete Class 2
Bituminous Concrete Class 3

**Course:** A lift or multiple lifts comprised of the same bituminous concrete mixture placed as part of the pavement structure.

**Density Lot:** All material placed in a single lift and as defined in Article 4.06.03.

**Disintegration:** Wearing away or fragmentation of the pavement. Disintegration will be evident in the following forms: Polishing, weathering-oxidizing, scaling, spalling, raveling, potholes or loss of material.

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

**Marshall:** A bituminous concrete mix design used in mixtures designated as "Bituminous Concrete Class ( )."

**Production Lot:** All material placed per day during a continuous daily paving operation.

**Quality Assurance (QA):** All those planned and systematic actions necessary to provide confidence that a product or facility will perform as designed.

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.

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

**4.06.02—Materials**: All materials shall conform to the requirements of Section M.04.

**1. Materials Supply**: The bituminous concrete mixture must be from one source of supply and originate from one Plant unless authorized by the Owner. The bituminous concrete mixture shall be produced at an approved Connecticut DOT Plant. The Contractor shall provide proof of current DOT plant approval status. Bituminous Concrete plant QC plan requirements are defined in Section M.04.

**4.06.03—Construction Methods**:

**1. Material Documentation**: All vendors producing bituminous concrete must have their truck-weighing scales, storage scales, and mixing plant automated to provide a detailed ticket.

Delivery tickets must include the following information:

- a. Project name printed on ticket.
- b. Name of producer, identification of plant, and specific storage bin (silo) if used.
- c. Date and time of day.
- d. Mixture Designation If RAP is used, the plant printouts shall include RAP dry weight, percentage and daily moisture content. Class 3 mixtures for machine-placed curbing must state "curb mix only".
- e. Net weight of mixture loaded into truck (When RAP is used, RAP moisture shall be excluded from mixture net weight).
- f. Gross weight (Either equal to the net weight plus the tare weight or the loaded scale weight).
- g. Tare weight of truck – Daily scale weight.
- h. Project number, purchase order number, name of Contractor (if Contractor other than Producer).
- i. Truck number for specific identification of truck.
- j. Individual aggregate, RAP, and virgin asphalt high/target/low weights shall be printed on batch plant tickets (For drum plants and silo loadings, the plant printouts shall be printed out at 5 minute intervals maintained by the vendor for a period of three years after the completion of the project).
- k. For every mixture designation the running daily total delivered and sequential load number.

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

The Contractor must notify the Owner immediately if, during the production day, there is a malfunction of the weighing or recording system in the automated plant or truck-weighing scales. Manually written tickets containing all required information will be allowed for one

hour, but for no longer, provided that each load is weighed on State-approved scales. The Owner reserves the right to monitor the plant's bituminous concrete mixture production for batching and/ or weighting operation.

**2. Transportation of Mixture:** Trucks with loads of bituminous concrete being delivered to the projects must not exceed the statutory or permitted load limits referred to as gross vehicle weight (GVW).

The mixture shall be transported from the mixing plant in trucks that have previously been cleaned of all foreign material and that have no gaps through which mixture might inadvertently escape. The Contractor shall take care in loading trucks uniformly so that segregation is minimized. Loaded trucks shall be tightly covered with waterproof covers acceptable to the Owner. Mesh covers are prohibited. The front and rear of the cover must be fastened to minimize air infiltration. The Contractor shall assure that all trucks are in conformance with this specification. Trucks found not to be in conformance shall not be allowed to be loaded until re-inspected to the satisfaction of the Owner.

Truck body coating and cleaning agents must not have a deleterious effect on the transported mixture. The use of solvents or fuel oil, in any concentration, is strictly prohibited for the coating of the inside of truck bodies. When acceptable coating or agents are applied, truck bodies shall be raised immediately prior to loading to remove any excess agent in an environmentally acceptable manner.

**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 Owner. 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, hand tools, etc.).

Refueling of equipment is prohibited in any location on the paving project where fuel might come in contact with bituminous concrete mixtures already placed or to be placed. Solvents for use 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 the paved or to be paved area; and they shall not be returned for use until after they have been allowed to dry.

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 Owner. The controls shall automatically adjust the screed to compensate for irregularities in the preceding course or existing base. The controls shall maintain the proper transverse slope and be readily adjustable and shall operate from a fixed or moving reference such as a grade wire or floating beam.

**Rollers:** All rollers shall be self-propelled and designed for compaction of bituminous concrete. Roller types shall include steel-wheeled, pneumatic or a combination thereof and may be capable of operating in a static or dynamic mode. Rollers that operate in a dynamic mode shall have drums that use a vibratory or oscillatory system or combination of. The vibratory system achieves compaction through vertical amplitude forces. Rollers with this system shall be equipped with indicators that provide the operator with amplitude, frequency and speed settings/readouts to measure the impacts per foot during the compaction process. The oscillatory system achieves compaction through horizontal shear forces. Rollers with this system 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 self-propelled and equipped with wide-tread compaction tires capable of exerting an average contact pressure from 60 to 90 pounds per square inch uniformly over the surface, adjusting ballast and tire inflation pressure as required. The Contractor shall furnish evidence 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.

**4. Seasonal Requirements:** All paving, including placement of temporary pavements, shall be divided into two seasons, In-Season and Extended Season. In-Season paving shall occur from May 1 – October 31, and Extended Season shall occur from November 1- April 30. The following requirements shall apply unless otherwise authorized or directed by the Owner:

- Bituminous concrete mixes shall not be placed when the air or subbase temperature is below 40°F regardless of the season.
- The Contractor shall not schedule paving operations during the Extended Season without prior approval from the Owner. The Contractor shall also provide to the Owner an “Extended Season Paving Plan” as outlined below as part of the Extended Season approval process:
  - An “Extended Season Paving Plan” shall be submitted to the Owner a minimum of two (2) weeks prior to the Contractor’s anticipated paving operations and shall address minimum delivered mix temperature, maximum paver speed, enhanced rolling patterns and the method to balance mixture delivery and placement operations. Extended Season paving shall not commence until the Owner has approved the "Extended Season Paving Plan".
- The final lift of bituminous concrete shall not be placed between November 1 and April 30. The Owner, at his discretion, may consider a request from the Contractor to allow placing the top course bituminous concrete if it is deemed to be in the best interest of the project.
- There will be no additional compensation in relation to when bituminous concrete is placed.

**5. Transitions for Roadway Surface:** Transitions shall be formed at any point on the roadway where the pavement surface deviates, vertically, from the uniform longitudinal profile as

specified on the plans. Whether formed by milling or by bituminous concrete mixture, all transition lengths shall conform to the criteria below unless otherwise specified.

**Permanent Transitions:** A permanent transition is defined as any transition that remains as a permanent part of the work. All permanent transitions, leading and trailing ends shall meet the following length requirements:

- a) Posted speed limit is greater than 35 MPH: 30 feet per inch of vertical change (thickness)
- b) Posted speed limit is 35 MPH or less: 15 feet per inch of vertical change (thickness).
- c) Bridge Overpass and underpass transition length will be 75 feet either
  - (1) Before and after the bridge expansion joint, or
  - (2) Before or after the parapet face of the overpass.

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 Owner.

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

- a) Posted speed limit is greater than 35 MPH
  - (1) Leading Transitions = 15 feet per inch of vertical change (thickness)
  - (2) Trailing Transitions = 6 feet per inch of vertical change (thickness)
- b) Posted speed limit is 35 MPH or less
  - (1) Leading and Trailing = 4 feet per inch of vertical change (thickness)

**Note:** Any temporary transition to be in-place over the winter shutdown period, holidays, or during extended periods of inactivity (more than 7 calendar days) shall conform to the “Permanent Transition” requirements shown above and shall be approved by the Owner prior to implementation.

**6. Spreading and Finishing of Mixture:** Prior to the placement of the bituminous concrete, the underlying base course shall be brought to the plan grade and cross section within the allowable tolerance. Immediately before placing the mixture, the area to be surfaced shall be cleaned by sweeping or by other means acceptable to the Owner. The bituminous concrete mixture shall not be placed whenever the surface is wet or frozen. The temperature of the bituminous concrete mixture at time of placement must be between 265°F. to 325°F. except that the minimum temperature will be 290°F. when the mixture is placed during the Extended Season.

The mix temperature may be verified by the Owner at the time and location of placement by means of a probe or infrared type of thermometer to confirm conformance with this specification.

**Placement:** The bituminous concrete 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 mix, the Owner is not obligated to accept or place the bituminous concrete mixture that is in transit from the plant or already at the project site awaiting placement.

In advance of paving, traffic control requirements as stipulated under the relevant sections of the Contract Documents shall be set up daily, maintained throughout placement, and shall not be removed until all associated work including density testing is completed.

The Contractor shall inspect the newly placed pavement for defects in the mixture or placement before rolling is started. Any deviation from standard crown or sections shown on the plans, or nonconforming to adjacent existing conditions, shall be immediately remedied by placing additional mixture or removing surplus mixture prior to commencing compaction operations. Such defects shall be corrected to the satisfaction of the Owner.

Where it is impractical due to physical limitations to operate the paving equipment, the Owner 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. Where hand spreading is permitted by the Owner, it shall not relieve the Contractor of his responsibility to comply with all compaction requirements. The Contractor shall use such equipment as may be necessary to ensure proper compaction has been attained in areas of hand spreading without damage to nearby or adjacent structures/amenities or completed work.

Placement Tolerances: Each lift of bituminous concrete placed at a uniform specified thickness shall meet the following requirements for thickness and area. Any pavement exceeding these limits shall be subject to removal and replacement. Lift tolerances will not relieve the Contractor from the responsibility of meeting the final designed grades and cross sections.

The Contractor shall provide copies of all bituminous concrete delivery slips to the Owner for each daily section of pavement placed to determine the theoretical thickness of the in-place material as follows:

$$\text{Theoretical Thickness} = T/A_a \times 0.0575$$

Where: T = Actual tons in place  
 A<sub>a</sub> = Actual area (SY)  
 Yield factor for calculation = 0.0575 Tons/ SY/ inch

Thickness- When 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, shall remove the deficient section and replace it with the specified thickness of material of the same class and to the dimensions as specified in the Contract Documents at their own cost.

**TABLE 4.06-3 Thickness Tolerances**

Mixture Designation	Lift Tolerance
Class 4 and S1	+ 3/8 inch*
Class 1, 2 and 12	+ 1/4 inch*

\*There is no negative lift tolerance, the minimum lift thickness shall be equal to the designed thickness indicted on plans.



When requested by the Owner, if quality or thickness is a disputed issue then, the Contractor, will provided pavement cores as another means to confirm the pavement thicknesses at no additional cost to the Owner. If the Contractor does not provide cores within 72 hours from the Owner request, then the Owner reserves the right to hire a third party to provide core samples to verify thickness. The cost of which will be deducted from the Contractor's progress payments and/ or retainage.

Longitudinal Joint Construction: All joints shall be straight and true to adjacent improvements. During placement of multiple lifts of bituminous concrete, the longitudinal joint shall be constructed in such a manner that it is located at least 6 inches from the joint in the lift immediately below. The Contractor shall plan his daily paving operation so that each paving length is the full width of area being paved. No exposed longitudinal joint edges will be allowed unless authorized by the Owner. Prior to placing the completing pass (hot side), an application of tack coat must be applied to the exposed edge of the preceding paving pass of bituminous concrete regardless of time elapsed between paver passes. The in-place time allowance described in Sub article "Tack Coat Application" below does not apply to joint construction.

Transverse Joints: All transverse joints shall be formed by saw-cutting a sufficient distance back from the previous run, existing bituminous concrete pavement, or bituminous concrete driveways to expose the full thickness of the lift. Tack coat shall be applied on any cold joint immediately prior to additional bituminous concrete mixture placement.

Tack Coat Application: A thin uniform coating of tack coat shall be applied to the pavement immediately before overlaying and be allowed sufficient time to break (set). All surfaces in contact with the bituminous concrete that have been in place longer than 3 calendar days shall have an application of tack coat. The tack coat shall be applied by a non-gravity pressurized spray system that results in uniform overlapping coverage at an application rate of 0.03 to 0.05 gallons per square yard for a non-milled surface and an application rate of 0.05 to 0.07 gallons per square yard for a milled surface. For areas where both milled and un-milled surfaces occur, the tack coat shall be an application rate of 0.03 to 0.05 gallons per square yard. The Owner must approve the equipment and the method of measurement prior to use. The material for tack coat shall not be heated in excess of 160°F and shall not be further diluted. Under no circumstances shall tack coat be applied to surfaces damp to the touch or over standing water. In the event of unforeseen weather conditions, the application of tack coat shall stop until the surface to receive tack coat is dry. The Owner is not obligated to accept any bituminous concrete mixture or tack coat that is placed on/in wet conditions.

Tack Coat Application Rate Verification: The Contractor shall provide daily tack coat delivery tickets to the Owner for verification of application rates.

Daily Delivery tickets must include the following information:

- a. Project name printed on ticket.
- b. Name and location of supplier,
- c. Date and time of day.
- d. Product type.
- e. 1<sup>st</sup> Gross weight - the loaded scale weight before application of tack coat material.

- f. 2<sup>nd</sup> Gross weight - the loaded scale weight upon completion of tack coat material application.
- g. Tare weight of truck – Daily scale weight.
- h. Project number, purchase order number, name of Contractor (if Contractor other than Producer).
- j. Truck number for specific identification of truck.

**Compaction:** The Contractor shall compact the mixture to an average density between **92.0 and 97.0 percent**. All roller marks shall be eliminated without displacement, shoving, cracking, or aggregate breakage.

The Contractor shall only operate rollers in the dynamic mode using the oscillatory system at the lowest frequency setting on concrete structures such as bridges and catch basins. The use of the vibratory system on concrete structures is prohibited. Rollers operating in the dynamic mode shall be shut off when reversing directions.

If the Owner determines that the use of compaction equipment in the dynamic vibratory mode may damage highway components, utilities, or adjacent property, the Contractor shall provide alternate compaction equipment. The Owner may allow the Contractor to operate rollers in the dynamic mode using the oscillatory system at the lowest frequency setting.

These allowances will not relieve the Contractor from meeting pavement compaction requirements. Compaction testing, as well as other testing required by the Engineer, shall be performed in accordance with CT DOT Form 816.

**Surface Requirements:** The pavement surface of any lift shall meet the following requirements for smoothness and uniformity. Any irregularity of the surface exceeding these requirements shall be corrected by the Contractor at his expense:

- a) Smoothness- Each lift of the surface course shall not vary more than ¼ inch from a Contractor-supplied 10-foot straightedge. For all other lifts of bituminous concrete, the tolerance shall be ⅜ inch. Such tolerance will apply to all paved areas regardless of placement methods, i.e. hand spreading.
- b) Uniformity- The paved surface shall not exhibit segregation, rutting, cracking, disintegration, flushing or vary in composition as determined by the Owner.

**7. Contractor Quality Control (QC) Requirements for Placement:** The Contractor shall be responsible for maintaining adequate quality control procedures throughout the placement operations. Therefore, the Contractor must ensure that the materials, mixture and work provided by Subcontractors, Suppliers and Producers also meet contract specification requirements.

A Quality Control Plan (QCP) shall be submitted for any project with a proposed tonnage greater than 2,500 tons of Bituminous Concrete and/or when the paving operation is scheduled to occur during the Extended Season with prior approval from the Owner.

**Quality Control Plan:** When required, prior to placement, the Contractor shall submit a QCP to the Owner for approval. The QCP shall be submitted at the pre-construction meeting or a minimum 30 days prior to any production or paving. Work covered by the QCP shall not

commence until the Owner’s comments have been incorporated into the QCP and approved. The QCP shall detail every aspect of the placement process and if required, include a separate section on Extended Season paving as described in Section 4. “Seasonal Requirements”. The QCP must address the actions, inspection, minimum frequency of testing/ 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 QCP shall also include details on when and who will communicate with personnel at the bituminous concrete plant to determine when immediate changes to the production or placement processes are needed, and to implement the required changes.

Approval of the QCP does not relieve the Contractor of his responsibility to comply with the project specifications and in accordance with the Contract Documents.

**Quality Control Inspection, Sampling and Testing:** The Contractor shall perform all quality control sampling and testing, provide inspection, and exercise management control to ensure that bituminous concrete production and placement conforms to the requirements of these specifications.

- a) **Records of Inspection and Testing:** For each day of placement, the Contractor shall document all test results and inspections on forms approved by the Owner. The document shall be certified by the Quality Control Manager or his representative that the information in the document is accurate, and that all work complies with the requirements of the contract.

**8. Density Testing of Bituminous Concrete:** The Contractor shall monitor and confirm density utilizing a nuclear density gauge of all bituminous concrete placed daily regardless of the quantity. Testing shall be performed by a NETTCP certified HMA Paving Inspector from a certified independent CT testing laboratory. The minimum frequency of testing shall be as follows.

Sub-Lots for Density Testing		
Daily Production Tons	MAT Number of Sub-Lots	JOINT Number of Sub-Lots/ Joint
Less than 500	1 per 100	1per 100
500 to 1,500	10	5
Greater than 1,500	20	10

The Contractor shall submit complete laboratory certified test reports and accurate density inspection reports to the Owner within 48 hours following the daily paving operations. The documents shall be submitted in a manner acceptable to the Owner.

**9. Corrective Work Procedures:** Any portion of the completed pavement that does not meet the requirements of the Contract Documents shall be corrected at the expense of the Contractor. Any corrective courses placed as the final wearing surface shall not be less than 1½ inches in thickness after compaction.

If pavement placed by the Contractor does not meet the requirements of the Contract Documents, and the Owner requires its replacement or correction, the Contractor shall:

- a) Propose a corrective procedure to the Owner 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.

In the event the Contractor proposes to perform corrective work during the "Extended Season," the Contractor shall provide an "Extended Season Paving Plan" and adhere to all seasonal requirements within this specification.

- b) Perform all corrective work in accordance with the Contract and the approved corrective procedure.

**10. 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. Prior to the Owner's authorization to open the pavement to traffic, the Contractor is responsible for the protection of the pavement from all damage.

#### **4.06.04—Method of Measurement and Basis of Payment:**

**1. Bituminous Concrete Class ( ):** The furnishing and placing of bituminous concrete will be measured and paid for per ton of "Bituminous Concrete, Class ( )" accepted by the Engineer and in accordance with this special provision and Section M.04.

- All costs associated with constructing longitudinal and transverse joints shall be included in this item. No separate payment shall be made.

**2. Transitions for Roadway Surface:** The installation of temporary and permanent transitions will not be measured for payment and shall be included in the Bituminous Concrete Class ( ) item. 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 will not be measured for payment and shall be included in the Bituminous Concrete Class ( ) item.

