

PROJECT MANUAL
CONSTRUCTION DOCUMENTS

RECONSTRUCTION OF CROSS STREET

September 07, 2018

Borough of Naugatuck



CT STATE PROJECT NO. 87-145
FEDERAL AID PROJECT NO. 1087 (114)

Designer:
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Cheshire, CT 06410

MMI #2129-28-6

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Borough of Naugatuck

LEGAL NOTICE

REQUEST FOR BIDS

Sealed bids for the construction of the following project will be received by the Purchasing Office, Borough of Naugatuck at the Naugatuck City Hall located at 229 Church Street, Naugatuck, CT 06770 until **Monday, October 29, 11:00 AM** local time after which no additional bids will be accepted. No exceptions. Immediately following, the bids will be publicly opened and read.

RECONSTRUCTION OF CROSS STREET

CT STATE PROJECT NO. 87-145

FEDERAL AID PROJECT NO. 1087 (114)

The project includes full-depth pavement reconstruction, horizontal and vertical roadway geometric improvements, a realigned Cotton Hollow Road at its intersection with Cross Street, installation of guiderail, installation of enclosed storm drainage systems and the addition of sidewalks and embankment walls. Improvements will begin at Route 8 and extend north to New Haven Road (CT Route 63). Construction shall be in accordance with the Borough of Naugatuck's Design and Construction Standards, Form 817, all supplements thereto date January 2018 and special provisions provided herein. This contract is subject to utilization goals and requirements for participation of certified Disadvantaged Business Enterprises (DBE). An Affirmative Action/Equal Opportunity Employer, Minority/Women's Business Enterprises are encouraged to apply. This contract is subject to state set-aside and contract compliance requirements. The Borough of Naugatuck hereby notifies all bidders that this contract has been assigned a 10% goal for DBE, as certified by ConnDOT. Form 817 Standard Specifications may be purchased at the ConnDOT Plans Sales Office, 160 Pascone Place, Newington, Connecticut. All proposals must be on the form furnished with the Contract Documents.

The minimum rates to be paid for labor of the various classifications shall be in accordance with Federal wage rates and CT State Labor wage rates. The Contract Wage Certification Form is to be submitted to the Labor Commissioner before the award of the contract.

Plans and Project Manuals will be available on **September 24, 2018** and may be examined and/or procured at the Purchasing Office, Naugatuck City Hall located at 229 Church Street, Naugatuck, CT 06770. Copies of the Contract Documents may be purchased for **Five Hundred Dollars (\$500.00)** (non-refundable) for each set.

Project Manuals can also be obtained at no cost from the Borough of Naugatuck web site <http://www.naugatuck-ct.gov> under the bids section. All firms obtaining plans and Project Manuals must submit contact information by e-mail to whozer@naugatuck-ct.gov. Contact information must be submitted seven days in advance of the bid opening to be considered.

Addenda if required shall be posted on the <http://www.naugatuck-ct.gov> web site. It is the bidder's responsibility to check the Town web site in advance of the bid opening to determine if any addenda have been issued."

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

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

Date: September 12, 2018

Borough of Naugatuck, Connecticut

Reconstruction of Cross Street

CT State Project No. 87-145

Federal Aid Project No. 1087 (114)

Naugatuck, CT

RE - 1

INFORMATION FOR BIDDERS

Borough of Naugatuck

Reconstruction of Cross Street

CT State Project No. 87-145
Federal Aid Project No. 1087 (114)

1. Proposals Received

Sealed proposals for the Reconstruction of Cross Street will be received by the Purchasing Office, Borough of Naugatuck, 229 Church Street, Naugatuck, CT 06770 until **Monday, October 29, 11:00 AM** local time. Immediately following, the bids will be publicly opened and read.

2. Location and Description of Work

The project includes full-depth pavement reconstruction, horizontal and vertical roadway geometric improvements, a realigned Cotton Hollow Road at its intersection with Cross Street, installation of guiderail, installation of enclosed storm drainage systems and the addition of sidewalks and embankment walls. Improvements will begin at Route 8 and extend north to New Haven Road (CT Route 63).

3. Schedule of Construction and Time of Completion

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

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

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

4. Plans and Project Manuals

Copies of the Plans and Project Manual may be seen and obtained at the Purchasing Office, Borough of Naugatuck, 229 Church Street, Naugatuck, CT 06770.

The Project Manual can also be obtained at no cost from the Borough of Naugatuck web site <http://www.naugatuck-ct.gov> under the bids section. All firms obtaining plans and Project Manuals must submit contact information by e-mail to whozer@naugatuck-ct.gov Contact information must be submitted seven days in advance of the bid opening to be considered.

The construction contract for the Reconstruction of Cross Street, CT State Project No. 87-145, Federal Aid Project No. 1087 (114), will be entered into by the successful bidder and the Borough of Naugatuck. The State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 817, along with the contract drawings, supplemental specifications and special provisions contained herein will detail the general requirements for materials, methods of installation, measurement and basis of payment to be required in this project. Any references to the

State of Connecticut, the Department, the commissioner, Engineer, or other terms indicating the State of Connecticut and her agents as party to the contract shall for this project mean the Borough of Naugatuck and her designated agents or employees.

Where insurance is required to be carried in the name of the State of Connecticut and the State of Connecticut is to be held harmless, this shall be done in the name of the Borough of Naugatuck and the Borough of Naugatuck shall be held harmless.

All requirements for material testing, certificates of the compliance or material certifications shall be done as if this were a contract being entered into with the State of Connecticut, shall be in accordance with Form 817.

It is the intent of this contract to maintain all standard requirements of Form 817 without attempting to redefine every term within the 817 to the "Borough of Naugatuck".

The bidder shall, therefore, be aware that the Borough of Naugatuck and its agents shall inspect and administrate this contract, make contract interpretations, determine the acceptability of the work and approve requests for payments. The Contractor shall be responsible for the requirements stated in Form 817, supplemental specifications, special provisions and in the construction drawings.

5. Addenda and Interpretations

No interpretations of the meaning of the contract documents will be made to any Bidder orally.

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

6. Familiarity of the Work

Each Bidder shall fully inform himself prior to bidding as to existing conditions and limitations under which the work is to be performed, and shall include in his bid a sum to cover the cost of items necessary to perform the work as set forth in the Contract Documents. No allowance will be made to a Bidder because of lack of such examination or knowledge. The submission of a bid will be considered as conclusive evidence that the Bidder has made such examination.

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

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

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

7. Existing Conditions

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

8. Estimate of Work

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

9. Qualification of Bidders

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

10. Disqualification of Bidders

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

11. Preparation of Proposals

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

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

12. Irregular Proposals

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

13. Proposal Guarantee

No proposal will be considered unless accompanied by a certified check in U.S. dollars, or bid bond using an insurance company licensed to do business in the State of Connecticut in an amount equal to at least one-third (33%) of the amount of the bid and payable to the order of the Borough of Naugatuck, said check or bid bond to be returned to the Bidder unless forfeited as hereinafter stipulated. Such checks or bid bonds will be returned to all bidders within five (5) days after the execution of the Contract and the furnishing of the required security by the successful Bidder.

14. Withdrawal of Proposals

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

15. Execution of Contract

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

16. Bonds

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

Connecticut. Bidder shall provide evidence that Surety Company is licensed to conduct business in the State of Connecticut. All sureties shall be in full force throughout the guarantee period and until the retainage is released.

17. Responsibility of the Contractor

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

18. Insurance

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

Unless requested otherwise by the Borough of Naugatuck, the Bidder and its insurer shall not assert the defense of governmental immunity in the adjustment of claims or in the defense of any claim or suit brought against the Borough of Naugatuck and the State. The Bidder shall assume and pay all cost and billing for premiums and audit charges earned and payable under the required insurance.

- A. Workmen's Compensation Insurance: With respect to all operations the Bidder performs and all those performed for it by subcontractors, the Bidder shall carry workmen's compensation insurance in accordance with the requirements and the laws of the State.
- B. Contractor's Public Liability and Property Damage Insurance: With respect to the Project operations the Bidder performs and also those performed for it by subcontractors, the Bidder shall carry regular Contractor's Public Liability Insurance. The insurance shall provide coverage for each accident or occurrence in the amount of \$2,000,000 for all damages resulting from (1) bodily injury to, or death of, persons and/or (2) injury to or destruction of property. Subject to that limit per accident or occurrence, the policy shall provide a total or aggregate coverage of \$4,000,000 for all damages during the policy period.