**3. Cut Bituminous Concrete Pavement:** The quantity of cut bituminous concrete pavement will be measured and paid for in accordance with Article 2.02.04.

**4. Material for Tack Coat:** The quantity of tack coat will be measured and paid for by the number of gallons furnished and applied on the Project and approved by the Engineer.

#### **Method of Measurement:**

- a. Container Method- Material furnished in a container will be measured to the nearest ½ gallon. The volume will be determined by either measuring the volume in the original container by a method approved by the Engineer or using a separate graduated container

capable of measuring the volume to the nearest ½ gallon. The container in which the material is furnished must include the description of material, including lot number or batch number and manufacturer or product source.

- b. Truck Method- The Engineer will establish a weight per gallon of the bituminous material based on the specific gravity at 60°F for the material furnished. The number of gallons furnished will be determined by weighing the material on scales furnished by and at the expense of the Contractor.

**Pay Item**

Bituminous Concrete, Class ( )  
Material for Tack Coat

**Pay Unit**

ton  
gal.

**NOTE**

The Owner may at any time during the course of the work perform QA testing that he deems necessary to assure conformance to this special provision and CDOT Form 816. Any deficiencies found through these actions shall be immediately corrected by the Contractor at no additional cost to the Owner. The cost associated with the re-testing of areas where corrective work was performed will be deducted from the Contractor's progress and/or retainage

Any pavement deficiencies, corrective work and/ or QC/QA issues need to be resolved prior to payment for the work under this section.

## **SECTION M.04 - BITUMINOUS CONCRETE**

### **M.04.01—Bituminous Concrete Materials and Facilities**

### **M.04.02—Mix Design and Job Mix Formula (JMF)**

### **M.04.03—Production Quality Control (QC) Testing and Control of Mixture**

**M.04.01—Bituminous Concrete Materials and Facilities:** Each source of material, and facility used to produce and test bituminous concrete (HMA) must be qualified on an annual basis by the Engineer. The basis of approval for plant machinery, material processing & controls, and field laboratory requirements are available from the Engineer. Test Procedures and Specifications referenced herein are in accordance with the latest AASHTO and ASTM Standard Test Procedures and Specifications. Such references when noted with an (M) have been modified by the Engineer and are detailed in Table M.04.03-6.

The Contractor shall submit to the Engineer all sources of coarse aggregate, fine aggregate, mineral filler and PG binder. The Contractor shall submit a Material Safety Data Sheet (MSDS) for each grade of binder to be used on the Project. The Contractor shall not change material sources without prior approval of the Engineer.

An adequate quantity of each size aggregate, mineral filler and bitumen shall be maintained at the HMA plant site at all times while the plant is in operation to ensure that the plant can consistently produce bituminous concrete mixtures that meet the job mix formula (JMF) as specified in Article M.04.02. The quantity of such material shall be reviewed by the Engineer on an individual plant basis and is dependent upon the plant's daily production capacity but shall never be less than one day's production capacity. Less than one day's production capacity may be cause for the job mix formula to be rejected.

#### **1. Coarse Aggregate:**

- a. **Requirements:** The coarse aggregate shall consist of clean, hard, tough, durable fragments of crushed stone or crushed gravel of uniform quality. Aggregates from multiple sources of supply must not be mixed or stored in the same stockpile.
- b. **Basis of Approval:** The request for approval of the source of supply shall include a washed sieve analysis in accordance with AASHTO T 27. The G<sub>sa</sub>, G<sub>sb</sub>, and P<sub>wa</sub> shall be determined in accordance with AASHTO T 85. The coarse aggregate must not contain more than 1% crusher dust, sand, soft disintegrated pieces, mud, dirt, organic and other injurious materials. When tested for abrasion using AASHTO T 96, the aggregate loss must not exceed 40%. When tested for soundness using AASHTO T 104 with a magnesium sulfate solution, the coarse aggregate must not have a loss exceeding 10% at the end of 5 cycles.

For HMA mixtures, materials shall also meet the coarse aggregate angularity criteria as specified in Tables M.04.02-2 thru M.04.02-4 for blended aggregates retained on the #4 sieve when tested according to ASTM D 5821. The amount of aggregate particles of the coarse aggregate blend retained on the #4 sieve that are flat or elongated shall be

determined in accordance with ASTM D 4791 and shall not exceed 10% by weight when tested to a 3:1 ratio, as shown in Tables M.04.02-2 thru M.04.02-4.

**2. Fine Aggregate:**

Requirements: The fine aggregate from each source quarry/pit deposit shall consist of clean, hard, tough, rough-surfaced and angular grains of natural sand; manufactured sand prepared from washed stone screenings; stone screenings, slag or gravel; or combinations thereof, after mechanical screening or manufactured by a process approved by the Engineer. The Contractor is prohibited from mixing two or more sources of fine aggregate on the ground for the purpose of feeding into an HMA plant.

- a. All fine aggregate shall meet the listed criteria shown in items #1 thru #7 of Table M.04.01-1. Table M.04.01-1 indicates the quality tests and criteria required for all fine aggregate sources. Individually approved sources of supply shall not be mixed or stored in the same stockpile. The fine aggregates must be free from injurious amounts of clay, loam, and other deleterious materials.

For Superpave mixtures, in addition to the above requirements, the fine aggregate angularity shall be determined by testing the materials passing the #8 sieve in accordance with AASHTO T 304, Method A. Qualification shall be based on the criteria listed in Tables M.04.02-2 thru M.04.02-4. The fine aggregate shall also be tested for clay content as a percentage contained in materials finer than the #8 sieve in accordance with AASHTO T 176.

**Table M.04.01-1: Fine Aggregate Criteria by Pit/Quarry Source**

Item	Title	AASHTO Protocol	Criteria
1	Grading	T 27 and T 11	100% Passing the 3/8 inch 95% Passing the #4 minimum
2	Absorption	T 84	3% maximum
3	Plasticity limits	T 90	0 or not detectable
4	L.A. Wear	T 96	50% maximum (fine aggregate particle size # 8 and above)
5	Soundness by Magnesium Sulfate	T 104	20% maximum @ 5 cycles
6	Clay Lumps and Friable Particles	T 112	3% maximum
7	Deleterious Criteria	As determined by the Engineer	<u>Deleterious substances include:</u> Organic or inorganic calcite, hematite, shale, clay or clay lumps, friable materials, coal-lignite, shells, loam, mica, clinkers, or organic matter (wood, etc.). -Shall not contain more than 3% by mass of any individual listed constituent and not more than 5% by mass in total of all listed constituents.
<b>If Fine aggregate is tested by the CTDOT twice and does not meet above criteria.</b>			

8	Pit/source Petrographic Analysis	C 295 (ASTM)	<ul style="list-style-type: none"> <li>• Required to be performed by the Contractor at no expense to the Department.</li> <li>• Report assignable cause(s), corrective action taken to mitigate source and written request for resample.</li> <li>• If fine aggregate fails upon retest, Contractor may be permitted to request trial use on roadway for evaluation using the subject fine aggregate in HMA, to be monitored for no more than 48 months.</li> <li>• Evaluation location(s); mix size &amp; level; terms and costs related to this application; determination of performance, and approval will be established at the sole discretion of the Engineer.</li> </ul>
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- b. Basis of Approval: A Quality Control Plan for Fine Aggregate (QCPFA) provided by the Contractor shall be submitted for review and approval for each new source documenting how conformance to Items 1 through 7 as shown in Table M.04.01-1 is monitored. The QCPFA must be resubmitted any time the process, location or manner of how the fine aggregate (FA) is manufactured changes, or as requested by the Engineer. The QCPFA must include the locations and manufacturing processing methods. The QCPFA for any source may be suspended by the Engineer due to the production of inconsistent mixtures.

The Contractor shall submit all test results to the Engineer for review. The Contractor shall also include a washed sieve analysis in accordance with AASHTO T 27/T 11. Any fine aggregate component or final combined product shall have 100% passing the 3/8-inch sieve and a minimum of 95% passing the # 4. The  $G_{sa}$ ,  $G_{sb}$ , and  $P_{wa}$  shall be determined in accordance with AASHTO T 84.

The Contractor will be notified by the Engineer if any qualified source of supply fails any portion of Table M.04.01-1. One retest will be allowed for the Contractor to make corrections and/or changes to the process. If, upon retest, the material fails again, the use of the material will not be permitted without additional testing.

The Contractor may solicit additional testing by a third party acceptable to the Engineer to perform a Petrographic analysis (ASTM C 295), at its expense. The Contractor shall submit the results of the analysis with recommended changes to the manufacturing process to the Engineer. The Contractor shall submit fine aggregate samples for testing by the Engineer after the recommended changes have been made.

Upon review of the Petrographic analysis report and identified items that were corrected, the source may be re-sampled and tested by the Engineer.



- c. The Contractor may request that the use of such material not meeting the requirements be considered on select project(s) for certain applications. HMA pavement incorporating such material will be monitored and evaluated for a period not to exceed 48 months, at the direction of the Department and at the expense of the Contractor. Terms of any evaluation and suitable application will be predetermined by the Engineer.

If the Engineer determines, upon evaluation, that the fine aggregate performance is adequate and not harmful to the pavement's serviceability, the Department may approve the material for use in HMA mixtures in similar applications.

### **3. Mineral Filler:**

- a. Requirements: Mineral filler shall consist of finely divided mineral matter such as rock dust, including limestone dust, slag dust, hydrated lime, hydraulic cement, or other accepted mineral matter. At the time of use it shall be freely flowing and devoid of agglomerations. Mineral Filler shall be introduced and controlled at all times during production in a manner acceptable to the Engineer.
- b. Basis of Approval: The request for approval of the source of supply shall include the location, manufacturing process, handling and storage methods for the material. Mineral filler shall conform to the requirements of AASHTO M-17.

### **4. Liquid Bituminous Materials:**

- a. Performance grade (PG) binder Requirements:
  - i. Binders shall contain uniformly mixed and blended liquid bituminous materials that are free of contaminants such as fuel oils and other solvents. Such binders shall be properly heated and stored to prevent damage or separation. A PG binder shall be classified by the supplier as a "Neat" binder for each lot and be so labeled on each bill of lading. Neat PG binders shall be asphalts free from modification with fillers, extenders, reinforcing agents, adhesion promoters, thermoplastic polymers, acid modification and other additives, and shall indicate such information on each bill of lading and certified test report.
  - ii. The blending at mixing plants of PG binder from different suppliers is strictly prohibited. Contractors who blend PG binders will be classified as a supplier and will be required to certify the binder in accordance with AASHTO R-26(M). The asphalt binder shall be Performance Grade 64-22 Neat asphalt. The binder 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 binder specific gravity at 77°F; rotational viscosity at 275°F and 329°F 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 materials. 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 (tanker truck) 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 will be free of contamination from any residual material, along with two (2) copies of the bill of lading.

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

b. Cut-backs (medium cure type)

i. **Requirements:** The liquid petroleum materials shall be produced by fluxing an asphalt base with appropriate petroleum distillates to produce the grade specified.

ii. **Basis of Approval:** The request for approval of the source of supply shall be submitted at least seven days prior to its use listing the location where the materials will be produced, and manufacturing, processing, handling and storage methods. The Contractor shall submit a Certified Test Report in accordance with Section 1.06 and a Material Safety Data Sheet (MSDS) for the grade to be used on the Project. The liquid asphalt shall be MC-250 conforming to AASHTO M-82.

c. Emulsions

i. **Requirements:** The emulsified asphalt shall be homogeneous and not be used if exposed to freezing temperatures.

ii. **Basis of Approval:** The request for approval of the source of supply must include the location where the materials will be produced, and manufacturing, processing, handling and storage methods.

1. 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. When ambient temperatures are 80°F and rising, grade SS-1 or SS-1h may be substituted if accepted by the Engineer. Each shipment shall be accompanied with a Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon.

2. Cationic emulsified asphalt shall conform to the requirements of AASHTO M-208(M). 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-1h may be substituted if accepted by the Engineer. Each shipment shall be accompanied with a Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon.

**5. Reclaimed Asphalt Pavement (RAP):**

a. Requirements: RAP shall consist of asphalt pavement constructed with asphalt and aggregate reclaimed by cold milling or other removal techniques approved by the

Engineer. For bituminous mixtures containing RAP, the Contractor shall submit a JMF in accordance with Article M.04.02 to the Engineer for review.

- 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 test the material and provide the following information along with a 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 stating that the RAP consists of aggregates that meet the specification requirements of subarticles 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.
    - 3. After recovery of binder from the RAP by AASHTO T 170(M), the viscosity test results shall be reported when tested at 140°F by AASHTO T 202 or T 316.
    - 4. A statement that RAP material has been crushed to 100% passing the ½ inch sieve and remains free from contaminants such as joint compound, wood, plastic, and metals.

**6. 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:

<b>CRCG Grading Requirements</b>	
<u>Sieve Size</u>	<u>Percent Passing</u>
3/8-inch	100
No. 4	35-100
No. 200	0.0-10.0

**7. Joint Seal Material:**

Requirements: Joint seal material shall be a hot-poured rubber compound intended for use in sealing joints and cracks in Asphalt Concrete Pavements. Joint seal material must meet the requirements of AASHTO M-324 – Type 2.

**8. Plant production requirements**

a. Storage Silos:

- i. The Contractor may use silos for short-term storage of Superpave mixtures with prior notification and 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. Prior approval must be obtained for storage times greater than those indicated. When multiple silos are filled, the Contractor shall discharge one silo at a time. Simultaneous discharge of multiple silos is not permitted.

<u>Type of silo cylinder</u>	<u>Maximum storage time for all classes (hr)</u>
Open Surge	4
Unheated – Non-insulated	8
Unheated – Insulated	18
Heated – No inert gas	To be determined by the Engineer

- ii. For all classes of mixture sampled from hauling vehicles at the plant after storage in silos (virgin or mixture containing RAP) except 5, 5A, and 5B, the binder properties of the recovered asphalt shall meet the PG binder grade specified when recovered by AASHTO T 170(M) and tested in accordance with AASHTO R-29 and M-320(M).
- iii. If mixture coming out of a silo continuously does not meet the requirements of M.04.03, or the binder does not meet the PG requirements, the Engineer shall deem that silo unacceptable for use.

- b. Aggregates: The Contractor shall ensure that aggregate stockpiles are managed to provide uniform gradation and particle shape, prevent segregation and cross contamination in a manner acceptable to the Engineer. For drum plants only, the Contractor shall determine the percent moisture content a minimum of twice daily, prior to production and halfway through production. The Contractor shall perform cold feed gradation analysis (AASHTO T 27(M) & T 11) for each component aggregate to ensure values remain within the tolerances stated in Table M.04.02 when compared to the latest JMF for that class.

- c. Mixture: The dry and wet mix times shall be sufficient to provide proper coating (minimum 95% as determined by AASHTO T 195(M)) of all particles with bitumen and produce a uniform mixture. The Contractor shall make necessary adjustments to ensure bituminous concrete mixtures are free from moisture throughout. The Contractor shall make necessary adjustments to ensure all types of bituminous concrete mixtures contain no more than 0.5% moisture throughout when tested in accordance with AASHTO T 329.

- d. RAP: The Contractor shall indicate the percent of RAP, the moisture content (as a minimum, determined twice daily – prior to production and halfway through production),

and the net dry weight of RAP added to the mixture on each truck ticket. For each day of production, the production shall conform to the job mix formula and RAP percentage and no change shall be made without the prior approval of the Engineer.

- e. 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 truck ticket, as specified herein. Tolerance controls shall be automatically or manually adjustable to provide proportions within these tolerances for any batch size. The automatic proportioning system shall be capable of consistently delivering mixtures within these limits for the full range of batch sizes.

An asterisk (\*) shall be automatically printed next to any individual batch weight(s) exceeding these tolerances. 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.

Each Aggregate Component:	±1.0 % total target batch weight
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

There must be provisions so that scales are not 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 truck and batch plant printout when the automatic batching sequence is interrupted or switched to auto-manual or full manual during proportioning. For each day's production, each project shall be provided a clear, legible copy of these recordings on each truck ticket.

- f. Field Laboratory:  
The Contractor shall furnish the Engineer an acceptable field laboratory, to test bituminous mixtures during production and the Engineer shall have priority to use it for testing. The HMA plant production field 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, 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 a high speed internet connection with a minimum upstream of 384 Kbps and a functioning web browser with unrestricted access to <https://ctmail.ct.gov>. This equipment shall be maintained in clean and good working order at all times and be made available for use by the Engineer.

The laboratory shall be equipped with a suitable 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. Windows shall be installed to provide sufficient light and ventilation. During summer months, the laboratory temperature shall not exceed ambient temperature. Light fixtures and outlets shall be installed at convenient locations, and a telephone shall be within audible range of the testing area. The laboratory shall be equipped with an adequate workbench that has a suitable length, width, and sampling tables, and be approved by the Engineer.

The field laboratory testing apparatus, supplies, and safety equipment shall be capable of performing all tests in their entirety that are referenced in AASHTO R 35(M), *Standard Practice for Superpave Volumetric Design for Hot-Mix Asphalt (HMA)* and AASHTO M 323, *Standard Specification for Superpave Volumetric Mix Design*. In addition, the quantity of all equipment and supplies necessary to perform the tests must be sufficient to initiate and complete the number of tests identified in Table M.04.03-2 for the quantity of mixture produced at the plant on a daily basis. The Contractor shall ensure that the Laboratory is adequately supplied at all times during the course of the project with all necessary testing materials and equipment.

g. Mixing Plant and Machinery:

The mixing plant used in the preparation of the bituminous concrete shall comply with AASHTO M-156(M)/ASTM D 995 for a Batch Plant or a Drum Dryer Mixer Plant and be approved by the Engineer.

#### **M.04.02—Mix design and Job Mix Formula (JMF)**

##### **1. Marshall Method - Class 1, 2, 3, 4, 5, 5A, 5B and 12:**

- a. Requirements: When specified, the Marshall method shall be employed to develop a bituminous concrete mix design that includes a JMF consisting of target values for gradation and bitumen content for each class of bituminous concrete designated for the project in accordance with the latest Asphalt Institute's MS-2 manual. Each class of bituminous concrete must meet the requirements as shown in Table M.04.02-1.
- b. Basis of Approval: The Contractor shall submit to the Engineer a request for approval of the JMF annually in accordance with one of the methods described herein. Prior to the start of any paving operations, the JMF and production percentage of bitumen must be accepted by the Engineer, and the Contractor must demonstrate the ability to meet the accepted JMF and production percentage of bitumen for each class of mixture. Additionally, the fraction of material retained between any two consecutive sieves shall not be less than 4%.