- C. **Automobile Liability Insurance:** The operation of all motor vehicles, including those hired or borrowed, used in connection with the project, shall be covered by Automobile Liability Insurance. The insurance shall provide coverage for each accident or occurrence in the amount of \$2,000,000 for all damages resulting from (1) bodily injury to, or death of, persons and/or (2) injury to or destruction of property. If an insurance policy shows an aggregate limit as part of the automobile liability coverage, the aggregate limit must be at least \$4,000,000.
- D. With respect to the project operations the Bidder performs and also those performed for it by subcontractors, the Bidder shall carry for and on behalf of the Borough of Naugatuck, and State, insurance which shall provide coverage for each accident or occurrence in the amount of \$2,000,000 for all damages resulting from (1) bodily injury to or death of person and/or (2) injury to or destruction of property. Subject to that limit per accident or occurrence, the policy shall provide a total or aggregate coverage of \$4,000,000 for all damages during the policy period.
- E. **Railroad's Protective Liability Insurance:** When the contract involves work on, over or under the right of way of any railroad company, the Bidder shall, with respect to the project operations it performs and also those performed for it by subcontractors, carry Railroad Protective Liability Insurance for and on behalf of the railroad company. The insurance shall provide coverage for each accident and occurrence in the amount of \$2,000,000 for all damages resulting from (1) bodily injury to or death of persons and/or (2) injury to or destruction of property. Subject to that limit per accident or occurrence, the policy shall provide a total or aggregate coverage of \$6,000,000 for all damages during the policy period.
- F. **Blasting:** When explosives are to be used in the prosecution of the work, the insurance required under paragraphs B, D, and E above shall also contain provisions for protection, in the amounts stated, against damage claims due to such use of explosives.
- G. **Termination or change of Insurance:** Each insurance policy shall be endorsed to provide that the insurance company shall notify the Borough of Naugatuck by certified mail at least thirty (30) days in advance of termination, or any change in the policy. No such change shall be made without prior written approval of the appropriate Official.
- H. **Claims:** Each insurance policy shall state that the insurance company shall agree to investigate and defend the Borough of Naugatuck and State against all damages, even if groundless.
- I. **Compensation:** There shall be no direct compensation allowed the Bidder on account of any premium or other charge necessary to take out and keep in effect all insurance or bonds, but the cost thereof shall be considered included in the general cost of the work.

19. Care and Protection of Property

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

20. Sales Tax

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

21. Compliance with Federal and State Regulations

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

22. Permits

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

23. Sedimentation and Erosion Control Plan

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

24. Contractor's Right to Terminate Work

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

25. Wage Rates

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

26. Power of Attorney

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

27. Right to Reject

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

PROPOSAL FORMS/BID FORMS

**RECONSTRUCTION OF CROSS STREET
Naugatuck, Connecticut**

BIDDER'S NAME:

PROPOSAL NUMBER:

CT STATE PROJECT NO. 87-145
FEDERAL AID PROJECT NO. 1087 (114)

BID SCHEDULE

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT PRICES BID		AMOUNT IN FIGURES
				IN FIGURES	IN WRITING	
0201001A	Clearing and Grubbing	L.S.	1			
0202000	Earth Excavation	C.Y	6,800			
0202100	Rock Excavation	C.Y	370			
0202452A	Test Pit	Ea.	15			
0202529	Cut Bituminous Concrete Pavement	LF	350			
0202911A	Condition Survey	Ea.	1			
0203100	Structure Excavation – Rock (Complete)	C.Y.	5			
0205001	Trench Excavation (0'-4' Deep)	C.Y.	1,280			

Reconstruction of Cross Street
CT State Project No. 87-145
Federal Aid Project No. 1087 (114)
Naugatuck, CT

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT PRICES BID		AMOUNT IN FIGURES
				IN FIGURES	IN WRITING	
0205002	Rock in Trench Excavation (0'-4' Deep)	C.Y.	70			
0205003	Trench Excavation (0'-10' Deep)	C.Y.	430			
0205004	Rock in Trench Excavation (0'-10' Deep)	C.Y.	30			
0205005	Trench Excavation (0'-15' Deep)	C.Y.	50			
0205006	Rock in Trench Excavation (0'-15' Deep)	C.Y.	10			
0206000	Ditch Excavation	C.Y.	25			
0206001	Rock in Ditch Excavation	C.Y.	2			
0207000	Borrow	C.Y.	1,400			
0209001	Formation of Subgrade	S.Y.	15,200			
0210820	Water Pollution Control	Est. Cost	1	\$5,000.00	Five Thousand Dollars and Zero Cents	\$5,000.00
0211000	Anti-Tracking Pad	S.Y.	350			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT PRICES BID		AMOUNT IN FIGURES
				IN FIGURES	IN WRITING	
0212000	Subbase	C.Y.	5,150			
0213100	Granular Fill	C.Y.	75			
0219001	Sedimentation Control System	LF	3,800			
0219011A	Sedimentation Control at Catch Basin	Ea.	60			
0406002A	Temporary Pavement	S.Y.	300			
0406170	HMA S1.0	Ton	2,650			
0406171	HMA S0.5	Ton	3,540			
0406236	Material For Tack Coat	Gal.	3,300			
0406600	Material Transfer Vehicle	Ton	3,540			
0406999	Asphalt Adjustment Cost	Est. Cost	1	\$5,000.00	Five Thousand Dollars and Zero Cents	\$5,000.00
0506001	Concrete for Steps and Copings	C.Y.	1			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	<u>UNIT PRICES BID IN FIGURES IN WRITING</u>	AMOUNT IN FIGURES	ITEM NO.
0507001	Type "C" Catch Basin	Ea.	30			
0507022	Type "C" Catch Basin Double Grate – Type II	Ea.	3			
0507026	Type "C" Catch Basin (4' Sump)	Ea.	2			
0507084	Special Type 'C' Catch Basin	Ea.	1			
0507124	Type 'C' Catch Basin Double Grate – Type II (4' Sump)	Ea.	3			
0507171A	Hydrodynamic Separator (site No. 1)	L.S.	1			
0507172A	Hydrodynamic Separator (site No. 2)	L.S.	1			
0507201	Type 'C-L' Catch Basin	Ea.	1			
0507251	Type 'C-L' Catch Basin Over 10' Deep	Ea.	1			
0507274	Round Type "C" Catch Basin Over 10' Deep – 5' Diameter	Ea.	1			
0507601	Manhole	Ea.	5			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	<u>UNIT</u> <u>PRICES BID</u> <u>IN FIGURES</u> <u>IN WRITING</u>	AMOUNT IN FIGURES	ITEM NO.
0507602	Special Manhole	Ea.	1			
0507682	Manhole – 5' Diameter	Ea.	1			
0507771	Reset Catch Basin	Ea.	4			
0507781	Reset Manhole	Ea.	1			
0507809	Convert Type "C-L" Catch Basin to Type "C" Catch Basin	Ea.	1			
0507831	Convert Catch Basin to Manhole	Ea.	5			
0507908A	Area Drain	LF	190			
0601445A	Embankment Wall (Site No. 1)	L.S.	1			
0601446A	Embankment Wall (Site No. 2)	L.S.	1			
0651001	Bedding Material	C.Y.	230			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	<u>UNIT</u> <u>PRICES BID</u> <u>IN FIGURES</u> <u>IN WRITING</u>	AMOUNT IN FIGURES	ITEM NO.
0651013	18" R.C.P.	LF	20			
0651019	36" R.C.P.	LF	20			
0651287	10" C.P.P. (Type S)	LF	90			
0651656	12" C.P.P. (Type S)	LF	2,060			
0651657	15" C.P.P. (Type S)	LF	560			
0651658	18" C.P.P. (Type S)	LF	200			
0651659	24" C.P.P. (Type S)	LF	300			
0651660	42" C.P.P. (Type S)	LF	40			
0651694	24" Polyethylene Culvert End	Ea.	1			
0703012	Modified Riprap	C.Y.	10			
0728001	Crushed Stone for Slope Protection	Ton	90			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	<u>UNIT PRICES BID IN FIGURES IN WRITING</u>	AMOUNT IN FIGURES	ITEM NO.
0751080A	Drainage Pipe Lateral	LF	500			
0751711	6" Underdrain	LF	1,430			
0755010	Geotextile (Separation – Medium Survivability)	S.Y.	30			
0811001	Concrete Curbing	LF	6,500			
0815001	Bituminous Concrete Lip Curbing	LF	550			
0906202A	Three Rail Wood Fence	LF	630			
0910021	R-B End Anchorage – Type 1	Ea.	3			
0910300	Metal Beam Rail (R-B MASH)	LF	225			
0913001A	4' Chain Link Fence	LF	50			
0914001A	Metal Handrail	LF	18			
0914017A	Ornamental Metal Fence (4' High)	LF	64			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	<u>UNIT</u> <u>PRICES BID</u> <u>IN FIGURES</u> <u>IN WRITING</u>	AMOUNT IN FIGURES	ITEM NO.
0921001	Concrete Sidewalk	SF	14,100			
0921002	Concrete Sidewalk – 8" Thick	SF	1,320			
0921005	Concrete Sidewalk Ramp	SF	700			
0921039	Detectable Warning Strip	Ea.	9			
0922500	Bituminous Concrete Driveway (Commercial)	S.Y.	1,400			
0922501	Bituminous Concrete Driveway	S.Y.	720			
0939001	Sweeping for Dust Control	Hr.	225			
0942001	Calcium Chloride for Dust Control	Ton	8			
0943001	Water for Dust Control	M. Gal.	1,200			
0944003	Furnishing and Placing Topsoil	S.Y.	13,000			
0949148A	Cornus Rutgers Stellar Pink, Stellar Pink Dogwood	Ea.	12			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	<u>UNIT PRICES BID IN FIGURES IN WRITING</u>	AMOUNT IN FIGURES	ITEM NO.
0949581A	Zelkova Serrata Village Green 3 ½"-4 ½" Cal. B.B.	Ea.	7			
0949838A	Acer Rubrum "Red sunset", Red Sunset Red Maple 2 ½"-3" Cal. B.B.	Ea.	11			
0949XX1A	Prunus x Okame, Okame Cherry, 3" Cal. B.B.	Ea.	23			
0949XX2A	Ilex glabra 'Shamrock', Chamrock Holly, #5 (Full & Dense)	Ea.	14			
0950019A	Turf Establishment - Lawn	S.Y.	13,000			
0950032	Erosion Control Matting - Type G	S.Y.	80			
0969060A	Construction Field Office (Small)	Month	12			
0970006	Trafficperson (Municipal Police Officer)	Est. Cost	1	\$320,000.00	Three Hundred & Twenty Thousand Dollars and Zero Cents	\$320,000.00
0971001A	Maintenance & Protection of Traffic	L.S.	1			
0975004	Mobilization and Project Closeout	L.S.	1			
0976002	Barricade Warning Lights - High Intensity	Day	23,000			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	<u>UNIT</u> <u>PRICES BID</u> <u>IN FIGURES</u> <u>IN WRITING</u>	AMOUNT IN FIGURES	ITEM NO.
0977001	Traffic Cone	Ea.	170			
0978002	Traffic Drum	Ea.	170			
0979003	Construction Barricade – Type III	Ea.	30			
0980001	Construction Staking	L.S.	1			
0981101A	Opposing Traffic Lane Divider	Ea.	50			
1001001	Trenching and Backfilling	LF	210			
1008115	2" Rigid Metal Conduit in Trench	LF	150			
1008215	2" Rigid Metal Conduit Under Roadway	LF	60			
1008908A	Clean Existing Conduit	LF	375			
1010001	Concrete Handhole	Ea.	1			
1010021	Concrete Handhole – Type II	Ea.	1			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	<u>UNIT PRICES BID IN FIGURES IN WRITING</u>	AMOUNT IN FIGURES	ITEM NO.
1010060A	Clean Existing Concrete Handhole	Ea.	1			
1108163A	Modify Existing Controller	Ea.	1			
1111201A	Temporary Detection (Site No. 1)	L.S.	1			
1111401	Loop Vehicle Detector	Ea.	6			
1111451	Loop Detector Sawcut	LF	225			
1113050	2 Conductor, No. 14 Cable	LF	750			
1113201A	Removal of Fire Alarm Cable	L.S.	1			
1118012A	Removal and/or Relocation of Traffic Signal Equipment	L.S.	1			
1118051A	Temporary Signalization (Site No.1)	L.S.	1			
1206023A	Removal and Relocation of Existing Signs	L.S.	1			
1208931A	Sign Face – Sheet Aluminum – (Type IX Retroreflective Sheeting)	SF	45			
1208932A	Sign Face – Sheet Aluminum (Type IV Reflective Sheeting)	SF	65			