The Engineer will test each class of mixture for compliance with the submitted JMF and Table M.04.02-1. The maximum theoretical density (Gmm) will be determined by AASHTO T 209(M). If the mixture does not meet the requirements, the JMF shall be adjusted within the ranges shown in Table M.04.02-1 until an acceptable mixture is produced. All equipment, tests and computations shall conform to the Marshall method in accordance with AASHTO T 245(M).

An accepted JMF from the previous operating season may be acceptable to the Engineer provided that there are no changes in the sources of supply for the coarse aggregate, fine aggregate, recycled material (if applicable) and the plant operation had been consistently producing acceptable mixture.

The Contractor shall not change sources of supply after a JMF has been accepted. Before a new source of supply for materials is used, a new JMF shall be submitted to the Engineer for approval.

- c. Marshall mixture (virgin): For bituminous concrete mixtures that contain no recycled material, the limits prescribed in Table M.04.02-1 govern. The Contractor shall submit to the Engineer for approval, a JMF with the individual fractions of the aggregate expressed as percentages of the total weight of the mix and the source(s) of all materials. The JMF shall indicate two bitumen contents; the JMF target percentage and a production percentage (actual amount added to mix) of bitumen for each mix class by total weight. For surface course Class 1, a 0.45 power gradation chart shall also be submitted on which is plotted the percentage passing each sieve. The JMF shall also indicate the target temperature of completed mixture as it is dumped from the mixer and tested in accordance with Article M.04.03.
- c. Marshall mixtures with RAP: In addition to subarticles M.04.02 – 1a through c, RAP in bituminous concrete shall comply with requirements stated in Article M.04.01, and as stated herein. Upon approval of the Engineer, a maximum of 15% RAP may be used with no binder grade modification. RAP material shall not be used with any other recycling option.

The Contractor may increase the RAP percentage in 5% increments up to a maximum of 30% provided a new JMF is accepted by the Engineer. The following information shall be included in the JMF submittal:

- Gradation and asphalt content of the RAP.
  - Percentage of RAP to be used.
  - Virgin aggregate source(s).
  - Total binder content based on total mixture weight.
  - Production pull percentage of added virgin binder based on total mixture weight.
  - Gradation of combined bituminous concrete mixture (including RAP).
  - Grade of virgin added, if greater than 15% of total mix weight.
- e. Marshall mixture with CRCG: In addition to subarticle M.04.02 – 1a through c, for bituminous concrete that contains CRCG, the Contractor shall submit a materials certificate to the Engineer stating that the mixture and its components comply with requirements stated in subarticle M.04.01 - (6). Additionally, 1% 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.

## 2. Cold Patch Method - Class 5, 5A, 5B:

- a. Requirements: This mixture must be capable of being stockpiled and workable at all times. A non-stripping agent accepted by the Engineer shall be used in accordance with manufacturer's recommendations. The Contractor shall take necessary steps to ensure that this mixture uses aggregate containing no more than 1% moisture and is not exposed to any rain, snow, or standing water for a period of 6 hours after being mixed. This mixture shall be mixed and stockpiled at the point of production on a paved surface at a height not greater than 4 feet during the first 48 hours prior to its use.
  - i. Class 5A mixture shall have 3/8 to 1/2 inch polypropylene fibers that have been approved by the Engineer added at a rate of 6 pounds per ton of mixture.
  - ii. Class 5B mixture shall have 1/4 inch polyester fibers that have been approved by the Engineer added at the rate of 2 1/2 pounds per ton of mixture.
  - iii. Class 5 mixture shall not contain fibers.
- b. Basis of Approval: The aggregates, fibers and binder (MC-250) shall meet the requirements as specified in subarticles M.04.01-1 through 4 and in Table M.04.02-1. The use of recycled material is not permitted with these classes of bituminous concrete. Mixtures not conforming to the binder content as shown in Table M.04.02-1 shall be subject to rejection. There is a two-test minimum per day of production. Mixtures not conforming to the gradation as shown in Table M.04.02-1 shall be subject to payment adjustment as specified in Section 4.06.



**TABLE M.04.02 – 1 MASTER RANGES FOR MARSHALL BITUMINOUS CONCRETE MIXTURES**

<p><b>Notes:</b> (a) 75 blow (Marshall Criteria). (b) 3-6% when used for a roadway wearing surface. (c) For divided highways with 4 or more lanes, a stability of 1500 lbs is required. (d) Contains an accepted non-stripping compound. (e) To help prevent stripping, the mixed material will be stockpiled on a paved surface and at a height not greater than 4 feet during the first 48 hours. (f) As determined by AASHTO T 245(M). (g) The percent passing the #200 sieve shall not exceed the percentage of bituminous asphalt binder determined by AASHTO T 164(M) or AASHTO T 308(M). (h) Mixture with 5% or more aggregate retained on ¾" sieve. (i) Mixtures finer than condition (h) above. (j) Class 5 mixture shall contain no fibers. Class 5A mixture shall have 3/8 to ½ inch polypropylene fibers that have been previously accepted by the Engineer added at a minimum rate of 6 pounds per ton of mixture. Class 5B mixture shall have ¼ inch polyester fibers that have been previously accepted by the Engineer added at the minimum rate of 2 1/2 pounds per ton of mixture</p>									
CLASS	1	2	3	4	12	5 (e)(j)	5A (e)(j)	5B (e)(j)	JMF % Tol. (±)
<b>Grade of PG Binder content %</b>	<b>PG 64-22 5.0 – 6.5</b>	<b>PG 64-22 5.0 – 8.0</b>	<b>PG 64-22 6.5 - 9.0</b>	<b>PG 64-22 4.0 - 6.0</b>	<b>PG 64-22 7.5 - 10.0</b>	<b>MC-250 (d) 6.0 - 7.5</b>	<b>MC-250 (d) 6.0 - 7.5</b>	<b>MC-250 (d) 6.0 - 7.5</b>	0.4
<b>Sieve Size</b>	<b>Percent Passing (%)</b>								
# 200	3.0 – 8.0 (g)	3.0 – 8.0 (g)	3.0 – 8.0 (g)	0.0 – 5.0 (g)	3.0 – 10.0 (g)	0.0 - 2.5	0.0- 2.5	0.0 - 2.5	2.0
# 50	6 – 26	8 – 26	10 - 30	5 - 18	10 - 40				4
# 30	10 - 32	16 - 36	20 - 40		20 - 60	2 - 15	2 – 15	2 - 15	5
# 8	28 - 50	40 - 64	40 - 70	20 - 40	60 - 95	10 - 45	10 – 45	10 - 45	6
# 4	40 - 65	55 - 80	65 - 87	30 - 55	80 - 95	40 - 100	40 – 100	40 - 100	7
¼"									
3/8 "	60 - 82	90 - 100	95 - 100	42 - 66	98 - 100	100	100	100	8
½ "	70 - 100	100	100		100				8
¾"	90 - 100			60 - 80					8
1"	100								
2"				100					
<b>Additionally, the fraction of material retained between any two consecutive sieves shall not be less than 4%</b>									
<b>Mixture Temperature</b>									
<b>Binder</b>	325°F maximum					140-185° F			
<b>Aggregate</b>	280-350° F					100-175° F			
<b>Mixtures</b>	265-325° F				275-325°F	120-175° F			25 °F
<b>Mixture Properties</b>									
<b>VOIDS - %</b>	3.0 – 6.0 (a)	2.0 – 5.0 (b)	0 – 4.0		0 - 5.0 (a)				
<b>Stability (f) lbs. min.</b>	1200 (c)	1000	1000		1000				
<b>FLOW (f) in.</b>	.08 - .15	.08 - .15	.08 - .18		.08 - .15				
<b>VMA % - min.</b>	15(h) :16 (i)								

**M.04.03—Production Quality Control (QC) Testing, Approval and Control of Mixture:**

The Contractor shall submit a Quality Control plan for HMA production specifically for the plant producing the HMA mixture in accordance with subarticle 4.06.03-9 for review and approval of the Engineer. The plan must also include a list of sampling & testing methods and frequencies used during production, and the names of all Quality Control plant personnel and their duties. In addition;

- i. All plant personnel involved with sampling and testing for Quality Control purposes must have a current certification as an NETTCP HMA Plant Technician or Interim HMA Plant Technician and be in good standing. Technicians found by the Engineer to be non-compliant with NETTCP and Department policies may be suspended by the Engineer from participating in the production of mixtures for Department projects until their actions can be reviewed by NETTCP.

The Contractor shall maintain a list of laboratory equipment used in their quality control 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.

In addition, based on the mix design method the following also applies.

- 1. **Materials Sampling & Testing Methods for Marshall Mixes:** The Contractor shall furnish the Engineer a field laboratory accepted by the Engineer to test bituminous mixtures during production. Material samples will be obtained from the hauling vehicles by the Engineer at the plant during each day's production as indicated in the Department's "Schedule of Minimum Requirements for Sampling Materials for Test." The following test procedures will be used:

<b>AASHTO T 30(M)</b>	Mechanical Analysis of Extracted Aggregate
<b>AASHTO T 40(M)</b>	Sampling Bituminous Materials
<b>AASHTO T 164(M)/ AASHTO T 308(M)</b>	Quantitative Extraction/Ignition Oven of Bitumen from Bituminous Paving Mixtures
<b>AASHTO T 245(M)</b>	Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus
<b>AASHTO T 209(M)</b>	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
<b>AASHTO T 269(M)</b>	Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
<b>AASHTO T 329</b>	Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method

- a. Cessation of Supply: Marshall Mix Production shall cease for the Project from any plant that consistently fails to produce mixture that meets the JMF and volumetric properties. The criteria for ceasing the supply of a class of mixture from any plant are as follows:

- i. Off-Test Status: The results of AASHTO T 164(M) and T 30(M) will be used to determine if the mixture is within the tolerances shown in Table M.04.02-1. The Contractor will be notified that a plant is "off test" for a class of mixture 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 for that class of mixture.
  - ii. When multiple plants and 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" adjusted payment.
  - iii. If a test indicates that the bitumen content or gradation are outside the tolerances, the Contractor may make a single JMF change on classes 1, 2, 3, 4 and 12 as allowed by the Engineer prior to any additional testing. A JMF change shall include the date and name of the Engineer that allowed it. Consecutive test results outside the requirements of Table M.04.02-1 JMF tolerances may result in rejection of the mixture.
  - iv. The Engineer may cease supply of mixture from the plant when the test results from three non-consecutive samples of a class of mixture are not within the JMF tolerances or the test results from two non-consecutive samples not within the master range indicated in Table M.04.02-1 during any one production period, due to inconsistent production.
  - v. 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.
- b. Adjustments for Off test Mixture under Cessation of Supply: The HMA plant shall cease supplying to the project:
- i. When the test results from three consecutive samples are "off test" and not within the JMF tolerances or,
  - ii. The test results from two consecutive samples are "off test" and not within the ranges indicated in Table M.04.02 – 1 or,
  - iii. When the percent of material passing the minus #200 sieve material exceeds the percent of extracted bitumen content for three consecutive samples during any production period of the values stated in Table M.04.02-1:
    - a. The quantity of mixtures shipped to the project determined to be "off test" and outside the tolerances will be tabulated by the Engineer and will be adjusted in accordance with Section 4.06.
    - b. Following cessation, a trial production period will be required at the plant for that class of mixture. Use of that class of mixture from that plant will be prohibited on the Project until the plant has demonstrated the ability to consistently produce acceptable mixture.
    - c. When the Engineer has accepted the mixtures from the trial production period, the use of that mixture on the Project may resume.

**Table M.04.03-6:  
Modifications to Standard AASHTO and ASTM Test Specifications and Procedures.**

<b>AASHTO Standard Specification</b>							
<b>Reference</b>	<b>Modification</b>						
<b>AASHTO M 320</b>	<p>1. Mass change for PG 64-22 shall be a maximum loss of 0.5% when tested in accordance with AASHTO T 240.</p> <p>2. The two bottles used for the mass change determination may be re-heated and used for further testing.</p>						
<b>AASHTO Standard Methods of Test</b>							
<b>Reference</b>	<b>Modification</b>						
<b>AASHTO T 27</b>	Section 7.7 Samples are not washed						
<b>AASHTO T 30</b>	Section 6.2 thru 6.5 Samples are not routinely washed						
<b>AASHTO M-156 /ASTM D 995</b>	<p>Section 8.7.3 <i>Accuracy: Batch Plants</i></p> <p>The automation proportioning system shall be capable of consistently delivering mixtures within the full range of batch sizes within the following tolerances:</p> <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"><i>Total Batch Weight Of</i></td> <td></td> </tr> <tr> <td style="text-align: center;"><i>Paving Mix. %</i></td> <td></td> </tr> <tr> <td style="text-align: center;"><i>Batch aggregate component</i></td> <td style="text-align: center;">± 1.0%</td> </tr> </table> <p>Note: AASHTO T 40 is modified as follows: Section 9.1.1 Sampling valve is located on bottom third of storage tank.</p>	<i>Total Batch Weight Of</i>		<i>Paving Mix. %</i>		<i>Batch aggregate component</i>	± 1.0%
<i>Total Batch Weight Of</i>							
<i>Paving Mix. %</i>							
<i>Batch aggregate component</i>	± 1.0%						
<b>AASHTO T 164</b>	<p>Method A</p> <p><b>APPARATUS:</b></p> <p>Section 6. ConnDOT in addition to AASHTO apparatus includes infrared lamp and substitutes graduated cylinder with a 1000 ml flask.</p> <p>Section 7. Reagent. Must be Conn D.O.T. approved *****</p> <p>Article 9.2.1 all classes of HMA except Class 4 are scooped from the sample container.</p> <p>Section 10.1 and 10.2 Moisture content is periodically determined on production samples as plant conditions require.</p> <p>Section 12.1 See Section 10</p> <p>Section 12.5 Filter paper is dried and weighed in field using heat lamp or oven when an ash test is performed.</p> <p>Article 12.6.1 Extract is collected if an ash test is to be performed</p> <p>Article 12.6.2 Performed on selected samples only</p> <p>Article 12.6.3 A three test running average is used to correct for total binder in HMA.</p>						

<p><b>AASHTO T 168</b></p>	<p>Samples are taken at one point in the pile. All types of bituminous concrete except Class 4 are scooped from the sample container instead of remixing and quartering. (Method verified by laboratory study).</p> <p>Samples from a hauling vehicle are taken from only one point instead of three as specified.</p> <p>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.</p> <p>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 determine conformance to material specifications and to prioritize inspections by laboratory personnel.</p>
<p><b>AASHTO T 170</b></p>	<p>Recovery of Asphalt from Solution by Abson Method Delete the referenced section and replace with the language shown:</p> <p>5.0 Apparatus</p> <p>5.1 Centrifuge- batch unit capable of exerting a minimum centrifugal force of 770 times gravity or a continuous unit capable of exerting a minimum force of 3000 times gravity.</p> <p>5.2. Centrifuge tubes- a 250mL wide mouth bottles</p> <p>5.3.1. Extraction Flasks- a 500mL three angle necks and joints flask with 24/40 side necks.</p> <p>5.3.2. Glass Tubing- Heat resistant glass tubing, having 10mm inside diameter and a gooseneck shaped delivery tube, for connecting the flask to the condenser.</p> <p>5.3.3. Inlet Aeration Tube- 180mm in length having a 6mm outside diameter with a 10-mm bulb carrying six staggered holes approximately 1.5 mm in diameter.</p> <p>5.3.4. Electric Heating Mantle- Variable transformer to fit a 500 mL flask.</p> <p>5.3.5 Water-jacketed Condenser- Allihn type, with 200 mm minimum jacket length.</p> <p>5.3.6. Thermometer- an ASTM low distillation thermometer having a range of -2 to 300°C (30 to 580°F), respectively, and conforming to the requirements in ASTM specification E 1</p> <p>5.3.7. Gas Flow Meter- A type capable of indicating a gas flow of up to 1000 mL per minute.</p> <p>5.3.8. Corks- No. 20</p> <p>5.3.9. Flexible Elastomeric Tubing</p> <p>5.3.10. Separatory Funnel-500 ml capacity or larger</p> <p>6.0. Reagents and Materials</p> <p>6.1. Carbon Dioxide Gas- A pressurized tank, with pressure-reducing valve. The solvent for extracting the asphalt from the mixtures should be reagent grade trichloroethylene or methylene chloride. Other solvents may affect the bitumen to change its properties significantly from that as it exists in the mixture.</p> <p>8. Sample</p>

	<p>8.1. The sample shall consist of the solution from previous extraction of a sample of sufficient mass to result in approximately 105 to 110 g of recovered bitumen.</p> <p>9. Procedure</p> <p>9.1. The entire procedure, from the start of the extraction to the final recovery, must be completed within 8 hours.</p> <p>9.2 Centrifuge the solution from the previous extraction for a minimum of 30 minutes at 770 times gravity (approx. 2700rpm) in 250 mL wide mouth bottles. Assemble the apparatus as shown in Figure 1 with the separatory funnel in the thermometer hole in the cork. Lower the aeration tube so that the bulb is in contact with the bottom of the flask. Fill the separatory funnel with the centrifuged solution and open the stopcock to fill the flask approximately one-half full of solvent mixture. Apply low heat to the flask and start distillation. Introduce carbon dioxide gas at a low rate (approx. 100mL/minute) to provide agitation and prevent foaming. Adjust the funnel stopcock to introduce fresh solvent at a rate that will keep the flask approximately one half full during distillation, adding additional solvent mixture to the funnel into all solvent has been introduced into the distillation flask. When the temperature reaches 157 to 160°C (315 to 320°F), increase the carbon dioxide gas flow to approximately 900mL/minute. Maintain this gas flow rate for 20 minutes while also maintaining the temperature of the residue in the flask at 160 to 166°C (320 to 330°F).</p>
<b>AASHTO T 195</b>	Section 4.3 only one truck load of mixture is sampled. Samples are taken from opposite sides of the load.
<b>AASHTO T 209</b>	<p>Article 9.5.1 Bowl is suspended 2 minutes prior to reading rather than 10 minutes. This makes no significant difference in results.</p> <p>Section 7.2 The average of two bowls is used proportionally in order to satisfy minimum mass requirements.</p> <p>8.3 Omit Pycnometer method.</p>
<b>AASHTO T 245</b>	<p>Article 3.3.2 A compacting temperature of 140 to 146°C (284 to 295°F) is used</p> <p>Article 3.5.2 Seventy-five (75) blows per side are used on Classes 1 and 12, per ConnDOT design requirements</p> <p>Section 3.1 for production testing: one specimen is molded for each extraction test for production over 275 metric tons/day (300 tons/day). Other mixtures: two specimens per extraction test.</p>
<b>AASHTO T 283</b>	This protocol shall be performed at the HMA plant in accordance with section 7 on HMA S0.5 (all design levels) by the Contractor or their representative at a time designated by the Division Chief. TSR testing is required on all classes and design levels during the design phase and on all HMA S0.5 design levels during the production phase.