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	<u>UNIT PRICES BID IN FIGURES IN WRITING</u>	AMOUNT IN FIGURES	ITEM NO.
1209114	Hot-Applied Painted Pavement Markings 4" Yellow	LF	16,000			
1209124	Hot-Applied Painted Pavement Markings 4" White	LF	17,000			
1209131	Hot-Applied Painted Legend, Arrows and Markings	SF	1,000			
1210101	4" White Epoxy Resin Pavement Markings	LF	8,000			
1210102	4" Yellow Epoxy Resin Pavement Markings	LF	7,700			
1210105	Epoxy Resin Pavement Markings, Symbols and Legends	SF	900			
1211001	Removal of Pavement Markings	SF	100			
1212001	Temporary Plastic Pavement Marking Tape - 4" Yellow	LF	530			
1214002	6" Preformed Black Line Mask Pavement Marking Tape	LF	560			
1220027	Construction Signs	SF	750			
1403501A	Reset Manhole (Sanitary)	Ea.	14			
1700001A	Service Connections (Estimated Cost)	Est. Cost	1	\$10,000.00	Ten Thousand Dollars and Zero Cents	\$10,000.00
1806202	Truck-Mounted or Trailer-Mounted Impact Attenuator	Hr.	16			
3000101	Trafficmen (State Police Officers)	Est. Cost	1	\$5,000	Five Thousand Dollars	\$5,000

Base Bid Total (in words)	
_____	\$ _____

The award of the Contract will be made to the lowest responsible bidder based on **BASE BID TOTAL**, which may be combined with Add Alternate No. 1 at any time throughout the project prior to the completion of the Base Bid work. By submission of the Bid, each bidder certifies that his bid has been arrived at independently, without consultation, communication, or agreement as to any matter related to this Bid and with any other Bidder or competitor.

Signature _____

Date _____

Print Name _____

Tel _____

Corporation Name _____

Fax _____

Address _____

E-mail _____

PROPOSAL/BID FORM

Borough of Naugatuck

RECONSTRUCTION OF CROSS STREET

CT State Project No. 87-145

Federal Aid Project No. 1087 (114)

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

The Bidder acknowledges receipt of the following addenda:

- Addendum No. _____ Dated:
- Addendum No. _____ Dated:
- Addendum No. _____ Dated:
- Addendum No. _____ Dated:
- Addendum No. _____ Dated:
- Addendum No. _____ Dated:

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

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

If this Proposal shall be accepted by the Owner and the undersigned shall fail to contract as aforesaid, and to give bonds in a sum equal to one hundred percent (100%) of the Contract price, as determined by the canvass of bids, and with surety or sureties satisfactory to the Owner within ten (10) days from the date of the award, then the Owner may, at its option, determine that the Bidder has abandoned the Contract: thereupon, the Proposal and acceptance shall be null and void, and the bid security, for not less than one third (33%) of the amount of the bid, accompanying this Proposal, shall become the property of the said Owner as liquidated damages for the delay and additional expense to the Owner caused thereby if said Proposal shall be rejected, or if said Proposal shall be accepted and the Bidder shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Proposal) and shall furnish a Bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other

respects perform the agreement created by the acceptance of said Proposal, the accompanying bid security shall be returned to the undersigned making bid.

Seal
(if bid is by a Corporation)

Firm or Corporation _____

By: _____
(Duly Authorized)

Street Address _____

City _____ State _____ Zip _____

Telephone _____

Date

Fax _____

REFERENCES

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

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

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

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

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

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

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

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

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

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

Surety: _____

Bank: _____

Major Material Supplier: _____

Bidder

BID BOND

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

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

Signed, this _____ day of _____, 2012.

The Condition of the above obligation is such that whereas the Principal has submitted to _____ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the Reconstruction of Cross Street, CT State Project No. 87-145, Federal Aid Project No. 1087 (114).

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

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

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

Principal (L.S.)

Surety

By: _____

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

CONTRACT FORMS

CONTRACT AND AGREEMENT

THIS AGREEMENT, for the Reconstruction of Cross Street, CT State Project No. 87-145, Federal Aid Project No. 1087 (114) made this _____ day of _____ in the year 20____, Between the Borough of Naugatuck, with its principal office and place of business at 229 Church Street, Connecticut 06770, acting herein through it's Mayor and _____, a _____, with an office and place of business at _____, hereinafter called the contractor.

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

I Definitions

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

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

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

II Contract Includes

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

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

Addendum No. ____ Dated: _____ Addendum No. ____ Dated: _____
Addendum No. ____ Dated: _____ Addendum No. ____ Dated: _____
Addendum No. ____ Dated: _____ Addendum No. ____ Dated: _____

III Specifications and Contract Drawings Supplementary

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

IV Modifications

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

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

V Correction of Errors and Omissions

The Plans, Standards and Specifications and Special Provisions forming part of this Contract are intended to be explanatory of each other, but should any discrepancy appear, or misunderstanding arise, as to the import of anything contained in either, the explanation and decision of the Borough of Naugatuck Inspector shall be final and binding on the Contractor; and all directions and explanations required, to complete and make effective any of the provisions of the Contract and Specifications, shall be given by the Borough of Naugatuck Inspector. Corrections of errors and omissions in the Drawings, Standard or Special Provisions may be made by the Borough of Naugatuck Inspector when such corrections are necessary for the proper fulfillment of the Contract Documents as construed by the Borough of Naugatuck Inspector. The effect of such corrections shall date from the time that the Borough of Naugatuck Inspector gives due notice thereof to the Contractor.

VI Borough of Naugatuck Inspector's Decision

All work under this Contract shall be done to the satisfaction of the Borough of Naugatuck Inspector, who shall determine the amount, quality, acceptability, and fitness of the several items of work and materials which are to be paid for hereunder. He also shall decide all

questions which may arise as to the fulfillment of the terms of the Contract Documents. The determination of the Borough of Naugatuck Inspector in all such matters shall be final and binding upon the parties thereto.

VII Inspection of Work

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

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

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

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

Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the Contract Drawings and Project Manual and work not so constructed shall be removed and made good by the Contractor at this own expense and free of all expense to the Owner, whenever so ordered by the Owner, without reference to any previous oversight or error in inspection.

VIII Address of Contractor

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

IX Obligation of the Contractor

The Contractor shall, at his own expense, provide any and all manner of supervisor, insurance, taxes, labor, materials, apparatus, scaffolding, appliances, tools, machinery, power, transportation, and whatever else may be required of every description necessary to do and complete the work and shall be solely answerable for the same and for the safe, proper, and lawful construction, maintenance, and use thereof. The Contractor shall cover and protect the

work from damage and shall make good all injury to the same occurring before completion of this Contract. The Contractor shall employ only competent workmen and shall provide experienced superintendents and foremen on each part of the work.

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

X Occupational Safety and Health Act

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

XI Nondiscrimination in Employment

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

XII Personal Attention and Competent Workmen

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

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

XIII Public Safeguards

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

XIV Materials and Workmanship

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

XV Materials and Manufactured Articles

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

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

XVI Unnoticed Defects

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

XVII Care and Protection of Work

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

XVIII Assignment of Contract

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

XIX Subcontracting

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

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

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

XX Liability of Contractor for Employees

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

XXI Coordination with Other Contractors and Utilities

During the progress of the work, existing utilities may be found to be in close proximity to or in conflict with the work being installed. The Contractor shall make every effort to identify and locate these utilities before working in the area. If it is known or found that these utilities exist the Contractor shall contact the appropriate utility and alert them to the situation. Should an existing utility be found to be in close proximity to the work the Contractor shall take all the necessary precautions to protect the utilities and his work. Should existing utilities be found to conflict with the work the Contractor shall arrange with the utility company for their adjustment. No additional compensation will be made for delays, inconvenience or damage sustained by the Contractor due to interference from the above-noted utility appurtenances or the operation of locating, installing or moving them or the inability of others to perform their work in a timely manner.

XXII Permits, Laws, Codes, Ordinances and Insurance

The Contractor shall keep himself fully informed of all existing and current codes, ordinances, and regulations and Municipal, County, State or National laws in any way limiting or controlling the actions or operations of those engaged upon the work or affecting the materials supplied to or by them. He shall, at all times, observe and comply with all such valid and legally binding ordinances, laws, and regulations and shall protect and indemnify the Owner and its representatives and agents against any claim or liability arising from, or based on, any violation of the same. He shall obtain and pay for all necessary permits and pay all fees required in connection with the Contract. Contractor shall provide the types and amounts of insurance as set forth in Section 19, Information of Bidders and maintain in effect. He shall take out and carry appropriate employer's liability insurance and public liability insurance.

XXIII Patent Rights

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

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

XXIV Defense of Suits

The Contractor shall indemnify and hold harmless the Owner and its consultants, agents and employees from and against all claims, damages, losses, and expenses, including, but not limited to, attorney fees, ("indemnification expense") arising out of or resulting from the

performance of the work or arising out of or resulting from the Contract Documents, including, without limitation, all indemnification expense regarding personal injury or death and/or damage to real or personal property or motor vehicles.

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

XXV Claims for Labor and Materials

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

XXVI Completion of Work by Owner

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

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

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

XXVII Partial and Final Estimates

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

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

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

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

XXVIII Payment

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

XXIX Guarantee

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

XXX Rate of Progress and Time of Completion

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

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

XXXI Extension of Time

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

XXXII Damages for Failure to Complete on Time

The Contractor shall pay to the Owner for each and every calendar day (including Saturdays, Sundays, and holidays) that he shall be in default in completing the entire work in the time stipulated in Article XXX, or within the extension of time he may be granted as provided in Article XXXIII, the sum of Two Thousand One Hundred Dollars (\$2,100.00) per day. This sum is hereby agreed upon not as a penalty but as liquidated damages which Owner will suffer by reason of such default, time being of the essence of the Contract and a material consideration thereof. The Owner shall have the right to deduct the amount of any such damages from any monies due the Contractor under this Contract.

XXXIII No Waiver of Rights

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

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

XXXIV Mandatory Negotiation

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

XXXV Arbitration

Any dispute or question arising under the provisions of this contract which has not been resolved under the mandatory negotiation paragraph of this contract shall be determined by arbitration. Arbitration proceedings shall occur at a neutral location in Waterbury, Connecticut, and shall be conducted in accordance with the rules then applicable of the American Arbitration Association. Arbitration shall proceed before a pane of one arbitrator to be selected by American Arbitration Association. The decision of the Arbitrator shall be final and may be entered in any court having jurisdiction thereof. Each party shall pay one-half of all costs and expenses of such arbitration.

XXXVI Owner's Right to Use

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

XXXVII Verification of Data

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

XXXVIII Contractor's Wage Certification Form

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

XXXIX Verbal Statements Not Binding

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

XXXX Final Estimate Constitutes Release

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

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

XXXXI Delays or Termination by Governmental Authorities

Notwithstanding any other provision(s) of this contract, the parties agree that in the event of a stop work order from the State Department of Transportation, Department of Environmental Protection, or any other State or Federal agency, no additional compensation will be made by

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

XXXXXII Validity of Agreement

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

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

Signed and sealed
in the presence of

Borough of Naugatuck
Mayor

(Duly Authorized)
Contractor

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

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

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of Owner)

(Address of Owner)

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

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the ____ day of _____, 20__, a copy of which is hereto attached and made a part hereof for the Reconstruction of Cross Street, CT State Project No. 87-145, Federal Aid Project No. 1087 (114).

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

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

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

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

ATTEST:

(Principal) Secretary

By _____ Principal _____(s)

(SEAL)

(Witness as to Principal)

(Address)

(Address)

Surety

ATTEST:

(Surety) Secretary

(SEAL)

Witness as to Surety

By _____ Attorney-in-Fact

(Address)

(Address)

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

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

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

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

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the penal sum of
_____ Dollars, \$(_____)

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

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 201__, a copy of which is hereto attached and made a part hereof for the Reconstruction of Cross Street, CT State Project No. 87-145, Federal Aid Project No. 1087 (114).

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

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in anyway

Reconstruction of Cross Street
CT State Project No. 87-145
Federal Aid Project No. 1087 (114)
Naugatuck, CT

affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

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

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

ATTEST:

(Principal) Secretary

By _____(s)
Principal

(SEAL)

(Witness as to Principal)

(Address)

(Address)

Surety

ATTEST:

(Surety) Secretary

(SEAL)

Witness as to Surety

By _____
Attorney-in-Fact

(Address)

(Address)

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

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

STATE OF CONNECTICUT
LABOR DEPARTMENT

REGULATION OF WAGES

CONTRACTOR'S WAGE CERTIFICATION FORM

I, _____ of _____

do hereby certify that the _____
Company Name

_____ Street

City, State, Zip Code _____

and all of its subcontractors will pay all workers on the

Project Name and Number

_____ Street and City

the wages as listed in the schedule or prevailing rates required for such project (a copy of which is attached hereto).

Signed

Subscribed and sworn to before me this _____ day _____, 20__.

Notary Public

Return to: Labor Department
Regulation of Wages
200 Folly Brook Blvd.
Wethersfield, CT 06209

Town Attorney Certification

CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned, _____
the duly authorized and acting legal representative of _____
do hereby certify as follows:

I have examined the attached Contract (s) and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid Agreements have been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said Agreements on behalf of the respective parties named thereon; and that the foregoing Agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof.

Town Attorney _____ Date: _____

**Form AU-766
 Guarantee Bond**



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

Part I: Nonresident Contractor Information		
Name	Connecticut Tax Registration No.	
Address (Street or PO Box, City, State, and ZIP Code)		
Part II: Person Doing Business With a Nonresident Contractor Information		
Name	Connecticut Tax Registration No., Federal ID No., or SSN	
Address (Street or PO Box, City, State, and ZIP Code)		
Part III: Surety Company Information		
Name	Bond No.	Amount of Bond
Address (Street or PO Box, City, State, and ZIP Code)		
Part IV: Project Information <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
<p>Conditions of the obligation for the project detailed above:</p> <ul style="list-style-type: none"> The nonresident contractor has entered into a contract related to real property at a Connecticut location. The nonresident contractor and the surety company are posting a bond of 5% of the total contract price, including any change orders and add-ons, with DRS to ensure that all taxes that become due and owing during the period of the contract will be paid. A bond must be posted within 120 days of the commencement of the contract or 30 days after the completion of the contract, whichever is earlier. If the nonresident contractor pays all taxes, interest, and penalties within three years from the last day of the month succeeding the reporting period in which the contractor posted the bond, the bond expires; otherwise the obligation remains in full force. This bond jointly and severally binds the nonresident contractor and the surety company, their heirs, executors, administrators, successors, and assigns for payment of this obligation. 		
<p>Nonresident Contractor Declaration: I, the nonresident contractor named above or its authorized agent, declare under the penalty of law that I have examined Form AU-766 and, to the best of my knowledge and belief it is true, complete, and correct. I understand the penalty for willfully delivering a false document or return to DRS is a fine of not more than \$5,000, or imprisonment for not more than five years, or both.</p>		
Print Name		Title
Authorized Signature		Date
<p>Surety Company Declaration: I, an authorized agent of the surety company named above, declare under the penalty of law that I have examined this Form AU-766 and, to the best of my knowledge and belief it is true, complete, and correct. I understand the penalty for willfully delivering a false document or return to DRS is a fine of not more than \$5,000, or imprisonment for not more than five years, or both.</p>		
Print Name		Title
Authorized Signature		Date
		Seal:

General Instructions

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

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

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

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

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

Regular place of business means:

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

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

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

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

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

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

Form AU-766(Back) (Rev. 10/05)

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

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

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

Specific Instructions

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

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

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

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

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

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

Enter the commencement date of this project or change order.