<p><b>AASHTO T 308</b></p>	<p>In addition to the standard testing procedure, the Department has adopted a procedure that addresses a correction factor that is calculated using the composite aggregate percentages (<b>Composite Aggregate Correction Factor Method (CACF)</b>).</p> <p>The aggregate is burned in compliance with the standard AASHTO procedure Method A exclusively. All modifications are listed for this method only.</p> <p>A2.2 Omit A2.3 Omit A2.4 Omit. Replace with: Determine an aggregate gradation for each aggregate component "blank" in accordance with T30. A2.5 Omit. Replace with: The individual aggregate samples are to be dried in an oven at a maximum temperature of <math>148 \pm 5^{\circ}\text{C}</math> (<math>300 \pm 9^{\circ}\text{F}</math>) to a constant weight. RAP samples are to be oven dried at a maximum temperature of <math>110 \pm 5^{\circ}\text{C}</math> (<math>230 \pm 9^{\circ}\text{F}</math>) to a constant weight. RAP samples will be burned for total binder content only and not to arrive at a correction factor for a mixture. A2.6 Omit. A2.7 Omit A2.8 Omit A2.8.1 Omit Note 2 A2.9 Omit. Replace with: Perform a gradation analysis on the residual aggregate in accordance with T30 and compare it to the gradation performed prior to burning. A2.9.1 Omit A2.9.2 Omit</p> <p>The correction factors for each size aggregate are provided by the Contractor to the Engineer prior to the Annual Plant Inspection. The Composite Aggregate Correction Factor (CACF) for any mixture may be calculated by summing the result of the correction factor for each individual aggregate multiplied by the percentage of that aggregate in the overall mixture. (Note: All correction factors must be re-calculated every time the percentage of any aggregate changes within the mixture.)</p> <p>In addition to the standard testing procedure, the Department has adopted a procedure that addresses the time involved between sampling the hot mix asphalt specimen and the beginning of the test. 6.3 Omit. Replace with: The test specimen must be ready to be placed in an approved ignition furnace for testing within ten minutes of being obtained from the hauling vehicle and the test shall start immediately after.</p>
<p><b>AASHTO T 331</b></p>	<p>6.1 Cores are dried to a constant mass prior to testing using a core-dry machine.</p>

**AASHTO Standard Recommended Practices**

Reference	Modification
<p><b>AASHTO R 35</b></p>	<p><b><u>Volumetric Calculations of VMA and Correction Factor</u></b>  VMA<sub>a</sub> - Voids in Mineral Aggregate from (V<sub>a</sub> + V<sub>b</sub>e) the mix:</p> <p>A. VMA calculated from the mix shall be determined in accordance with <i>Formula 5.16.1A</i>. It can be correlated that the VMA calculated from AASHTO R-35 is equivalent to VMA<sub>a</sub> when the <math>Pb_a \times (100 - Pb_t) / 100</math> is known and substituted for <math>A_{cf}</math>, as shown in <i>Formula 5.16.1A (ii)</i>. Test results from VMA<sub>a</sub> shall therefore be required to meet all contract specifications. Values of VMA<sub>a</sub> that are out of specifications during production may be cause for the contractor to determine assignable reason, take corrective action, and modify the Job Mix Formula (JMF), as needed. Continued VMA<sub>a</sub> data that is out of specifications may be cause for the Engineer to order cessation of supply.</p> <p><i>Formula 5.16.1A</i>. Determining the VMA of HMA by the mix or air voids &amp; effective binder method:</p> $VMA_a = V_a + \left[ \frac{(Gmb_d \times (Pb_t - A_{cf}))}{G_b} \right]$ <p>Where: VMA<sub>a</sub> = VMA calculated from plant production mix (V<sub>a</sub> + V<sub>b</sub>e)  Gmb<sub>d</sub> = Bulk specific gravity as determined by AASHTO T 166(M)  Pb<sub>t</sub> = Total Binder Content (corrected) by AASHTO T 308(M)  A<sub>cf</sub> = Absorption correction factor provided by Contractor (refer to B. i and ii)</p> <p>B. Determining the HMA mix binder correction factor for each class by use of percent absorption of water by AASHTO T 84/85, AASHTO M 323 and D<sub>f</sub> method. This value shall be performed by the Contractor during the mix design only and submitted as a JMF value. Two methods for determining the A<sub>cf</sub> are shown, although method (i) will be the desired method to be used. Both methods are equivalent when the G<sub>sa</sub>, G<sub>sb</sub> and P<sub>wa</sub> are recent and valid for the mix.</p> <p>i. <math>A_{cf} = D_f \times P_{wa} \times (100 - Pb_t) / 100</math>  ii. <math>A_{cf} = (Pb_a \text{ from annual JMF submittal}) \times (100 - Pb_t) / 100</math></p> <p>Where: D<sub>f</sub> = as determined by Formula 5.16.1B.  P<sub>wa</sub> = as determined by AASHTO T 84/85  Pb<sub>a</sub> = as determined by AASHTO M 323 (from annual JMF submittal)  D<sub>f</sub> (Density Factor): The Contractor shall calculate the HMA mix design D<sub>f</sub> (derived from formula X1.2 APPENDIX X1 of AASHTO R 35) for each class of material, in accordance with <i>Formula 5.16.1B</i>.</p> <p><i>Formula 5.16.1B</i>. Determining the Density Factor (D<sub>f</sub>) of mix design HMA:</p>



	$D_f = \left( \frac{G_{se} - G_{sb}}{G_{sa} - G_{sb}} \right)$ <p>Where:  D<sub>f</sub> = Density Factor or multiplier determined by AASHTO R-35(M)  G<sub>se</sub> = Effective Specific Gravity determined by AASHTO M-323 at plant  G<sub>sa</sub> = Apparent Specific Gravity determined by AASHTO T 84/85 of mix design  G<sub>sb</sub> = Bulk Specific Gravity determined by AASHTO T 84/85 of mix design</p>
<b>AASHTO R 26</b>	<p>Quality Control Plans must be formatted in accordance with AASHTO R 26, certifying suppliers of performance-graded asphalt binders, Section 9.0, Suppliers Quality Control Plan, and "NEAUPG Model PGAB QC Plan."</p> <ol style="list-style-type: none"> <li>1. The Department requires that 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.</li> <li>2. Sampling of asphalt binders should be done under the supervision of qualified technician. NECTP "Manual of Practice," Chapter 2 Page 2-4 (Key Issues 1-8).</li> <li>3. A copy of the Manual of Practice for testing asphalt binders in accordance with the Superpave PG Grading system shall be in the testing laboratory.</li> <li>4. All laboratories testing binders for the Department are required to be accredited by the AASHTO Materials Reference Laboratory (AMRL).</li> <li>5. 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.</li> <li>6. 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.</li> </ol> <p>Suppliers shall provide AASHTO M-320 Table 2 testing at a minimum of once per month on one sample of material. Each supplier shall rotate the PG grade each month (including PMA), so that data can be collected for all the grades produced.</p>

**ITEM #0201030A - CLEARING AND GRUBBING (SITE 1)**  
**ITEM #0201031A - CLEARING AND GRUBBING (SITE 2)**

All of the provisions of Section 2.01 of the Standard Specifications shall apply.

**Site 1**

This item will also include the removal of debris and remnants of existing stone wall on City of Groton's right-of-way.

There will be no separate payment for this work as it is considered included in this item's lump sum price.

**Site 2**

Clearing and grubbing activities shall not damage or disturb the existing security fence owned by Electric Boat Corporation. If fence is damaged in any way, the Contractor shall immediately contact Brian Bogar, Electric Boat Facilities, 860-433-9261, [bbogar@gdeb.com](mailto:bbogar@gdeb.com).

This item will also include removal of debris on Electric Boat's property per plans.

There will be no separate payment for this work as it is considered included in this item's lump sum price.

2536-13-03-n2019-spec 0201030a - clearing and grubbing.doc

## **ITEM #0216003A – PERVIOUS STRUCTURE BACKFILL**

**Description:** Pervious structure backfill shall include the furnishing, placing, and compaction of pervious material adjacent to structures. This item shall also consist of furnishing and placing crushed stone or gravel in burlap bags at the inlet ends of weep holes in structures to the dimensions indicated on the plans or as ordered by the Engineer.

**Material:** Pervious structure backfill shall conform to the requirements of Article M.02.05.

The materials for bagged stone shall conform to the following requirements:

- (a) The crushed stone or gravel shall conform to the grading requirements of Article M.01.01 for No. 3 or No. 4 coarse aggregate or a mixture of both.
- (b) The bag shall be of burlap and shall be large enough to contain one cubic foot of loosely packed granular material.

**Construction Methods:** Pervious structure backfill shall be placed adjacent to abutments, retaining walls, box culverts, and elsewhere as called for. It shall be placed above a plane extending on a 2 to 1 slope from the upper edge of the footing to the top of the embankment, or as shown on the plans. Where the face of undisturbed material is above or beneath this slope plane, the amount of pervious structure backfill shall be decreased or increased accordingly, if ordered by the Engineer.

In filling behind abutments, retaining walls, box culverts, or other structures, the fill is placed against undisturbed material, or against compacted embankments having a length in a direction at right angles to the abutment wall or culvert not less than twice the height of the structure against which the fill is placed. The slope of the embankment on which the pervious structure backfill is to be placed shall be plowed deeply or cut into steps before and during the placing of pervious structure backfill so both types of material will be thoroughly bonded and compacted.

Each layer of pervious structure backfill shall be spread to a thickness not exceeding 6 inches in depth after compaction and shall be thoroughly compacted as directed by the Engineer by the use of power rollers or other motorized vehicular equipment, by tamping with mechanical rammers or vibrators, or by pneumatic tampers. Any equipment not principally manufactured for compaction purposes and equipment, which is not in proper working order in all respects, shall not be used within the area described above.

Special attention shall be given to compaction in places close to walls where motorized vehicular equipment cannot reach. Within 3 feet of the back face of walls and within a greater distance at angle points of walls, each layer of pervious structure backfill shall be compacted by mechanical rammers, vibrators, or pneumatic tampers.

The dry density of each layer of pervious structure backfill formed from broken or crushed stone, broken or crushed gravel or reclaimed miscellaneous aggregate free of bituminous concrete

shall have a dry density after compaction that is no less than 100 percent of the dry density for that material when tested in accordance with AASHTO T180, Method D. If a layer formed from reclaimed miscellaneous aggregate containing bituminous concrete is placed as pervious structure backfill, the wet density of this layer after compaction shall not be less than 100 percent of the wet density of that material when tested in accordance with AASHTO T180, Method D.

In this test, material retained on the ¾ inch sieve shall be replaced with material retained on the number 4 sieve, as noted as an option in the specifications for this test.

Each layer of the pervious structure backfill shall be compacted at optimum moisture content. No subsequent layer shall be placed until the specified compaction is obtained for the pervious layer.

Where weep holes are installed, bagged stone shall be placed around the inlet end of each weep hole, to prevent movement of the pervious material into the weep hole. Approximately one cubic foot of crushed stone or gravel shall be enclosed in each of the burlap bags. All bags shall then be securely tied at the neck with cord or wire so that the enclosed material is contained loosely. The filled bags shall be stacked at the weep holes to the dimensions shown on the plans or as directed by the Engineer. The bags shall be unbroken at the time pervious material is placed around them, and bags which are broken or burst prior to or during the placing of the pervious material shall be replaced at the expense of the contractor.

**Method of Measurement:** Payment lines for pervious structure backfill shall coincide with the limits of the compacted pervious structure backfill as actually placed and ordered by the Engineer. There shall be no direct payment for bagged stone, but the cost thereof shall be considered as included in the cost of the work for “Pervious Structure Backfill”.

**Basis of Payment: Pervious structure backfill** will be paid for the contract unit price per cubic yard for “Pervious Structure Backfill”, complete in place.

<u>Pay Item</u>	<u>Pay Unit</u>
Pervious Structure Backfill	C.Y.

## **ITEM #0216011A – FLOWABLE FILL**

### **Description:**

The work shall consist of furnishing, hauling, and placement of flowable fill, which will be used to fill between the existing spillway and proposed wall at the locations and to the limits indicated on the plans and as directed by the Engineer.

### **Materials:**

The material for the work shall conform to the requirements of Article M.03.01. Materials shall be recommended by the manufacturer.

Flowable fill shall be a mixture of Portland Cement, Fly Ash (optional), Fine Aggregates, Air Entraining agent, and Water.

The Contractor shall be responsible for producing a flowable fill mixture and adjusting their mixture design as called for by the circumstances or as directed by the Engineer.

There shall be a minimum air content of 8% in the flowable fill.

Flowable fill material shall be proportioned to produce a 28-day compressive strength of approximately 50-100 psi.

### **Construction Methods:**

Flowable fill shall be produced and delivered using concrete construction equipment. Placing flowable fill shall be by chute, pumping, or other method approved by the Engineer.

Mixing and placing of flowable fill shall only begin if the air temperature is at least 35 degrees Fahrenheit and rising. At time of placement, flowable fill shall have a temperature of at least 40 degrees Fahrenheit. Mixing and placing shall stop when the air temperature is 40 Fahrenheit Celsius and falling.

The flowable fill shall be placed in a manner so that voids are eliminated or at least minimized within the abandoned pipe to the satisfaction of the Engineer.

The Contractor shall furnish the flowable fill necessary to cast several cylinders from each day's pour for the 28-day compressive-strength determinations. The necessary personnel and forms for casting these specimens will be furnished by the Contractor independent testing lab and the number of specimens required will be specified by the Engineer. These cylinders shall be cured in an approved concrete cylinder box, or boxes, as described in Section 6.12.

**Method of Measurement:**

The quantity of flowable fill shall be the actual volume in cubic yards completed and accepted to fill the abandoned pipe and manholes as shown on the plans or as ordered by the Engineer.

**Basis of Payment:**

This material will be paid for at the contract unit price per cubic yard for "Flowable Fill" complete in place, which price shall include all materials, equipment, tools, labor and work incidental thereto.

Pay Item  
Flowable Fill

Pay Unit  
CY

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## **ITEM #0219011A – SEDIMENTATION CONTROL AT CATCH BASIN**

### **Description:**

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

### **Materials:**

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

#### Siltsack®

SI Geosolutions:

[www.sigeosolutions.com](http://www.sigeosolutions.com)

(800)621-0444

#### Dandy Sack™

Dandy Products Inc.

P.O. Box 1980

Westerville, Ohio 43086

Phone: 800-591-2284

Fax: 740-881-2791

Email: [dlc@dandyproducts.com](mailto:dlc@dandyproducts.com)

Website: [www.dandyproducts.com](http://www.dandyproducts.com)

#### FLeXstorm Inlet Filters

Inlet & Pipe Protection

24137 W. 111th St - Unit A

Naperville, IL 60564

Telephone: (866) 287-8655

Fax: (630) 355-3477

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

**Construction Methods:**

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

**Method of Measurement:**

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

**Basis of Payment:**

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

<u>Description</u>	<u>Unit</u>
Sedimentation Control at Catch Basin	Ea.

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## **ITEM #0601445A - EMBANKMENT WALL (SITE NO. 1)**

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

**Retaining Wall Selection:** The Contractor shall select the Redi- Rock Retaining Wall blocks per the plans. The Engineer will reject any other proposed retaining wall blocks.

### **Design:**

1 - Design Computations: No design computations are required. Contractor shall follow typical details shown on the plans.

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

1 - Facing Block: The facing block can be precast (wet cast) concrete and shall be the color specified on the plans. The block shall meet the following requirements:

- a. Precast Concrete: Shall conform to the requirements of Section M.03 and as follows:
  - i. The minimum compressive strength of the block shall be 4000 psi measured at 28 days.
  - ii. All precast concrete components shall be air-entrained composed of portland cement, fine and coarse aggregates, admixtures and water. The air-entraining feature may be obtained by the use of either air-entraining portland cement or an approved air-entraining admixture. The entrained-air content shall be not less than four percent or more than seven percent.

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

3 - Backfill Material: The material for backfill shall be Pervious Structure Backfill conforming to the requirements of Articles M.02.01 and M.02.06.

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

5. – Granular Fill: This material shall conform to the requirements of Article M.02.01.

6. – Pervious Structure Backfill and Bagged Stone: This material shall conform to the requirements of Section 2.16.02.

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

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

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

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

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

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

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

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

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

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

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

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

At the end of each day's operation, the Contractor shall slope the last level of backfill away from the wall facing to direct runoff of rainwater away from the wall face. The Contractor shall control and divert runoff at the ends of the wall such that erosion or washout of the wall section does not occur. In addition, the Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

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

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

**Method of Measurement:** This work will be paid for on a lump sum basis and will not be measured for payment.

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

1. Excavation for the wall
2. Design and Construction of temporary earth retaining systems for the support of the slope during construction.
3. Construction of the Embankment Wall, including the unreinforced concrete leveling pad.
4. The furnishing, placing and compacting of pervious structure backfill within the maximum payment lines.
5. The furnishing and placing of backfill drainage systems for the wall.
6. Any other work and materials shown on the plans for the construction of the wall.

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

If bedrock or large boulders (greater than one cubic yard) are encountered in the excavation, the payment for its removal will be made under the item "Structure Excavation - Rock".

## **ITEM # 0703013A - SPECIAL RIPRAP**

### **Description:**

Work under this item shall consist of placing riprap and grouting with cement grout at the locations shown on the plans, in accordance with the plans, and as directed by the Engineer.

### **Materials:**

#### A. Riprap

Materials for this item shall consist of sound, tough, durable and angular rock, free from decomposed stones or other defects impairing its durability. The size of a stone as hereinafter specified shall be its least dimension. Broken concrete or rounded stones are not acceptable. The type of material to be used shall be as noted on the plans, in the special provisions or as may be ordered by the Engineer.

1. This material shall conform to the following gradation:

<u>Stone Size</u>	<u>% of the weight</u>
10 inches	0
6 inches to 10 inches	20-50
4 inches to 6 inches	30-60
2 inches to 4 inches	30-40
1 inch to 2 inches	10-20
Less than 1 inch	0-10

#### B. Grout

Provide grout that meets the following requirements:

1. Minimum 28-day compressive strength of 3000 psi.
2. Minimum air content of 5 percent.
3. Use the approved mix design desired by the contractor.
4. Use a minimum of six sacks of type II Portland cement per cubic yard of grout.
5. Submit a grout mix design that readily flows into the open spaces between the stones with the riprap gradation used.
6. Add 1.5 pounds of fibermesh or equivalent per cubic yard of grout.
7. Do not use calcium chloride admixtures.