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

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

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

OTHER CONTRACTS

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

(Signed) _____

Title

Subscribed and sworn before me

This _____ day of _____, 20__

(Notary Public)

My commission expires _____

- (e) No proposed subcontractor shall be disapproved by the Borough of Naugatuck except for cause.
- (f) The Contractor shall be fully responsible to the Borough of Naugatuck 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.
- (g) 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: Reconstruction of Cross Street, CT State Project No. 87-145, Federal Aid Project No. 1087 (114).
- (h) Nothing contained in this Contract shall create any contractual relationship between any subcontractor and the Borough of Naugatuck.

OTHER CONTRACTS

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

CONTRACTOR'S PROPOSED PROGRESS CHART – HIGHWAY CONSTRUCTION BAR CHART

Project Number(s): _____

Town(s) of: _____

Date Submitted: _____

Description: _____

Operation	Quantity	Duration
Organization		
Clearing & Grubbing		
Earth Excavation		
Rock Excavation		
Channel Excavation		
Borrow		
Drainage (Trench, Pipe)		
Pile Driving		
Footing		
Abutments & Wings		
Steel Erection		
Floor Slabs		
Concrete Pavement		
Bit. Conc. Pavement		
Bridge Railing		
Curbing		
Sidewalk		
Fencing		
Electrical Work		
Traffic Items		
Misc. & Clean up		

Equipment to expect to use:

Calendar Days
 Total Calendar Days: _____
 Signed By: _____

**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.

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)

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: _____



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC #
INSURED	INSURER A :	
	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES

CERTIFICATE NUMBER:

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	UMBRELLA LIAB <input type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input type="checkbox"/> RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						PER STATUTE <input type="checkbox"/> OTH-ER <input type="checkbox"/> E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER**CANCELLATION**

	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

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CONNECTICUT DEPARTMENT OF TRANSPORTATION (CTDOT)

PRE-AWARD DBE COMMITMENT APPROVAL REQUEST

TO BE SUBMITTED WITHIN THE TIME FRAME INDICATED IN THE BID DOCUMENTS

Only certified DBE firms and only for work which they have been certified for will be approved by CDOT toward the goal. Department's DBE directory is available on CTDOT's website or by calling 860-594-2171

Sheet _____ of _____

CDOT Project Number (s): _____

DBE Subcontractor: _____

Town(s) of: _____

NAICS Code (s) associated with this submission: _____

Submitted By (Prime): _____

Address: _____

Original Bid (\$): _____

Is this DBE firm a 1st or 2nd tier subcontractor? 1st 2nd*

Dollar amount subcontracted to this DBE firm (\$): _____

Dollar amount requested for CREDIT for this DBE Firm (\$): _____ **

** Please be advised that by submitting this form you (the prime) agree that the total Credited amount will be the amount of commitment and will be measured by the Commercially Useful Function the Subcontractor performs.

* The CDOT prefers 1st tier subcontractors; however, credit for 2nd tier DBE firms will be approved provided this page is signed by both the prime and the DBE firm, the 1st tier subcontractor is identified, the extent of the 2nd tier work is clearly identified, and the prime makes the assertion that regardless of its arrangement with the 1st tier subcontractor, this DBE firm will be used and its replacement is subject to the conditions of the DBE specification and contract requirements.

<u>Item Number & Description</u>	<u>Is This item Partial</u> <u>Yes No</u>	<u>Firm Type Code</u> ***	<u>Unit of Item</u>	<u>Quantity bid by Prime</u>	<u>Contract Unit Price</u>	<u>Quantity Subcontracted</u>	<u>Subcontract Unit Price</u>	<u>Total Item price subcontracted</u> ****	<u>Total item prices credited to the subcontractor</u> *****
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

If any of the items above are checked **Yes** as to **Partial**, please use the space provided or use an attachment to offer an explanation of the work involved. Also please identify who is responsible for the remainder of the partial items.

*** Firm Type Code: **S** (subcontractor), **M** (manufacturer), **P** (supplier), **T** (trucking), **V** (services)

Any DBE Trucking firm (**T**) nominated on this form must self-perform not less than 30% of their contract value.

**** In instances where the Prime is paying the Subcontractor a higher unit price than the bid, by submitting this form the Prime agrees to the higher subcontracted price without additional costs to the Department.

***** The credited amount includes adjustments for supply items (60%) or items further subcontracted to NON-DBE firms.

*** Is this DBE Purchasing any Material or Leasing any Equipment from the Prime or any of the Prime's Affiliates?

YES
NO

If YES, state the amount and DO NOT include the amount in the amount toward the goal. Amount: \$ _____

Signature of Prime Contractor, Title

Date

Signature of Subcontractor, Title

Date

After this submittal is approved by the Department, any proposed changes to it must be submitted to the Department for approval.

GENERAL REQUIREMENTS

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GENERAL REQUIREMENTS

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Borough of Naugatuck

**RECONSTRUCTION OF CROSS STREET
CT State Project No. 87-145
Federal Aid Project No. 1087 (114)**

GENERAL REQUIREMENTS

1. Scope of Work

The project includes full-depth pavement reconstruction, horizontal and vertical roadway geometric improvements, a realigned Cotton Hollow Road at its intersection with Cross Street, installation of guiderail, installation of enclosed storm drainage systems and the addition of sidewalks and embankment walls. Improvements will begin at Route 8 and extend north to New Haven Road (CT Route 63).

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

2. Standards

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

Abbreviations are defined as follows:

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

3. Contract Drawings and Working Drawings

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

4. Alterations

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

5. Planimeter

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

6. Contractor's Schedule of Operations

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

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

7. Coordination with Other Contractors and Utilities

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

8. Cost Breakdown

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

9. Estimated Quantities

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

10. Payment for Miscellaneous Work

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

11. Drawings and Information to be Furnished by the Contractor

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

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

Approval by the Inspector of shop drawings for any material, apparatus, device and layout shall not relieve the Contractor from the responsibility of furnishing same of proper dimension, size, quality, quantity and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. Approval shall not relieve the Contractor from the responsibility for errors of any sort on the shop drawings. If the shop drawings deviate from the Contract Documents, the Contractor shall advise the Inspector of the deviations in writing, including the reasons for the deviation.

In the event the Contractor obtains the Engineer's approval for the material, manufactured items, or equipment, other than that which is shown on the Plans or specified herein, the Contractor shall, at his own expense, make any changes as required in the structures, buildings, piping, or

any other portion of the work necessary to accommodate the approved material, manufactured item, or equipment.

12. Substitution Clause

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

13. Contract Limits

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

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

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

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

14. Work in Easements

Not applicable in this Contract.

15. Cleaning up the Site

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

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

16. Storage of Materials

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

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

17. Removal of Condemned Materials

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

18. Hauling Materials

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

19. Accommodation of Traffic

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

Warning signs shall be provided along all streets while work is in progress and, where traffic direction is required, flag men shall be designated by the Contractor to direct traffic past the equipment, machinery or construction operations. Barricades and lights shall be provided as required to protect life and property. Where trenches have been cut in streets on which traffic may pass at times, warning signs shall be placed at frequent intervals and maintained until the street is safe for travel. All such work and operations shall be in accordance with requirements

of the Owner, Standard Specifications and Special Provisions herein. The use of unauthorized or unapproved signs, barricades, or traffic delineators will not be permitted.

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

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

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

20. Temporary Roads and Driveways

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

21. Dust Control

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

22. Working Conditions

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

23. Work in Inclement Weather

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

24. Working Hours

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

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

25. Emergency Work

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

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

26. Sedimentation and Erosion Control

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

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

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

28. Work within or Near Areas Designated as Inland Wetlands

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

29. Soil and Groundwater Conditions

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

30. General Sanitary Requirements

Replacement and Resetting of Sanitary Manhole Frames and covers must be in accordance with the Special Provisions and Borough of Naugatuck Standards.

31. Water Supply and Electrical Energy

Not applicable for this Contract.

32. Contractor's Officer

Not applicable for this Contract

33. Resident Engineer's Office

Not applicable for this Contract.

34. Explosives and Blasting

Not applicable for this Contract.

35. Sheeting, Shoring, and Bracing

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

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

36. Existing Structures

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

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

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

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

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

37. Marking New Underground Plant

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

38. Operation of Water Valves

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

39. Testing Laboratories

The inspector in coordination with the Contractor shall provide the State DOT with all samples of materials to be tested, and all necessary paperwork required, under this contract.

40. Wage Rates

The wages paid on an hourly basis to any mechanic, laborer, or workman employed upon the work herein contracted to be done, and amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund, as defined in Section 31-53 of the General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the Town in which such public works project is being constructed. Any Contractor who is not obligated by agreement to make payment or contribution, on behalf of such employee welfare fund, shall pay to each employee, as part of his wages, the amount of payment or contribution for his classification on each pay day.

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

41. Notice to the Contractor - State Required Forms

The Apparent Low Bidder will be required to submit the following State Required forms to the Borough of Naugatuck:

- 1 - DBE Participation Approval Request
- 2 - Contractor's Proposed Progress Chart
- 3 - Certificate of Compliance with Connecticut General Statute Section 31-57-b
- 4 - CON 83 - Anticipated Source of material
- 5 - CON 32 - Certification of Insurance

The Borough of Naugatuck will provide a copy of the above applicable forms to the Apparent Low Bidder.