#### C. Grout materials

1. Portland cement: Use Portland cement conforming to Section M.03.01-3
2. Pozzolan:

- 2.1 Use Pozzolans conforming to Section 03055 and specification ASTM C 618. Class F, in amounts not to exceed 25 percent, based on absolute volume.
- 2.2 Use an equivalent amount of Portland cement in the grout mixture as a substitute.
3. Aggregates: Conform to the requirements of Section M.03.01-1 & 2
4. Water: Use water that conforms to requirement of Section M.03.01-4
5. Air-entraining admixtures: Refer to Section M.03.01-9a
6. Other admixtures: Refer to Section M.03.01-9b
7. Use products to clean rock surfaces that are known to be compatible with cementitious grouts. Use in accordance with manufacturer's instructions.

D. Bedding Materials

1. Use imported free-draining bedding aggregate material consisting of sand, gravel, or crushed stone meeting the following gradation. Do not use on-site materials.
2. Provide 6 inches of granular bedding aggregate material under the grouted riprap.
3. Use Granular Bedding Gradation according to AASHTO T 27 meeting Table 2 requirements.

Table 2

<b>Granular Bedding Gradation</b>	
<b>U.S. Standard Sieve Size</b>	<b>Percent by Weight <i>Passing</i> Square Mesh Sieves</b>
1½ - inch	100
¾ - inch	20-90
⅜ - inch	- - -
No. 4	0-20
No. 100	- - -
No. 200	0-3

**Construction Methods:**

A. Preparation

1. Install surface and ground water control measures as needed to perform work in dry conditions. Water control measures include, but are not limited to diversions, culverts, sumps with pumps or other means necessary to maintain the level of groundwater below subgrade elevation and to divert surface water away from the work area.
2. Remove all topsoil, loose excavated materials, trees, timber debris, soft yielding material and concrete debris, and other objectionable materials from beneath the areas where the grouted riprap is to be placed and as shown on the

plans. Do not block natural drainage layers or horizons within the channel bottom.

3. Place any approved on-site material and compact as specified to the designated subgrade elevation.
4. Spread fill materials uniformly minimizing segregation.
5. Compact subgrade to 95 percent maximum density, AASHTO T 99, or to a 70 percent relative maximum density, AASHTO T 180.
6. Smooth graded areas maintaining specified slope with no more than 3 inches change unless closer tolerances are specified.
7. Notify the Engineer before placing riprap elements over bedding layer.
8. Do not place riprap until the Engineer has verified compaction requirements.

B. Placement of Bedding Materials

1. Place free-draining bedding aggregate on subgrade
2. Maintain 3 inches minimum bedding aggregate thickness.
3. Finish the surface of the drainage aggregate free of mounds.

C. Placement of Riprap Elements

1. Install the riprap in place of the specified depth.
  - 1.1 Distribute larger stones uniformly.
  - 1.2 Do not group stones as a substitute for larger stone.
  - 1.3 Arrange individual stones as necessary by use of equipment or grapple device or hand in order to maintain the specified gradation and interlock.
2. Provide adequate access when placing stones in the grout to lower portions of the stone to prevent voids from forming.
  - 2.1 Place stones to secure a stone mass with the minimum thickness and height indicated.
3. Provide a riprap surface conforming to the lines and grades and adjacent ground surfaces as shown on the plans.
  - 3.1 Manipulate the stone if necessary to secure a regular surface of graded size and mass stability.
  - 3.2 Remove any stones projecting above the finished design grade more than 10 percent of the stone layer thickness.
  - 3.3 Make smooth transition without cutting or breaking stones.
4. Place all stones in a dry condition beginning at the toe of the slope or other lowest point.

5. Form all outer edges and the top of grouted riprap where construction terminates so that the surface of the work is embedded and even with adjacent slope or ground.

D. Riprap Grouting

1. Do not place grout mix when the daily minimum temperature is less than 40 degrees F.
  - 1.1 Maintain at minimum temperature of 50 degrees F and not more than 90 degrees F during the placement and the curing periods.
2. Do not place on frozen surfaces.
  - 2.1 Cover the grouted stone and heat within a range of 50 and 90 degrees F for a minimum of 24 hours prior to placing grouting materials when temperature is below 40 degrees F and dropping.
3. Thoroughly wet riprap, bedrock, and foundation surfaces.
  - 3.1 Allow excess water to drain.
  - 3.2 Achieve a dry saturated surface condition.
4. Use low pressure to inject grout into the voids between stones by pumping through a maximum 2-inch diameter hose.
  - 4.1 Stop the flow at any time.
5. Deposit grout to fill all voids as stones are placed.
  - 5.1 Secure maximum compaction and density of the grout.
6. Place the grout from bottom to top and use sufficient grout to fill all voids between the stones.
  - 6.1 Fill all voids with grout from the subgrade level through the stone layer.
  - 6.2 Grout must penetrate to subgrade.
  - 6.3 Use a "pencil" vibrator fill all voids between and under stones.
7. Leave grout joints recessed below the surface of the adjacent stones.
  - 7.1 Leave the top surface of the stones fully exposed.
  - 7.2 Immediately remove all excess grout with a stiff brush augmented with a cleaning agent if needed.
8. Do not use grout to cover the surface of the stone.



- 8.1 Construct the grouted riprap having a rustic appearance.
- 8.2 Match the workmanship of the sample panel.
9. Do not clog the filter drain materials.
10. Do not re-temper grout mix by adding water in field.

E. Curing and Protection

1. Keep exposed surfaces continuously moist for the seven-day curing period.
2. Maintain moisture by sprinkling, fog spraying, or by covering with continuously moistened canvas, cloth mats, straw, sand or similar material.
  - 2.1 Protect the grout during the curing process without causing damage to the grout surface by erosion or other mechanisms during water or moist covering.

**Method of Measurement:**

This work shall be measured for payment by the actual number of cubic yards special riprap and bedding material and grout accepted in place, completed within the limits as shown on the plans, or as ordered by the Engineer.

**Basis of Payment:**

This work will be paid for at the contract unit price per cubic yard for “Special Riprap”, complete in place, which price shall include all equipment, riprap, bedding and grout, and all other tools and labor incidental thereto.

## **ITEM #0913959A - PROTECTIVE FENCE (8'-0" HIGH)**

**Description:** Work under this item shall consist of fabricating and installing a chain link fence as shown on the plans, as directed by the Engineer, and in accordance with these specifications.

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

1. **Chain Link Fabric:** The fabric shall be black, resin-clad (PVC) coated galvanized steel woven wire and be of the chain link type. It shall be No. 9 gage, Class 2b PVC coated wire woven to form a continuous fabric having a 2" mesh. The chain link fabric shall conform to the requirements in AASHTO M181, Section 3.1, Type IV Vinyl Coated Fabric with a knuckled selvage at the top and bottom.
2. **Posts and Rails:** Metal posts and rails shall be standard steel pipe conforming to the requirements of ASTM A53 (E or S Grade B) or with AAHTO M181, Grade 2. Round pipe used for rail connections shall be standard steel pipe conforming to the requirements of ASTM A53 (E or S Grade B). Posts and rails shall PVC coated inside and outside with the same PVC coating as the chain link mesh or shall be galvanized in conformance with Subarticle M.10.05-2 and have with the outside surface coated with the same PVC coating as the chain link mesh, color: black.
3. **Fence Fittings:** The fittings shall be malleable iron, pressed steel or aluminum alloy. All ferrous fittings shall be galvanized in conformance to the requirements of ASTM A153 and be PVC coated the same color of the chain link mesh.
4. **Non-shrink Grout:** Grout used to anchor fence posts in preformed holes shall be non-shrink and non-staining and shall conform to the requirements of Subarticle M.03.01-12.
5. **Silicone Joint Seal:** Joint seal placed around the base of the posts to seal the interface between the post and the non-shrink grout shall conform to the requirements of the special provision "Section 6.01 - Concrete for Structures."
6. **Wire Clamps and Tie Wires:** Wire clamps for fastening fabric to line posts shall not be less than 6 gauge. Tie wires or hog rings used to fasten the chain link fabric to the rails shall be not less than 9-gauge PVC coated (black) steel wire. 6 gage PVC coated, galvanized coiled spring tension wire with 9 gage PVC coated (black) hog rings @ 6 inches shall be installed along the bottom edge of chain link fence.
7. **Galvanizing Compound:** The galvanizing compound, used to repair areas damage during construction, shall be zinc dust-zinc oxide paint in conforming to the requirements of Federal Specification TT-P-641b or Military Specification MIL-P-21035.

8. Barbed Wire and brackets: The top of the fence shall have three (3) strands of barbed wire on appropriate post extensions.

The Contractor shall furnish a Materials Certificate and a Certificate of Compliance in conformance with the requirements of Article 1.06.07 for the following materials: posts, rails, bolts and washers.

**Construction Methods:** The protective fence shall be accurately fabricated and installed in accordance with the plans and as directed by the Engineer.

Before fabricating any materials, the Contractor shall submit shop drawings to the Engineer for approval in accordance with Article 1.05.03(b). These drawings shall include but not be limited to the following information: a layout plan showing all post spacing, all fence and attachment details, materials list, material designations, and the name and telephone number of a person to contact in case of questions.

Posts shall be centered in the preformed holes in the concrete and held plumb. Non-shrink grout shall then be placed in the annular space around the post, overfilling the hole to build the grout up above the surrounding concrete so water drains away from the post.

After the grout has completely set, place silicone joint sealant around the base of the post against the non-shrink grout to seal against moisture intrusion around the post.

Expansion posts, with sliding pipe, shall be installed at the locations indicated on the plans. All rails shall be erected to produce a smooth, continuous appearance with posts placed vertically and with all rails parallel to the grade of the wall. The fabric shall be stretched tightly between end posts and securely fastened. The fabric shall be attached to the rails and line posts as shown on the plans.

The coated fabric shall extend at its base into a longitudinal 2" deep by 4" wide slot in the top of the concrete wall. After installation the slot shall be grouted flush with the top of the wall to embed the coated fabric.

Coated fabric, fence posts, rails and fittings shall be handled with care so the coating is not damaged nor the appearance marred. Damage to the galvanized coating below the finish coating shall be repaired in accordance with ASTM A780 with two coats of galvanizing compound before repairing the finish coat. The final dry film thickness of the galvanizing compound shall be a minimum of 2 to 3 mils. Damage to coating shall be repaired as directed by the manufacturer.

**Method of Measurement:** This work will be measured for payment by the actual number of feet of protective fence, installed and accepted, measured from centerline to centerline of end posts.

**Basis of Payment:** This work will be paid for at the contract unit price per linear feet for "Protective Fence (8'-0" High)", complete in place, which price shall include all materials, equipment, tools and labor incidental thereto.

## **ITEM #0950005A – TURF ESTABLISHMENT**

All of the provisions of Section 9.50 of the Standard Specifications shall apply with the following exception:

**Article 9.50.02 - Materials:** Add the following:

Grass seed mixture for this project shall conform to the following:

Jackson Seed (1-800-688-7333) Pre-formulated Kentucky Bluegrass blend - "Heisman" or approved equivalent. Seeding rate to be 3-4 lbs. per 1000 sf.

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## **ITEM #0969060A - CONSTRUCTION FIELD OFFICE, SMALL**

**Description:** Under this item, adequate weatherproof office quarters shall be provided by the Contractor for the duration of the work, and if required, for a maximum of ninety days thereafter for the exclusive use of the Town and others who may be engaged to augment the Town's forces with relation to the contract. The office quarters shall be located convenient to the work site and installed in accordance with Article 1.08.02, this office shall be separated from any office occupied by the Contractor. Ownership and liability of the office quarters shall remain with the Contractor.

The construction field office shall be set up in a location directed by the Engineer and approved by the Town.

**Materials:** Materials shall be in like new condition for the purpose intended and shall be approved by the Engineer.

**Office Requirements:** This office shall have a minimum of 400 sq. ft. of floor space and a minimum ceiling height of 7 ft. A minimum of two outside doors is required.

Windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds and screens. The entrance shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the Town and will be kept in their possession while the office is being used by the Inspector and Town personnel.

The Contractor shall furnish lavatory and toilet facilities at a location convenient to the office quarters for the use of Inspector and Town personnel and such assistants as they may engage. He shall also supply lavatory and sanitary supplies as required.

The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office. If the field office space provided is in a permanent commercial structure, the external illumination requirements will not apply.

The Contractor shall provide the following additional equipment, facilities, and/or services at the Field Office on this project to include at least the following to the satisfaction of the Engineer:

**Parking Facility:** The Contractor shall provide adequate parking spaces for four vehicles on a paved surface, with surface drainage if needed. If paved parking does not exist adjacent to the field office, the Contractor shall provide a parking area of sufficient size to accommodate four vehicles. Construction of the parking area and driveway, if necessary, will consist of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel to serve the electrical requirements of the field office, including: lighting, general outlets, computer outlets, calculators etc., and meet the following minimum specifications:

- A. 120/240 volt, 1 phase, 3 wire.
- B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
- C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
- D. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles shall be installed at each computer workstation location.
- E. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles shall be installed, for use by the Telephone Company.
- F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
- G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120 volt, straight blade.
- H. After work is complete and prior to energizing, the Town of Plymouth Building Inspector must be contacted.

Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient heating, air conditioning and ventilation equipment to maintain a temperature range of 68°-80° Fahrenheit within the field office.

Telephone Service: This shall consist of the installation of the following:

- 2 - Telephone lines: one line for phone service and one line dedicated for the facsimile machine. The Contractor shall pay all charges except for toll calls made by Town personnel.

Internet Service: The Contractor shall provide and pay all charges for a complete installation of "Elite" High Speed (6.0 mbps) DSL wireless service.

The Following Furnishings Shall Be Provided In The Field Office:

- 2 - Suitable office desks with drawers, locks, and matching desk chairs that have pneumatic seat height adjustment and dual wheel casters on the legs or base.
- 2 - Office chairs.
- 4 - Cushioned folding chairs.
- 1 - Fire resistant cabinet (legal size/4 drawer), locking.
- 1 - Drafting, type table - 3 ft x 6 ft and supported by wall brackets and legs.
- 2 - Drafters' stools.
- 1 - Computer system as specified below under "Computer Hardware and Software".

- 1 - Combination computer laser wireless printer/ copier/ scanner/ fax, dry plain paper with automatic feeder and reducing capability. See "Computer Hardware and Software" below for laser printer requirements. All supplies, including printer cable, 5,000 sheet box of paper and maintenance shall be provided by the Contractor.
- 2 - Personal computer tables - 4 ft x 2.5 ft size and quality for the purpose intended.
- 1 - Digital camera as specified below under "Computer Hardware and Software".
- 1 - Hot and cold water dispensing unit and supply of cups and bottled water shall be supplied by the Contractor for the duration of the project.
- 2 - Electronic office type printing calculators capable of addition, subtraction, multiplication and division with memory and a supply of printing paper.
- 2 - Telephones.
- 1 - Telephone answering machine.
- 3 - Wastebaskets - one 30 gal and two 5 gal.
- 2 - Electric pencil sharpeners.
- \* - Fire extinguishers - provide and install type and number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.
- 1 - Vertical plan rack for 2 sets of 2 ft x 3 ft plans for each rack.

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project.

#### Computer Hardware and Software:

The Contractor shall deliver to the Engineer all supporting documentation for the software and hardware including any instructions or manuals. The Contractor shall provide original backup media for the software.

The Contractor shall provide the computer system with all required supplies, maintenance and repairs (including labor and parts) throughout the Contract life.

Once the Contract has been completed, the computer will remain the property of the Contractor. Prior to the return of any computer(s) to the Contractor, field personnel will coordinate with the Data Center personnel for the removal of Department owned equipment, software, data, and associated equipment.

#### A) Computer – Minimum Specification:

Processor – Intel® Core 2 Duo Processor (2.00 GHz, 800 MHz FSB 2MB L2 Cache)

Memory – 2 GB DIMM DDR2 667MHz.

Monitor – 19.0 inch LCD color monitor.

Graphics – Intel Graphics Media Accelerator 3100. or equivalent.

Hard Drive – 160 GB Ultra ATA hard drive (Western Digital, IBM or Seagate).

Floppy Drive – 3.5 inch 1.44MB diskette drive.

Optical Drive – CD-RW/DVD-RW Combo.

Multimedia Package – Integrated Sound Blaster Compatible AC97 Sound and speakers.

Case – Small Form or Mid Tower, capable of vertical or horizontal orientation.

Integrated Network Adapter – comparable to 3COM PCI 10/100 twisted pair Ethernet.  
Keyboard – 104+ Keyboard.  
Mouse – Optical 2-button mouse with scroll wheel.  
Operating System – Windows XP Professional Service Pack 2; Windows Vista Capable.  
Application Software – MS Office 2007 Professional Edition.  
Additional Software (Latest Releases, including subscription services for the life of the Contract.–

- Norton Anti-Virus and CD/DVD burning software (ROXIO or NERO),
- Adobe Acrobat Standard

Resource or Driver CD/DVD – CD/DVD with all drivers and resource information so that computer can be restored to original prior to shipment back to the contractor.  
Uninterrupted power supply – APC Back-UPS 500VA.

Note: All hardware components must be installed before delivery. All software documentation and CD-ROMs/DVD for Microsoft Windows XP Professional, Microsoft Office 2007 Professional Edition, and other software required software must be provided.

**B) Laser Printer – Minimum Specification:**

Print speed – 20 ppm.  
Resolution – 1,200 x 1,200 dpi.  
Paper size – Up to 216 mm x 355 mm (8.5 in x 14 in).  
RAM – 16 MB.  
Print Drivers – Must support HP PCL6 and HP PCL5e.  
Printer cable – 1.8 m (6 ft).

**C) Digital Camera – Minimum Specification:**

Optical – 5 mega pixel, with 3x optical zoom.  
Memory – 2 GB.  
Features – Date/time stamp feature.  
Connectivity – USB cable or memory card reader.  
Software – Must be compatible with Windows XP and Vista.  
Power – Rechargeable battery and charger.

The Contractor is responsible for service and repairs to all computer hardware. All repairs must be performed with-in 48 hours. If the repairs require more than a 48 hours then a replacement must be provided. All supplies, paper and maintenance for the computers, laptops, printers, copiers, and fax machines shall be provided by the Contractor.

**Maintenance:**

The Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters and surrounding area clean at all times. Exterior areas shall be mowed and cleaned of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking and walkway areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting



and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

**Method of Measurement:** The furnishing and maintenance of the construction field office will be measured for payment by the number of calendar months that the office is in place and in operation, measured to the nearest month.

**Basis of Payment:** The furnishing and maintenance of the construction field office will be paid at the listed unit price per month for “Construction Field Office, Medium”, which price shall include all material, equipment, labor, utility services and work incidental thereto.

The cost of providing the parking area, external illumination, trash removal and snow and ice removal shall be included in the monthly unit price bid for the item “Construction Field Office, Small”.

<u>Pay Item</u>	<u>Pay Unit</u>
Construction Field Office, Small	Month

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## **ITEM #0971001A - MAINTENANCE AND PROTECTION OF TRAFFIC**

### **Article 9.71.01 - Description is supplemented as follows:**

The Contractor shall maintain and protect traffic as follows and as limited in the Special Provision "Prosecution and Progress":

The Contractor shall maintain and protect traffic in accordance with the current edition of "The Manual on Uniform Traffic Control Devices (MUTCD), Part VI", The portions of streets over which traffic is maintained shall be kept in such condition that traffic will be safely and adequately accommodated. Sidewalks outside the limits of construction are to be kept free of excavated materials, tool, machinery and other subjects that will impede or endanger pedestrian traffic.

The Contractor shall furnish erect, light and maintain such signs, barricades, barrels, flashers and warning lights as needed or directed by the Engineer, for the regulation and protection of traffic and pedestrians. Such signs, barricades, barrels, flashers, and warning lights shall be used to safely and adequately keep pedestrians, including handicapped persons, and vehicles from equipment, materials, obstacles, excavations, and newly constructed structures.

The Contractor shall sweep areas as required and/or directed by the Engineer.

At no time, unless otherwise approved by the Engineer, shall the Contractor close or cause to be closed any portion of roadways beyond what is stipulated herein, or on the plans, as necessary to perform the work.

The Contractor shall be required to provide and/or relocate any required roadway safety measures (e.g. Construction Barricades, Traffic Cones, Drums, etc.) as shown on the plans or as directed by the Engineer or Town. The costs for these measures will be measured and paid for under those specific contract items.

### **Thames Street and Side Streets**

Contractor shall follow detour and closure plan.

### **Commercial and Residential Driveways**

The Contractor shall maintain access to and egress from all commercial, residential, school and cemetery driveways throughout the project limits unless the Contractor has first negotiated alternate arrangements with the property owners or business proprietors or as otherwise noted on the plans. All driveways shall be accessible to delivery trucks at all times throughout construction. Driveway construction shall be coordinated with the property owners. At a minimum, temporary graded surfaces shall consist of subbase, processed aggregate base, granular fill, or other suitable materials approved by the Engineer. 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. The

cost for installation and maintenance of all such temporary access shall be included in the Maintenance and Protection of Traffic item. If temporary access is to be provided longer than five days, then a temporary bituminous concrete driveway will be installed in accordance with the specifications and paid for under "Maintenance and Protection of Traffic".

**Article 9.71.03 - Construction Method is supplemented as follows:**

**General**

Unpaved travel paths will only be permitted for areas requiring full depth and full width reconstruction, in which case, the Contractor will be allowed to maintain traffic on processed aggregate for a duration not to exceed 10 calendar days. The unpaved section shall be the full width of the road and perpendicular to the travel lanes. Opposing traffic lane dividers shall be used as a centerline.

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

The Contractor shall schedule operations so that pavement removal and roadway resurfacing shall be completed full width across a roadway (bridge) section by the end of a workday (work night), or as directed by the Engineer.

When the installation of all intermediate courses of bituminous concrete pavement is completed for the entire roadway, the Contractor shall install the final course of bituminous concrete pavement.

When the Contractor is excavating adjacent to the roadway, the Contractor shall provide a 3-foot shoulder between the work area and travel lanes, with traffic drums spaced every 50 feet. At the end of the workday, if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary traversable slope of 4:1 or flatter that is acceptable to the Engineer.

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

Construction vehicles entering travel lanes at speeds less than the posted speed are interfering with traffic and shall not be allowed without a lane closure. The lane closure shall be of sufficient length to allow vehicles to enter or exit the work area at posted speeds, in order to merge with existing traffic.

### **Existing Signing**

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

### **Signing Patterns**

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory.

### **Pavement Markings - Limited Access Highways, Turning Roadways and Ramps**

During construction, the Contractor shall maintain all pavement markings throughout the limits of the project.

### **Interim Pavement Markings**

The Contractor shall install painted pavement markings, which shall include lane lines (broken lines), edge lines, stop bars, lane-use arrows and gore markings, on each intermediate course of bituminous concrete pavement and on any milled surface by the end of the work day/night. All painted pavement markings will be paid under the appropriate items.

If the Contractor does not install permanent Epoxy Resin Pavement Markings by the end of the work day/night on exit ramps where the final course of bituminous concrete pavement has been installed, the Contractor shall install temporary 12-inch-wide white stop bars. The temporary stop bars shall consist of Temporary Plastic Pavement Marking Tape and shall be installed by the end of the work day/night. 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 these markings when the permanent Epoxy Resin Pavement Markings are 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" after such time as determined by the Engineer.

### **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, 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, 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; 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" 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 19 through 25 may be used for moving operations such as line striping, pothole 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 DOT Construction, Connecticut State Police (Local Barracks), Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the traffic operations, lines of responsibility, and operating guidelines which will be used on the project. Other work zone safety meetings during the course of the project should be scheduled as needed.
- 1.b) A Work Zone Safety Meeting Agenda shall be developed and used at the meeting to outline the anticipated traffic control issues during the construction of this project. Any issues that can't be resolved at these meetings will be brought to the attention of the District Engineer and the Office of Construction. The agenda should include:
- Review Project scope of work and time
  - Review Section 1.08, Prosecution and Progress
  - Review Section 9.70, Trafficpersons
  - Review Section 9.71, Maintenance and Protection of Traffic
  - Review Contractor's schedule and method of operations.
  - Review areas of special concern: ramps, turning roadways, medians, lane drops, etc.
  - Open discussion of work zone questions and issues
  - Discussion of review and approval process for changes in contract requirements as they relate to work zone areas

## **SECTION 2. GENERAL**

- 2.a) If the required minimum number of signs and equipment (i.e. one High Mounted Internally Illuminated Flashing Arrow for each lane closed, two TMAs, Changeable Message Sign, etc.) are not available; the traffic control pattern shall not be installed.
- 2.b) The Contractor shall have back-up equipment (TMAs, High Mounted Internally Illuminated Flashing Arrow, Changeable Message Sign, construction signs, cones/drums, etc.) available at all times in case of mechanical failures, etc. The only exception to this is in the case of sudden equipment breakdowns in which the pattern may be installed but the Contractor must provide replacement equipment within 24 hours.
- 2.c) Failure of the Contractor to have the required minimum number of signs, personnel and equipment, which results in the pattern not being installed, shall not be a reason for a time extension or claim for loss time.
- 2.d) In cases of legitimate differences of opinion between the Contractor and the Inspection staff, the Inspection staff shall err on the side of safety. The matter shall be brought to the District Office 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 advance 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 advance 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) Temporary road closures using Rolling Road Blocks (RRB) may be allowed on limited access highways for operations associated with the installation and removal of temporary lane closures. RRB may be allowed for the installation and removal of lead signs and lane tapers only and shall meet the following requirements:
- RRB may not start prior to the time allowed in the contract Limitations of Operation for sign pattern installation. Sign pattern removal must be complete prior to the time indicated in the Limitations of Operation for restoring the lanes to traffic.
  - On limited access highways with 4 lanes or more, a RRB may not start until the Limitations of Operation Chart allows a 2-lane closure. In areas with good sight lines and full shoulders, opposite side lead signs should be installed in a separate operation.
  - Truck-Mounted Impact Attenuators (TMAs) equipped with arrow boards shall be used to slow traffic to implement the RRB. State Police Officers in marked vehicles may be used to support the implementation of the RRB. The RRB shall start by having all vehicles, including Truck-Mounted Impact Attenuators TMAs and police vehicles leave the shoulder or on-ramp and accelerate to a normal roadway speeds in each lane, then the vehicles will position themselves side by side and decelerate to the RRB speed on the highway.
  - An additional Truck-Mounted Impact Attenuator TMAs equipped with a Portable Changeable Message Sign shall be utilized to advise the motorists that sign pattern installation / removal is underway. The Pre-Warning Vehicle (PWV) should be initially positioned in the right shoulder ½ mile prior to the RRB operation. If a traffic queue reaches the PWV's initial location, the contractor shall slowly reverse the PWV along the shoulder to position itself prior to the new back of queue. A Pre-Warning Vehicle, as specified elsewhere in the contract, shall be utilized to advise the motorists that sign pattern installation / removal is underway.
  - The RRB duration shall not exceed 15 minutes from start of the traffic block until all lanes are opened as designated in the Limitation of Operation chart. If the RRB duration exceeds 15 minutes on 2 successive shifts, no further RRB will be allowed until the Contractor obtains approval for a revised installation procedure from the respective construction District.

- RRB should not be utilized to expand a lane closure pattern to an additional lane during the shift. The workers and equipment required to implement the additional lane closure should be staged from within the closed lane. Attenuator trucks (and State Police if available) should be used to protect the workers installing the taper in the additional lane.
  - Exceptions to these work procedures may be submitted to the District Office for consideration. A minimum of 2 business days should be allowed for review and approval by the District.
  - The RRB procedures (including any approved exceptions) will be reviewed and discussed by the inspection team and the Contractor in advance of the work. The implementation of the agreed upon plan will be reviewed with the State Police during the Work Zone Safety meeting held before each shift involving temporary lane closures. If the State Police determine that alternative procedures should be implemented for traffic control during the work shift, the Department and Contractor will attempt to resolve any discrepancies with the duty sergeant at the Troop. If the discrepancies are unable to be resolved prior to the start of the shift, the work will proceed as recommended by the Department Trooper. Any unresolved issues will be addressed the following day.
- 3.e) The Contractor must adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.
- 3.f) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging/exiting with/from the main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.
- 3.g) Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.
- 3.h) On limited access roadways, workers are prohibited from crossing the travel lanes to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.

**SECTION 4. USE OF HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW**

- 4.a) On limited access roadways, one Flashing Arrow shall be used for each lane that is closed. The Flashing Arrow shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the traffic control plan. For multiple lane closures, one Flashing Arrow is required for each lane closed. If conditions warrant, additional Flashing Arrows should be employed (i.e.: curves, major ramps, etc.).
- 4.b) On non-limited access roadways, the use of a Flashing Arrow for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the Flashing Arrow.

- 4.c) The Flashing Arrow shall not be used on two lane, two-way roadways for temporary alternating one-way traffic operations.
- 4.d) The Flashing Arrow board display shall be in the “arrow” mode for lane closure tapers and in the “caution” mode (four corners) for shoulder work, blocking the shoulder, or roadside work near the shoulder. The Flashing Arrow shall be in the “caution” mode when it is positioned in the closed lane.
- 4.e) The Flashing Arrow shall not be used on a multi-lane roadway to laterally shift all lanes of traffic, because unnecessary lane changing may result.

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

- 5.a) For lane closures on limited access roadways, a minimum of two TMAs shall be used to install and remove traffic control patterns. If two TMAs are not available, the pattern shall not be installed.
- 5.b) On non-limited access roadways, the use of TMAs to install and remove patterns closing a lane(s) is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to utilize the TMAs.
- 5.c) Generally, to establish the advance and transition signing, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane. The flashing arrow board mounted on the TMA should be in the “flashing arrow” mode when taking the lane. The sign truck and workers should be immediately ahead of the second TMA. In no case shall the TMA be used as the sign truck or a work truck. Once the transition is in place, the TMAs shall travel in the closed lane until all Changeable Message Signs, signs, Flashing Arrows, and cones/drums are installed. The flashing arrow board mounted on the TMA should be in the “caution” mode when traveling in the closed lane.
- 5.d) A TMA shall be placed prior to the first work area in the pattern. If there are multiple work areas within the same pattern, then additional TMAs shall be positioned at each additional work area as needed. The flashing arrow board mounted on the TMA should be in the “caution” mode when in the closed lane.
- 5.e) TMAs shall be positioned a sufficient distance prior to the workers or equipment being protected to allow for appropriate vehicle roll-ahead in the event that the TMA is hit, but not so far that an errant vehicle could travel around the TMA and into the work area. For additional placement and use details, refer to the specification entitled “Truck-Mounted or Trailer-Mounted Impact Attenuator”. Some operations, such as paving and concrete repairs, do not allow for placement of the TMA(s) within the specified distances. In these situations, the TMA(s) should be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.
- 5.f) TMAs should be paid in accordance with how the unit is utilized. If it is used as a TMA and is in the proper location as specified, then it should be paid at the specified hourly

rate for “Truck-Mounted or Trailer-Mounted Impact Attenuator”. When the TMA is used as a Flashing Arrow, it should be paid at the daily rate for “High Mounted Internally Illuminated Flashing Arrow”. If a TMA is used to install and remove a pattern and is also used as a Flashing Arrow in the same day, then the unit should be paid as a “Truck-Mounted or Trailer-Mounted Impact Attenuator” for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove). If the TMA is also used as a Flashing Arrow during the same day, then the unit should be paid at the daily rate as a “High Mounted Internally Illuminated Flashing Arrow”.

## **SECTION 6. USE OF TRAFFIC DRUMS AND TRAFFIC CONES**

- 6.a) Traffic drums shall be used for taper channelization on limited-access roadways, ramps, and turning roadways and to delineate raised catch basins and other hazards.
- 6.b) Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 36-hour duration.
- 6.c) Traffic Cones less than 42 inches in height shall not be used on limited-access roadways or on non-limited access roadways with a posted speed limit of 45 mph and above.
- 6.d) Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

## **SECTION 7. USE OF (REMOTE CONTROLLED) CHANGEABLE MESSAGE SIGNS (CMS)**

- 7.a) For lane closures on limited access roadways, one CMS shall be used in advance of the traffic control pattern. Prior to installing the pattern, the CMS shall be installed and in operation, displaying the appropriate lane closure information (i.e.: Left Lane Closed - Merge Right). The CMS shall be positioned ½ - 1 mile ahead of the lane closure taper. If the nearest Exit ramp is greater than the specified ½ - 1 mile distance, than an additional CMS shall be positioned a sufficient distance ahead of the Exit ramp to alert motorists to the work and therefore offer them an opportunity to take the exit.
- 7.b) CMS should not be installed within 1000 feet of an existing CMS.
- 7.c) On non-limited access roadways, the use of CMS for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the CMS.
- 7.d) The advance CMS is typically placed off the right shoulder, 5 feet from the edge of pavement. In areas where the CMS cannot be placed beyond the edge of pavement, it may be placed on the paved shoulder with a minimum of five (5) traffic drums placed in a taper in front of it to delineate its position. The advance CMS shall be adequately protected if it is used for a continuous duration of 36 hours or more.
- 7.e) When the CMS are no longer required, they should be removed from the clear zone and have the display screen cleared and turned 90° away from the roadway.

- 7.f) The CMS generally should not be used for generic messages (ex: Road Work Ahead, Bump Ahead, Gravel Road, etc.).
- 7.g) The CMS should be used for specific situations that need to command the motorist's attention which cannot be conveyed with standard construction signs (Examples include: Exit 34 Closed Sat/Sun - Use Exit 35, All Lanes Closed - Use Shoulder, Workers on Road - Slow Down).
- 7.h) Messages that need to be displayed for long periods of time, such as during stage construction, should be displayed with construction signs. For special signs, please coordinate with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.
- 7.i) The messages that are allowed on the CMS are as follows:

<u>Message No.</u>	<u>Frame 1</u>	<u>Frame 2</u>	<u>Message No.</u>	<u>Frame 1</u>	<u>Frame 2</u>
1	LEFT LANE CLOSED	MERGE RIGHT	9	LANES CLOSED AHEAD	REDUCE SPEED
2	2 LEFT LANES CLOSED	MERGE RIGHT	10	LANES CLOSED AHEAD	USE CAUTION
3	LEFT LANE CLOSED	REDUCE SPEED	11	WORKERS ON ROAD	REDUCE SPEED
4	2 LEFT LANES CLOSED	REDUCE SPEED	12	WORKERS ON ROAD	SLOW DOWN
5	RIGHT LANE CLOSED	MERGE LEFT	13	EXIT XX CLOSED	USE EXIT YY
6	2 RIGHT LANES CLOSED	MERGE LEFT	14	EXIT XX CLOSED USE YY	FOLLOW DETOUR
7	RIGHT LANE CLOSED	REDUCE SPEED	15	2 LANES SHIFT AHEAD	USE CAUTION

8

2 RIGHT  
LANES  
CLOSED

REDUCE  
SPEED

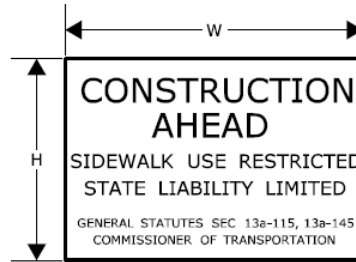
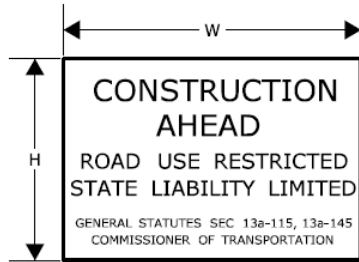
16

3 LANES  
SHIFT  
AHEAD

USE  
CAUTION

For any other message(s), approval must be received from the Office of Construction prior to their use. No more than two (2) displays shall be used within any message cycle.

## 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 RAMP PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

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

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

SIGN 16-E SHALL BE USED ON ALL EXPRESSWAYS.