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:

"Plans" – Titled RECONSTRUCTION OF CROSS STREET – See section 8 of supplemental conditions.

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

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

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

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

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

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

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

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

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

2. SCOPE OF WORK

The project includes full-depth pavement reconstruction, horizontal and vertical roadway geometric improvements, a realigned Cotton Hollow Road at its intersection with Cross Street, installation of guiderail, installation of enclosed storm drainage systems and the addition of sidewalks and embankment walls. Improvements will begin at Route 8 and extend north to New Haven Road (CT Route 63).

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

3. TIME FOR COMPLETION

The Contractor shall commence work within ten (10) calendar days of the date of the written "Notice to Proceed" from the Owner and the Contractor shall fully complete this Contract within three hundred sixty five (365) days from the date of the written "Notice to Proceed."

4. LIQUIDATED DAMAGES

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

If the Contractor shall fail to complete the work within the Contract times, or extension of time granted by the Borough, then the Contractor and his sureties shall be liable for and shall pay to the Borough 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 \$2,100.00. 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.

5. PAYMENTS

Monthly applications for payment shall be submitted to the Borough Engineer for consideration. Payment shall be made within thirty days after approval of the application for payment by the Borough and in accordance with "Mobilization and Project Closeout" of the Standard Specifications.

Final payment will not be made until final completion and acceptance by the Borough of all work covered by the Contract. The Contractor agrees that he will indemnify and save the Borough harmless for all claims growing out of the lawful demands of subcontractors, laborers, suppliers, and assignees.

6. PAYMENT OF WAGES

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

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

7. 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."

8. CONTRACT DRAWINGS

The Contract Drawings, dated September 7th, 2018 for this project are as follows:

<u>Sheet Title</u>	<u>Sheet in Set</u>	<u>Sheet</u>
Title Sheet	01	-
Detailed Estimate Sheet	02	DET-1
Index Plan & General Notes	03	IN-1
Typical Cross Sections	04	TYP-01
Miscellaneous Details	05-10	MDS-01-06
Existing Conditions & Baseline Layout Plan	11-17	EX-01-07
Boring Logs	18-20	BOR-01-03
Roadway Plans	21-27	PLN-01-07
Roadway Profiles	28-35	PLN-01-08
Intersection Grading Plan	36-37	GRA-01-02
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Traffic Control Signal Plan	45	TCS-01
Traffic Control Signal Plan – Intersection No. 087-220 FIO		
Signing and Pavement Marking Plans	46-55	SPM-01-10
Maintenance and Protection of Traffic Plan	56-59	MPT-01-04
Detour Plan	60	DET-01
Cross Sections	61-89	XSC-01-29
Structural Plans	90-91	STR-01-02
Frontier Relocations Plans FIO		

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

9. SAFETY

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

10. LINES, GRADES, AND MEASUREMENTS

The controlling lines and grades shall be as shown on the Contract Drawings. Additional batter boards, lines, grades and forms shall be furnished and set by the Contractor if 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 Standard Specifications and Special Provisions.

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.

11. BLASTING AND EXPLOSIVES

Not applicable for this Contract.

12. PUBLIC ACCESS

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

13. UTILITIES

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

The Contractor shall make all the necessary arrangements with any utility that must be protected or relocated in order to accomplish the work. The Contractor shall be solely responsible for the protection of the operating condition of all active utilities within the areas of construction and 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. The Contractor shall notify "Call Before You Dig" at 811 or visit CBYD.com at least 72 hours prior to the start of any excavation work to request the mark-out of existing utilities. The Contractor shall coordinate the construction activities with all utility companies with facilities in the project, including the Borough.

14. TEMPORARY UTILITIES

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

15. TOILET ACCOMMODATIONS AND DRINKING WATER

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

16. SEQUENCE OF CONSTRUCTION

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

17. BEST MANAGEMENT PRACTICES FOR PROTECTION OF THE ENVIRONMENT

- a. No construction shall proceed until proper sedimentation and erosion control methods have been installed as the sequence of construction necessitates.
- b. No equipment, materials, or machinery shall be stored, cleaned, or repaired within 25 feet of any wetland or watercourse.
- c. No construction shall proceed until a method to prevent construction debris, paint, spent blast materials, or other materials from entering the wetland or watercourse has been implemented as the sequence of construction necessitates. These materials shall be collected and disposed of in an environmentally safe manner as determined by Federal, State, and local laws. The applicant shall monitor wind velocities and storm events during the conduct of such work, and shall cause such activity to cease if storm or wind conditions threaten to cause deposits of materials in the waterway.
- d. No objectionable materials resulting from any clearing activity shall be disposed of in any wetland or watercourse. This includes but is not limited to: stumps, tree roots, matted roots, wood chips, and other debris.
- e. No fill or materials shall be deposited in surrounding wetlands or watercourses.
- f. Where dewatering is necessary, the pump shall not discharge directly into the wetland or watercourse. Proper methods and devices shall be utilized, such as pumping the water into a temporary sedimentation basin, providing surge protection at the inlet and the outlet of pumps, or floating the intake of the pump, or other method to minimize and retain the suspended solids. If the pumping operation is causing turbidity problems, work shall cease until such time that turbidity controlling measures have been implemented.
- g. Dumping of oil or other deleterious materials on the ground is forbidden. The applicant shall provide a means of catching, retaining, and properly disposing of drained oil, removed oil filters, or other deleterious material. All oil spills shall be reported immediately to the DEEP/Hazardous Materials office at (860) 424-3338. Failure to do so may result in the imposition of a fine under Section 22a-450 of the Connecticut General Statutes.
- h. Every precaution shall be used while working in the vicinity of a waterway to prevent and minimize degradations of the existing water quality. All activities shall conform and be at all times consistent with applicable water quality standards, and management practices of the Federal Clean Water Act (1972), Connecticut's Water

Quality Standards and other applicable State laws, and as defined in Form 817, Section 1.10, entitled "Environmental Compliance".

18. CALL-BEFORE-YOU-DIG

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

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

19. DUST CONTROL

The contractor shall be responsible for controlling dust from its operations, and when ordered by the Engineer shall use whatever methods necessary for dust control, in a manner satisfactory to the Engineer. No additional payment for this work will be made, and all costs including labor, materials, and equipment shall be considered to be included in the "Maintenance and Protection of Traffic."

20. DESCRIPTION OF WORK

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

21. METHODS OF CONSTRUCTION

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

Special Provisions or as required by the Owner, of the various materials used on the contract for testing purposes. All ordering lists shall be submitted for approval to the Owner by the Contractor.

22. MOBILIZATION

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

23. EXISTING CONDITIONS

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

24. EXISTING STORM AND SEWER LINES

The Contractor shall be responsible for maintaining and protecting all existing storm drainage and sewer lines encountered in the work under this contract. Hand excavation and adequate bracing and shoring shall be employed where required to insure the structural integrity of said existing structures. The Contractor shall hold the Borough of Naugatuck harmless and shall be solely responsible for any liabilities or damages arising from their work near, under, or through existing sewers and culverts. The Contractor shall repair and replace, as required by the Borough, any existing sewers or culverts damaged as a result of their work. No payment by the Borough for work covered in this section, unless authorized in writing by the Borough of Naugatuck.

25. SURPLUS EXCAVATED MATERIAL

All surplus excavated material shall remain onsite. Contractor to coordinate with the Borough's engineering and public works department on placement of surplus excavated material. Contract lump sum prices, and no separate payment will be made for any work involved in this section.

26. DAILY CLEANUP

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

27. CONSTRUCTION SCHEDULE

At the preconstruction meeting held by the Borough, the Contractor shall furnish a detailed anticipated construction schedule for review and approval by the Borough prior to monthly payments to the Contractor. This construction schedule shall be revised to show progress to date and anticipated future progress and submitted to the Borough.

28. PROJECT MEETINGS

Regularly scheduled project meetings with Borough staff, the Contractor, and the Engineer are required on a weekly basis to review progress of the work. Meetings are to be held at a site adjacent to or on the work site as determined by the Borough of Naugatuck. The meetings are to be chaired by a designated representative of the Borough of Naugatuck.

29. UTILITY COORDINATION

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

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SPECIAL PROVISIONS

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INTRODUCTION TO THE SPECIAL PROVISIONS

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, and supplements thereto dated July 2017 (otherwise referred to collectively as "Form 817"), 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, and supplements thereto dated January 2018.

CTDOT, District, State, Department, Commissioner: Borough of Naugatuck or its Engineer, Construction Manager, Inspector or other authorized representative or agent of the Owner.

Inspector/Engineer: Engineer, Construction Manager, Inspector or other authorized representative or agent of the Owner.

Laboratory: The Contractor will be responsible for conducting and paying for the asphalt testing only (Refer to Section 4.06 of the Standard Specifications). For all other materials the inspector (municipal staff or consultant) will be tasked with collecting samples and providing them to CTDOT Division of Materials Testing. The Laboratory chosen by the Contractor 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 Special Provision 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 of the Special Provision Items, shall mean the Special Provisions of this Contract.

Payment will only be made for items in the Bid Proposal. Other items may be included in the Standard or Technical Specifications 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 or Technical Specifications.