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

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

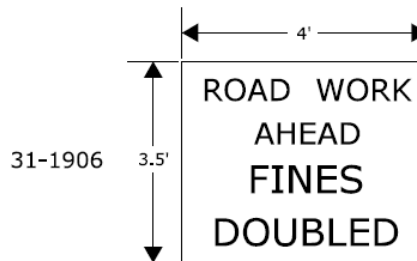
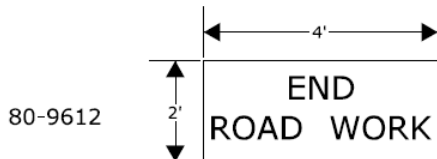
### REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

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

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

### "END ROAD WORK" SIGN

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



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN  
REQUIRED SIGNS

CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

*Charles S. Harlow*  
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

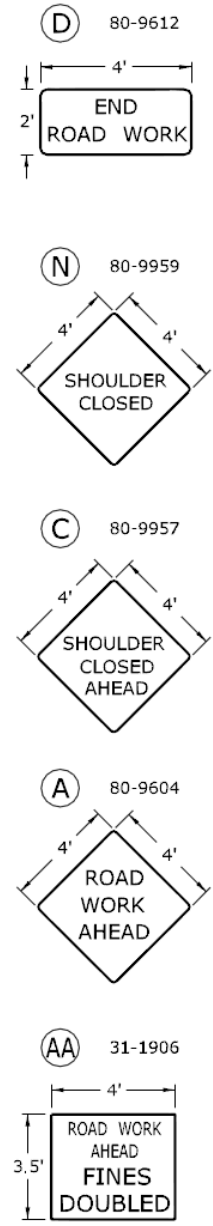
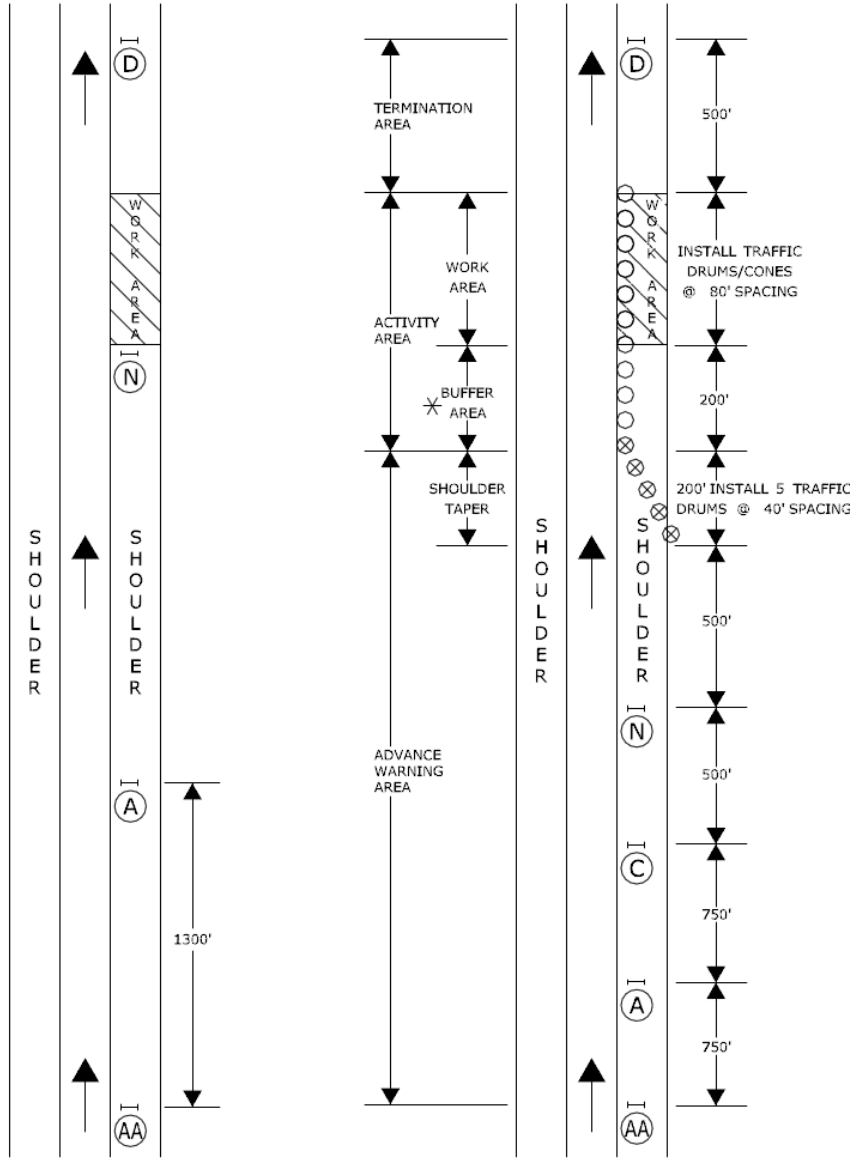
APPROVED

*Charles S. Harlow*  
Charles S. Harlow  
2012.06.05 15:50:35-0400  
PRINCIPAL ENGINEER



# WORK IN SHOULDER AREA - TURNING ROADWAYS / RAMPS

SIGN FACE  
70 SQ. FT (MIN.)



**MOVING OPERATION**

**STATIONARY OPERATION**

- TRAFFIC CONE **OR** TRAFFIC DRUM
- \* OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



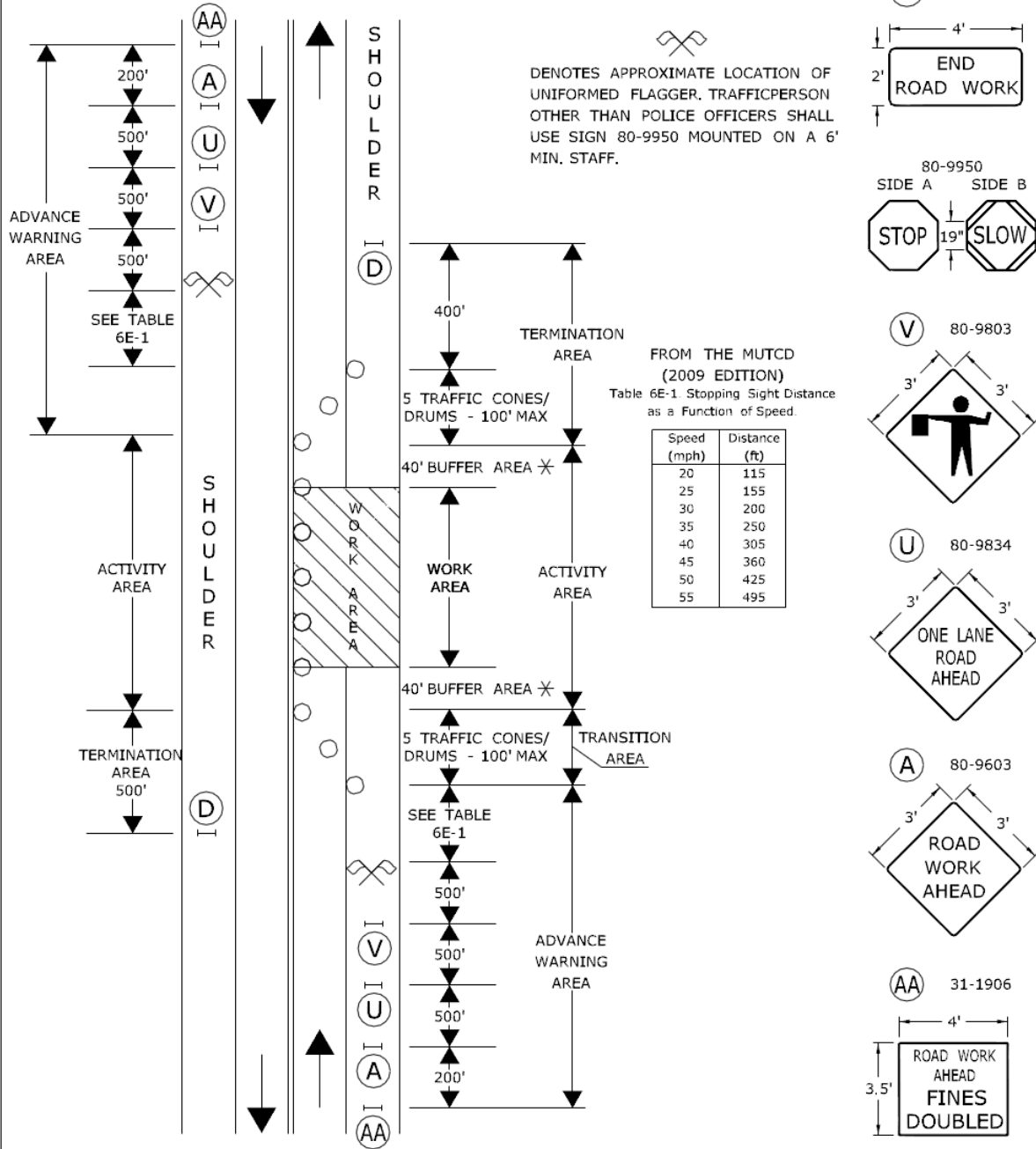
CONSTRUCTION TRAFFIC CONTROL PLAN  
**PLAN 9**  
SEE NOTES 1, 2, 4, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow* Charles S. Harlow  
2012.06.05 15:53:53-0400  
PRINCIPAL ENGINEER

# WORK IN TRAVEL LANE AND SHOULDER TWO LANE HIGHWAY ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE  
108 SQ. FT (MIN.)



- TRAFFIC CONE OR TRAFFIC DRUM
- ✱ OPTIONAL ✕ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



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* Charles S. Harlow  
2012.06.05 15:55:23-04'00"  
PRINCIPAL ENGINEER

# WORK IN TRAVEL LANE AND SHOULDER TWO LANE HIGHWAY ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE  
108 SQ. FT (MIN.)

## HAND SIGNAL METHODS TO BE USED BY UNIFORMED FLAGGERS

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

### A. TO STOP TRAFFIC

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



### B. TO DIRECT TRAFFIC TO PROCEED

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



### C. TO ALERT OR SLOW TRAFFIC

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



○ TRAFFIC CONE **OR** TRAFFIC DRUM  
 ✱ OPTIONAL    ⊗ TRAFFIC DRUM    ┆ PORTABLE SIGN SUPPORT  
 ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

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

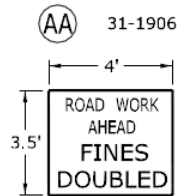
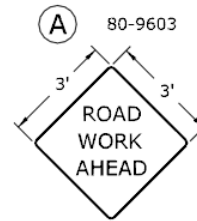
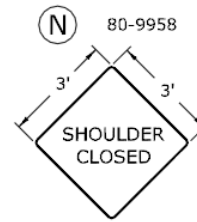
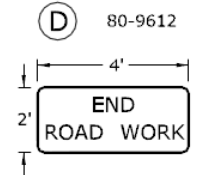
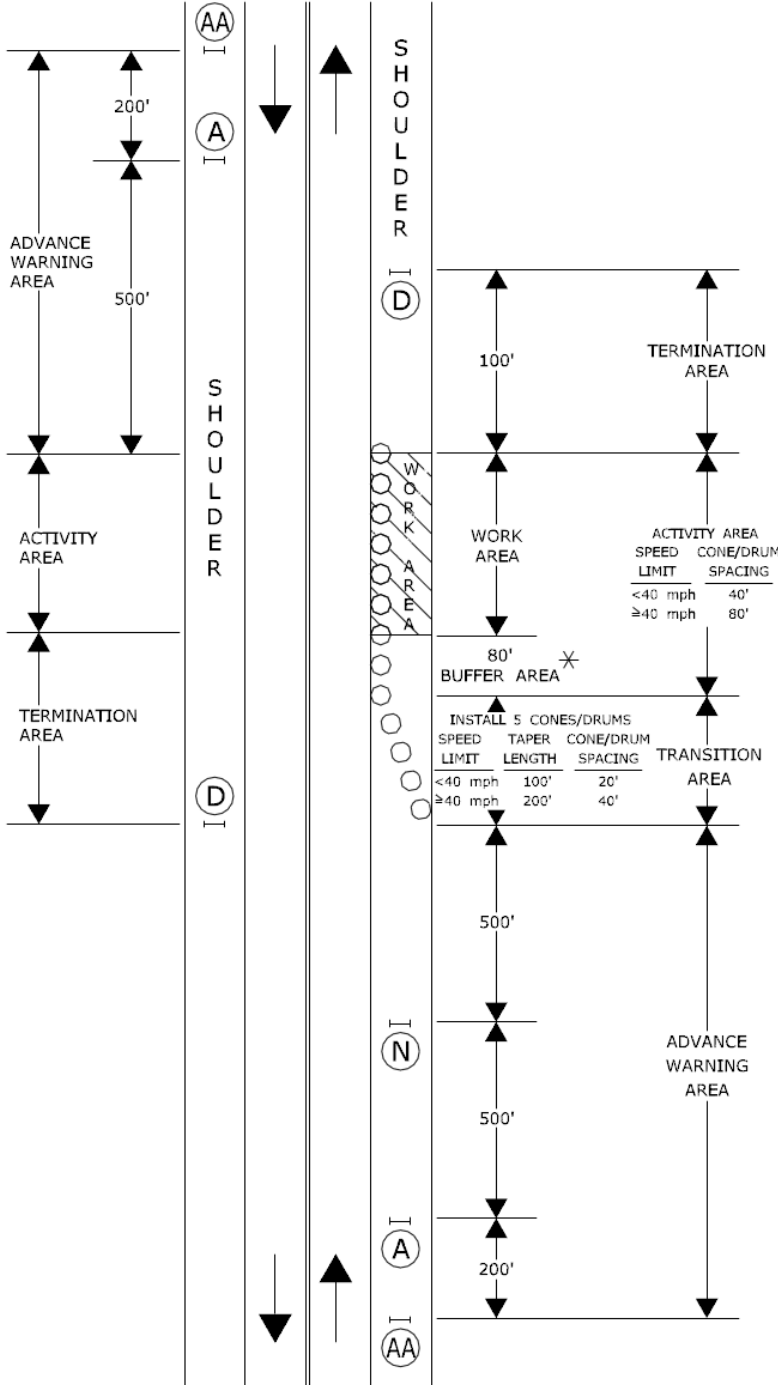
CONNECTICUT DEPARTMENT OF TRANSPORTATION  
 BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

*Charles S. Harlow*  
 Charles S. Harlow  
 2012.06.05 15:55:45-04'00"  
 PRINCIPAL ENGINEER

# WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE  
71 SQ. FT (MIN.)



- TRAFFIC CONE OR TRAFFIC DRUM
- \* OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

## PLAN 14

SEE NOTES 1, 2, 4, 7, 8

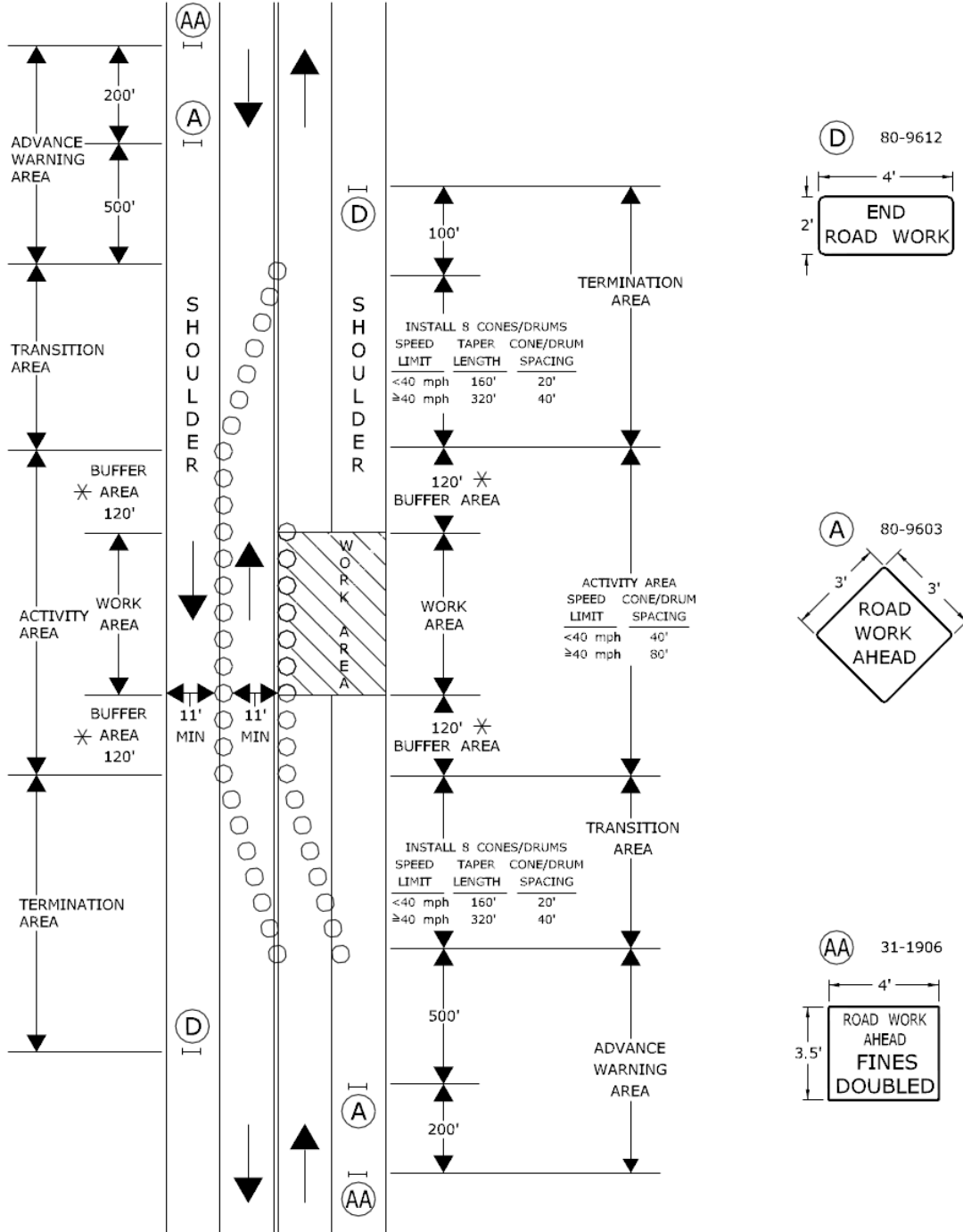
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BUREAU OF ENGINEERING & CONSTRUCTION

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*Charles S. Harlow*  
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.)



- 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

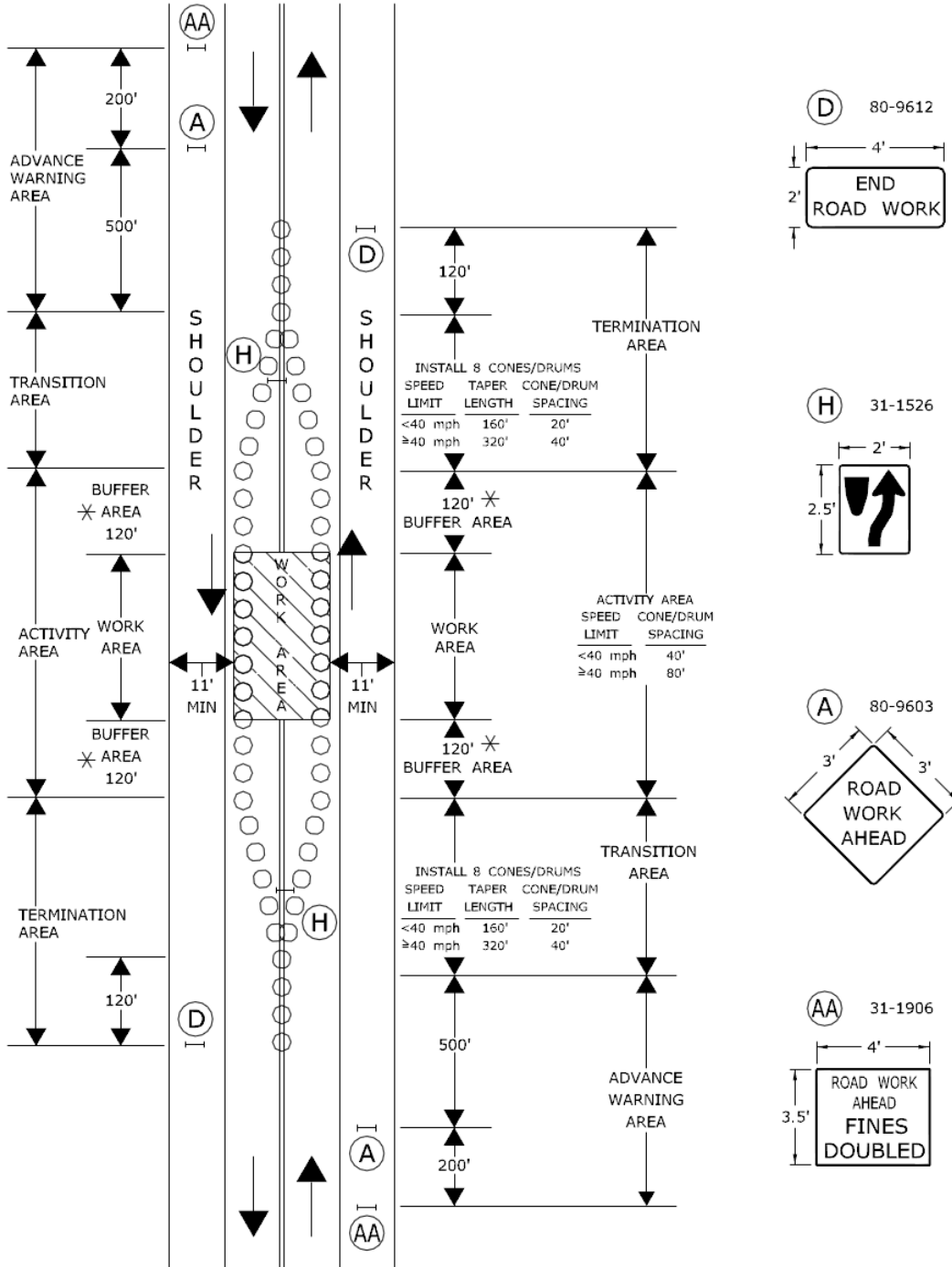
CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

*Charles S. Harlow*  
Charles S. Harlow  
2012.06.05 15:56:29-04'00"  
PRINCIPAL ENGINEER

# WORK IN MIDDLE OF ROADWAY TWO LANE HIGHWAY

SIGN FACE  
72 SQ. FT. (MIN.)



- TRAFFIC CONE OR TRAFFIC DRUM
- \* OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◁ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

## PLAN 16

SEE NOTES 1, 2, 4, 6, 7, 8

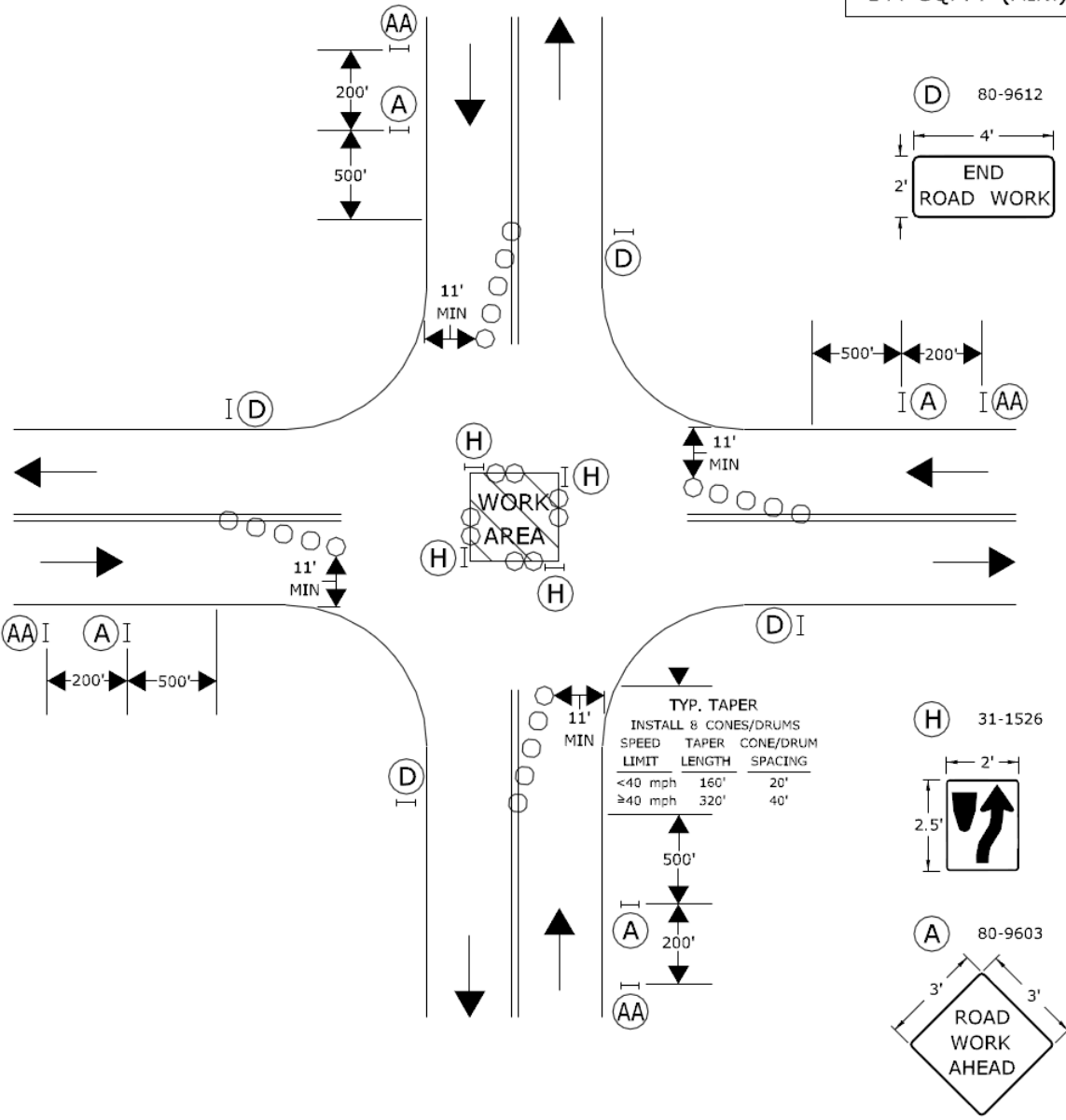
CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

*Charles S. Harlow*  
Charles S. Harlow  
2012.06.05 15:56:51-04:00  
PRINCIPAL ENGINEER

# WORK IN MIDDLE OF ROADWAY AT INTERSECTION

SIGN FACE  
144 SQ. FT. (MIN.)



- 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

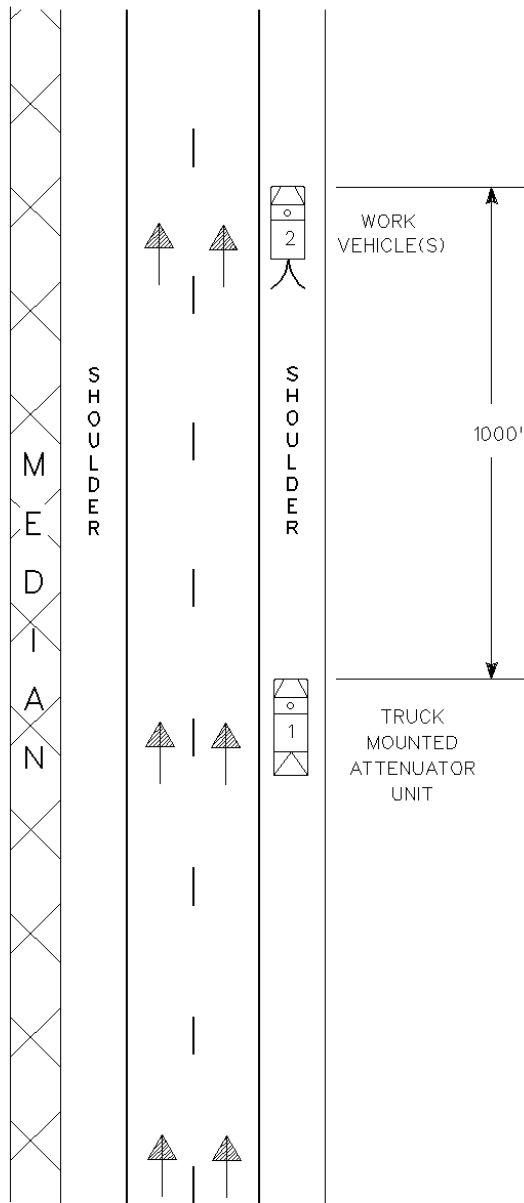
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING & CONSTRUCTION

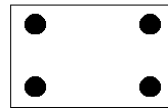
APPROVED

*Charles S. Harlow*  
Charles S. Harlow  
2012.06.05 15:57:16-04'00"  
PRINCIPAL ENGINEER

# MOVING OPERATION ON RIGHT SHOULDER MULTILANE HIGHWAY & SECONDARY ROADWAYS



SIGN MOUNTED ON TRUCK 1



DEPARTMENT APPROVED  
ARROW BOARD  
( FLASHING YELLOW MODE )

REV'D 1-02



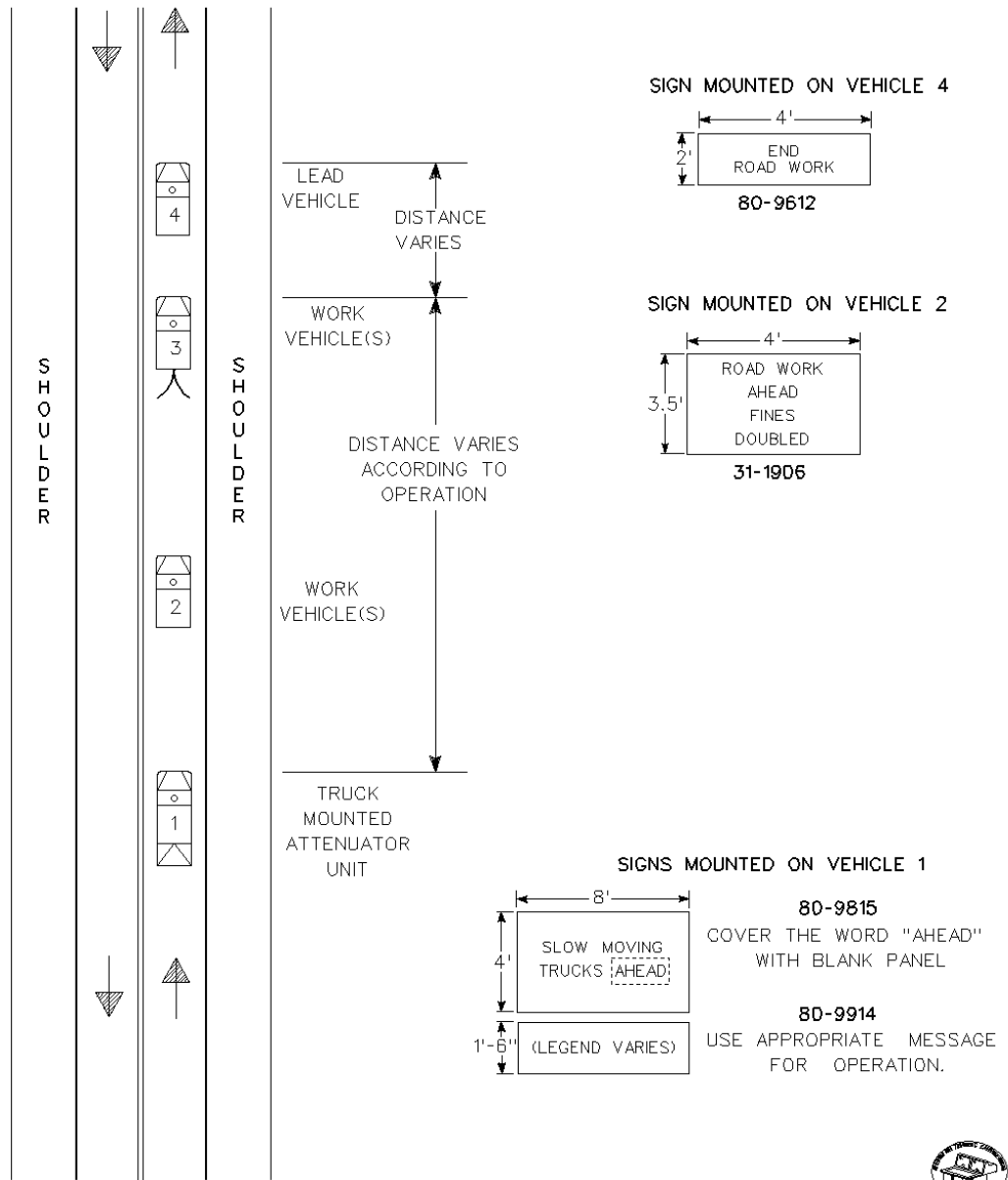
CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF ENGINEERING &  
HIGHWAY OPERATIONS  
DIVISION OF TRAFFIC ENGINEERING

CONSTRUCTION  
TRAFFIC CONTROL PLAN  
PLAN 19  
SCALE NONE


APPROVED J. McCall DATE 1-30-02  
PRINCIPAL ENGINEER



# MOVING OPERATION TWO LANE HIGHWAY



REV'D 1-02

  
 CONNECTICUT  
 DEPARTMENT OF TRANSPORTATION  
 BUREAU OF ENGINEERING &  
 HIGHWAY OPERATIONS  
 DIVISION OF TRAFFIC ENGINEERING  
 CONSTRUCTION  
 TRAFFIC CONTROL PLAN  
 PLAN 24  
 SCALE NONE

APPROVED John D. McCall DATE 1-30-02  
 PRINCIPAL ENGINEER

**Article 9.71.05 – Basis of Payment is supplemented by the following:**

The contract lump sum price for "Maintenance and Protection of Traffic" shall also include furnishing, installing, and removing the material for the temporary traversable slope in those areas where a longitudinal dropdown exists.

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. This contract lump sum price shall also include final installation of temporarily relocated signs in their original location.

The contract lump sum price for "Maintenance and Protection of Traffic" shall also include any temporary adjustments or modifications required to the permanent drainage structures, including but not limited to the resetting of catch basin and manhole tops as necessary, to facilitate temporary drainage measures prior to final paving.

The contract lump sum price for "Maintenance and Protection of Traffic" shall also include the cost for installation and maintenance of all temporary access to all residential and commercial properties, including but not limited to temporary graded surfaces consisting of subbase, processed aggregate base, granular fill, or other suitable materials approved by the Engineer.

The contract lump sum price for "Maintenance and Protection of Traffic" shall also include furnishing, installing and relocating all temporary protective systems including, but not limited to, construction signs, traffic drums, traffic cones, construction barricades, barricade warning lights and temporary construction fencing.

The contract lump sum price for "Maintenance and Protection of Traffic" shall also include all dust control measures required during construction, including but not limited to water for dust control and sweeping. This item shall also include the preparation and submission of a dust control plan.

The contract lump sum price for "Maintenance and Protection of Traffic" shall also include the cost for furnishing, installation, maintenance and removal of all temporary painted pavement markings, as required by the specifications, throughout the duration of the project.

Pay Item

Maintenance and Protection of Traffic

Pay Unit

LS

Project: Reconstruction Of Thames Street Wall At Electric Boat

**Minimum Rates and Classifications  
for Heavy/Highway Construction**

**Connecticut Department of Labor  
Wage and Workplace Standards Division**

ID#: H 26741

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

Project Number:

Project Town: Groton

FAP Number:

State Number:

Project: Reconstruction Of Thames Street Wall At Electric Boat

<b>CLASSIFICATION</b>	<b>Hourly Rate</b>	<b>Benefits</b>
1) Boilermaker	33.79	34% + 8.96
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	34.72	32.15
2) Carpenters, Piledrivermen	33.53	25.66
2a) Diver Tenders	33.53	25.66

**As of:** Friday, November 22, 2019

Project: Reconstruction Of Thames Street Wall At Electric Boat

3) Divers	41.99	25.66
03a) Millwrights	34.04	26.09
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	51.00	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

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4e) Painters: Tanks, Tower and Swing	36.62	21.80
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	38.50	28.61+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	31.00	20.84

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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	32.50	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	18.00	20.84
Group 9: Hydraulic Drills	29.30	18.90

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----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
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13b) Brakemen, Trackmen	32.01	20.84 + a
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----CLEANING, CONCRETE AND CAULKING TUNNEL----

14) Concrete Workers, Form Movers, and Strippers	32.01	20.84 + a
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15) Form Erectors	32.34	20.84 + a
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----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----

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16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	32.01	20.84 + a
17) Laborers Topside, Cage Tenders, Bellman	31.90	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

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21) Mucking Machine Operator	40.06	20.84 + a
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----TRUCK DRIVERS----(\*see note below)

Two axle trucks	29.51	24.52 + a
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Three axle trucks; two axle ready mix	29.62	24.52 + a
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Three axle ready mix	29.67	24.52 + a
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Four axle trucks, heavy duty trailer (up to 40 tons)	29.72	24.52 + a
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Four axle ready-mix	29.77	24.52 + a
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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

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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" Mandrell)	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" and Under Mandrel).	38.20	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

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Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	35.24	24.80 + a
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

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Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	34.26	24.80 + a
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\*\*NOTE: SEE BELOW

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

20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
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21) Heavy Equipment Operator	42.26	6.5% + 19.88
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22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
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23) Driver Groundmen	26.50	6.5% + 9.00
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23a) Truck Driver	40.96	6.5% + 17.76
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---LINE CONSTRUCTION---

24) Driver Groundmen	30.92	6.5% + 9.70
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25) Groundmen	22.67	6.5% + 6.20
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26) Heavy Equipment Operators	37.10	6.5% + 10.70
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27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
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28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45
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Project: Reconstruction Of Thames Street Wall At Electric Boat

01) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters. **\*\*See Laborers Group 5 and 7\*\***

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*Welders: Rate for craft to which welding is incidental.*

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

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

***ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra \$4.00 premium in addition to the hourly wage rate and benefit contributions:***

- 1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)***
- 2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson***
- 3) Cranes (under 100 ton rated capacity)***

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

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

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

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

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

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

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

*The annual adjustments will be posted on the Department of Labor's Web page: [www.ct.gov/dol](http://www.ct.gov/dol).*

*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.*

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

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

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

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

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

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

*As of:*

Friday, November 22, 2019