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

1. Special Provisions, 2. Plans, 3. Standard Specifications.

SEPTEMBER 7, 2018
FEDERAL AID PROJECT NO. 1087 (114)
STATE PROJECT NO. 87-145

RECONSTRUCTION OF CROSS STREET

Borough of Naugatuck
Federal Aid Project No. 1087 (114)

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, 2016, as revised by the Supplemental Specifications dated January 2018 (otherwise referred to collectively as "ConnDOT Form 817") is hereby made part of this contract, as modified by the Special Provisions contained herein. Form 817 is available at the following DOT website link <http://www.ct.gov/dot/cwp/view.asp?a=3609&q=430362>. The current edition of the State of Connecticut Department of Transportation's "Construction Contract Bidding and Award Manual" ("Manual"), is hereby made part of this contract. If the provisions of this Manual conflict with provisions of other Department documents (not including statutes or regulations), the provisions of the Manual will govern. The Manual is available at the following DOT website link <http://www.ct.gov/dot/cwp/view.asp?a=2288&q=259258>. The Special Provisions relate in particular to the Reconstruction of Cross Street in the Borough of Naugatuck.

CONTRACT TIME AND LIQUIDATED DAMAGES

In order to minimize the hazard, cost and inconvenience to the traveling public and pollution of the environment, it is necessary to limit the time of construction work, which interferes with traffic as specified in Article 1.08.04 of the Special Provisions.

There will be two assessments for liquidated damages and they will be addressed in the following manner:

1. For this contract, an assessment per day for liquidated damages, at a rate of (\$2,100) Dollars per day shall be applied to each calendar day the work runs in excess of the 365 allowed calendar days for the contract.
2. For this contract, an assessment per hour for liquidated damages shall be applied to each hour, or any portion thereof, in which the Contractor interferes with normal traffic operations during the restricted hours given in Article 1.08.04 of the Special Provisions. The liquidated damages shall be as shown in the following tables entitled "Liquidated Damages Per Hour" for each hour, or any portion thereof, in which the Contractor interferes with normal traffic operations during the restricted hours.

For the purpose of administering this contract, normal traffic operations are considered interfered with when:

1. Any portion of the travel lanes or shoulders is occupied by any personnel, equipment, materials, or supplies including signs.
2. The transition between the planes of pavement surfaces is at a rate of one inch in less than fifteen feet longitudinally.

LIQUIDATED DAMAGES PER HOUR

Project No. 87-145 Route 8 Northbound 2 Through Lane Section		
If Working Periods Extends Into	A.M. 1 Lane Closure	P.M. 1 Lane Closure
1st Hour of Restrictive Period	\$ 500	\$ 1,000
2 nd Hour of Restrictive Period	\$ 500	\$ 10,000
3rd Hour or any Subsequent Hour of Restrictive Period	\$ 1,000	\$ 45,000

Project No. 87-145 Route 8 Southbound 2 Through Lane Section		
If Working Periods Extends Into	A.M. 1 Lane Closure	P.M. 1 Lane Closure
1st Hour of Restrictive Period	\$ 9,000	\$ 1,000
2 nd Hour of Restrictive Period	\$ 40,000	\$ 3,000
3rd Hour or any Subsequent Hour of Restrictive Period	\$ 60,000	\$ 6,000

The above liquidated damages apply to those hours shown on the Limitation of Operations charts designated with a "2" or "E".

For each hour shown on the Limitation of Operations charts designated with an "E", liquidated damages of \$500 shall apply for each hour, or part thereof, if all available shoulder widths are not available to traffic.

Liquidated damages in the amount of \$500 shall apply for each hour, or part thereof, that the Contractor interferes with existing traffic operations on any ramps during the non-allowable hours.

NOTICE TO CONTRACTOR – DEFINITION OF OWNER

Whenever the terms Owner, Department, State of Connecticut Department of Transportation, Commissioner, Engineer and/or State appear in the Contract Documents, it shall be understood to mean the Borough of Naugatuck acting directly or through a construction manager, inspector, engineer and/or other duly authorized representatives.

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 – METRIC UNITS

The contractor is hereby notified that a number of the CT State standard details list English units and the equivalent metric units in parentheses. It should be noted that this is an English unit project and any references to metric units should be disregarded, except on the traffic control signal plan where modifications to the existing signal equipment are proposed and information is provided in metric units.

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 AND COORDINATION OF EXISTING UTILITIES

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

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

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

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

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

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

Any damage to any existing private and public utility, as a result of the Contractors operations, shall be repaired to the utility's and Engineer's satisfaction at no cost to the 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 Contractor shall coordinate all utility relocations with the respective utility company.

The Contractor shall coordinate with the appropriate utility company for the adjustment of the utility gate boxes and valves. The Contractor shall notify the utility company a minimum of two weeks in advance of the required gate box and valve adjustments as shown on the plans. All work required to set private utility owned gate boxes to finished grade shall be completed by the respective utility company.

NOTICE TO CONTRACTOR – PROJECT UTILITIES

The Contractor shall notify Call-Before-You-Dig at 811, 1-800-922-4455 or visit www.cbyd.com at least 72 hours before any excavation work is begun to request mark-out of existing utilities. The Contractor shall coordinate his construction activities with all utility companies with facilities in the area. It should be noted that utility relocations will be a significant part of this project. The Contractor should note that coordination with Frontier will be of particular importance regarding relocation of utility poles.

It is the responsibility of the Contractor to coordinate all utility relocations with the respective utility company.

Listed below are the contacts for each utility company:

1. Comcast of Connecticut, Inc
Mr. Jim Bitzas,
Senior Manager of Western New England
1110 East Mountain Road
Westfield, MA 01085
PHONE: (413) 562-9923 EXT: 5783252
Mobile: (617)279-7485
E-MAIL: jim_bitzas@cable.comcast.com

2. The Southern New England Telephone Company dba Frontier Communications of Connecticut
Ms. Lynne DeLucia,
Engineering
1441 North Colony Road
Meriden, CT 06450-4101
PHONE: (203) 238-5000
Mobile: 860-967-4389
E-MAIL: Lynne.m.anastasio@ftr.com

3. Lightower Fiber Networks
Mr. Eric Clark,
Manager Fiber Construction
1781 Highland Avenue
Cheshire, CT 06410
PHONE: (203) 649-3904
MOBILE: (860) 863-8311
E-MAIL: eclark@lightower.com

4. The Connecticut Light and Power Company dba Eversource Energy – Electric Distribution
Mr. Thomas Woronik
Supervisor-Construction Engineering
22 East High Street
East Hampton, CT 06424
PHONE: (860) 267-3891
E-MAIL: thomas.woronik@eversource.com

5. Yankee Gas Services Company dba Eversource Energy - Gas Distribution
Mr. Thomas Costa
Manager Gas Project Engineering
157 Cordaville Road
Southborough, MA 01772
PHONE: (508) 305-7027
E-MAIL: Thomas.costa@eversource.com

6. The Connecticut Water Company
Mr. Daniel Lesnieski,
Infrastructure Rehabilitation Manager
446 Smith Street
Middletown, CT 06457
PHONE: (860) 292-2834
E-MAIL: dlesnieski@ctwater.com

7. Naugatuck Sanitary and Storm Sewer
Mr. Wayne Zirolli,
Borough Engineer
229 Church Street
Naugatuck, CT 06770
PHONE: (203) 720-7006
FAX: (203) 720-7041
E-MAIL: wzirolli@naugatuck-ct.gov

8. Mr. Mark Russo
District 4 Electrical Supervisor
Department of Transportation
Southbury, Connecticut 06488
(203) 264-9596

9. Ms. Ellen Murray
Fire Chief
Borough of Naugatuck Fire Department
41 Maple Street
Naugatuck, CT 06770
PHONE: (203) 720-7085
E-MAIL: emurray@naugatuck-ct.gov

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 – STAGING AND LAYDOWN AREAS

The Contractor must submit to the Engineer for review and approval any areas he intends to use for staging and laydown. In addition to review and approval by the Engineer, potential sites to be obtained by the Contractor from private owners must be submitted to the Borough of Naugatuck for approval. The Contractor must submit verification of approval by the property owner to the Engineer prior to use.

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, but may not be limited to, tests on the gradation, abrasion and soundness of the 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 - VEHICLE EMISSIONS

All motor vehicles and/or construction equipment (both on-highway and non-road) shall comply with all pertinent State and Federal regulations relative to exhaust emission controls and safety.

The contractor shall establish staging zones for vehicles that are waiting to load or unload at the contract area. Such zones shall be located where the emissions from the vehicles will have minimum impact on abutters and the general public.

Idling of delivery and/or dump trucks, or other equipment shall not be permitted during periods of non-active use, and it should be limited to three minutes in accordance with the Regulations of Connecticut State Agencies Section 22a-174-18(b)(3)(c):

No mobile source engine shall be allowed "to operate for more than three (3) consecutive minutes when the mobile source is not in motion, except as follows:

- (i) When a mobile source is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control,
- (ii) When it is necessary to operate defrosting, heating or cooling equipment to ensure the safety or health of the driver or passengers,
- (iii) When it is necessary to operate auxiliary equipment that is located in or on the mobile source to accomplish the intended use of the mobile source,
- (iv) To bring the mobile source to the manufacturer's recommended operating temperature,
- (v) When the outdoor temperature is below twenty degrees Fahrenheit (20 degrees F),
- (vi) When the mobile source is undergoing maintenance that requires such mobile source be operated for more than three (3) consecutive minutes, or
- (vii) When a mobile source is in queue to be inspected by U.S. military personnel prior to gaining access to a U.S. military installation."

All work shall be conducted to ensure that no harmful effects are caused to adjacent sensitive receptors. Sensitive receptors include but are not limited to hospitals, schools, daycare facilities, elderly housing and convalescent facilities. Engine exhaust shall be located away from fresh air intakes, air conditioners, and windows.

If any equipment is found to be in non-compliance with this specification, the contractor will be issued a Notice of Non-Compliance and given a 24 hour period in which to bring the equipment into compliance or remove it from the project. If the contractor then does not comply, the Engineer shall withhold all payments for the work performed on any item(s) on which the non-conforming equipment was utilized for the time period in which the equipment was out of compliance.

Any costs associated with this "Vehicle Emissions" 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 – DUST CONTROL

The Contractor is responsible for controlling air pollution at all times during work of this contract, 24 hours a day, 7 days per week, including non-working hours, weekends and holidays.

The Contractor shall comply with all State and Federal regulations pertaining to dust control. Particular attention shall be made to the Regulations of Connecticut State Agencies Section 22a-174-18a, b “Control of Particulate Emissions”.

The contractor shall submit a dust control plan to the Engineer within 30 days after the Award of the Contract. The dust control plan shall include contact information for the responsible individual(s) from the contractor (24-hour availability) who have authority to implement necessary controls. The plan should detail dust control procedures for anticipated activities that may typically generate dust (ex. Jack hammering, saw-cutting pavement, haul roads, material storage sites, etc.)

The cost for the dust control submittal associated with this “Dust Control” notice shall be included in the general cost of the contract. Payment for the application of dust control items included in the Contract will be under those respective items.

NOTICE TO CONTRACTOR - TRAFFIC SIGNALS

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

Qualified/Unqualified Workers

U.S. Department of Labor

Occupational Safety & Health Administration (OSHA) www.osha.gov

Part Number 1910

Part Title Occupational Safety & Health Administration

Subpart S

Subpart Title Electrical

Standard Number 1910.333

Title Selection and use of work practices

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

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

The Controller Unit (CU) shall conform to the current edition of the Functional Specifications for Traffic Control Equipment. The Functional Specifications require the CU meet NEMA Standard Publication No. TS2-1992 Type 2. The Functional Specifications are available on the Departments' web site <http://www.ct.gov/dot/site/default.asp>, click on "Doing Business with CONNDOT", under Engineering Resources click on "Traffic Engineering", Scroll down to Traffic Documents click on "Functional_Specifications_for_Traffic_Control_Equip.pdf".

Utility poles cannot be double loaded without proper guying.

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

The 30 Day Test on traffic control equipment, as specified in Section 10.00, Article 10.00.10 - TESTS, will not begin until the items listed below are delivered to the Department of Transportation, Traffic Signal Lab in Rocky Hill.

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

NOTICE TO CONTRACTOR – BEST MANAGEMENT PRACTICES FOR THE PROTECTION OF THE ENVIRONMENT

The Contractor's operations must be performed in a manner such that impacts to the environment, particularly wetland areas, are limited in accordance with the State of Connecticut Department of Energy and Environmental Protection and local regulatory agencies. The following must be adhered to:

1. No construction shall proceed until proper sedimentation and erosion control methods have been installed as the sequence of construction necessitates.
2. No equipment, materials, or machinery shall be stored, cleaned, or repaired within fifty (50) feet of any wetland or watercourse.
3. 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.
4. Fording of streams with equipment shall be prohibited unless specified elsewhere. DEP approval will be required for any haul road or temporary structure placed in wetlands or watercourses other than those shown on the plans.
5. No fill or material shall be deposited in surrounding wetlands or watercourses unless shown on the plans.
6. 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 or sediment chamber, 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, said operation shall cease until such time as feasible means of controlling turbidity are determined and implemented.
7. Cofferdams, and other measures such as bank stabilization, shall be of minimal size. In all cases, such installations shall not cause flooding or increase scouring potential.
8. Work within and adjacent to watercourses shall be conducted during periods of low flow (or low tide), whenever possible. The applicant shall remain aware of flow conditions during the conduct of such work, and shall cause such activity to cease should flow conditions threaten to cause excessive erosion, siltation, or turbidity. During storms, every effort shall be taken to secure the work site.
9. All temporary fill, such as that used for permitted access roads and/or cofferdams, shall be properly stabilized during use to prevent erosion, and, when no longer needed, must be disposed of at an upland site, and suitably contained to prevent turbid runoff from re-entering a wetland or watercourse. All areas affected by temporary fills must be restored to their original contours, and revegetated with suitable vegetation. The area/extent of

temporary fill or excavation shall be minimized to that area necessary to perform the required work.

10. 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. Hazardous Materials absorbent pads shall be stored on-site throughout the duration of the project. 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.
11. Every precaution shall be used while working in the vicinity of a waterway to prevent and minimize degradations of the existing water quality. All activities shall conform and be at all times consistent with applicable water quality standards and management practices of the Federal Clean Water Act (1972), Connecticut's Water Quality Standards and other applicable State Laws, and as defined in Form 817, Section 2.10.
12. All work shall be performed in accordance with local inland wetland and watercourses regulations suggested under the permit granted.

NOTICE TO CONTRACTOR – REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

The Contractor is hereby advised that Form FHWA-1273 “Required Contract Provisions Federal-Aid Construction Contracts” (contained herein) has been deemed to be applicable to this project and is incorporated and made a part of this project. The Contractor shall insert this form in each subcontract and further require its inclusion in all lower tier subcontracts. The Contractor shall be responsible for compliance by any subcontractor, lower tier subcontractor, or service provider.

NOTICE TO CONTRACTOR – BUY AMERICA

The Contractor is hereby advised that several items proposed for this project are subject to the Buy America requirements. Please refer to Section 1.06 of the standard specifications and FHWA's regulatory policy regarding Buy America (Title 23 C.F.R. 635.410 and 49 U.S.C. 5323(j)). The Contractor shall also be responsible for compliance by any subcontractor, lower tier subcontractor, or service provider.

NOTICE TO CONTRACTOR - CONSTRUCTION CONTRACTOR
DIGITAL SUBMISSIONS

Upon execution of the Contract, the Contractor acknowledges and agrees that contractual submittals for this Project shall be submitted and handled through a system of paperless electronic means as outlined in the special provision for Section 1.05 herein.

Shop drawings, working drawings, and product data shall be created, digitally signed and delivered by the Contractor in accordance with the Department's [Contractor Digital Submission Manual](#) (CDSM). Other deliverables that are required by other special provisions shall be similarly submitted.

Access credentials will be provided to the Contractor by the Department.

The Department will provide the Contractor with a list of email addresses that are to be used for each submittal type.

The Department shall not be held responsible for delays, lack of processing or response to submittals that do not follow the specified guidelines in the CDSM.

NOTICE TO CONTRACTOR – PUBLIC UTILITY PLANS AND UTILITY WORK SCHEDULES

The Contractor's attention is hereby directed to the fact that included in the plans are plan sheets furnished to the State by various utility companies affected by the proposed construction. These sheets are not intended to show all proposed work required by the utility installations to be completed by the various utility companies or municipal authorities, before, during or after the life of this contract. It may be possible that in addition to the work indicated on these plans, the utility companies and authorities may make adjustments to and/or remove installations other than those indicated on the plans or may install facilities not indicated. It is the contractor's responsibility to coordinate all utility relocations and that there will be no reimbursement for any delays caused by utility relocations. The contractor's stage construction must accommodate the required utility relocations.

Utility work schedules detailing work to be performed by each utility company are attached for reference. The Contractor is required to coordinate such work with each individual utility company.

CT Water has recently completed the installation of a new water main from Cotton Hollow Road to New Have Road (Route 63). Water main design plans have been included in the plan set "for information only". The Contractor shall be responsible for removing any abandoned water mains for proposed storm drainage installations at no additional cost to the project.

UTILITY WORK SCHEDULE Rev 3/2015

CTDOT Project Number:	87-145	Town:	Naugatuck
Project Description:	Reconstruction of Cross St		
CTDOT Utilities Engineer:	Xiuyun Cai		
Phone:	860-594-3269	Email:	Xiuyun.Cai@ct.gov
Utility Company:	Eversource Energy		
Prepared By:	Michael Prentice	Date Prepared:	6/29/2017
Phone:	203-271-4794	Email:	michael.prentice@eversource.com

Scope of Work

The following is a description of all utility work planned to be completed in conjunction with the CTDOT project. The narrative describes all work to be carried out by the utility or its contractor, including temporary and permanent work required by the project as well as any additional utility infrastructure work the utility intends on performing within the project limits during the construction of the project.

Eversource will provide Frontier our Pole Size/Class and guying requirements. When Frontier has set new poles and anchors behind new curb line Eversource will shift our conductors and equipment to new poles and install guying as required. Eversource will need to replace conduit along Meadow Brook Place and set conduit deeper to accomodate new sidewalk.

Special Considerations and Constraints

The following describes the limiting factors that must be planned for in the scheduling and performance of the utility work. For example, restrictions on cut-overs, outages, limitations on customer service interruptions (e.g. nights, weekends, holidays), seasonal and environmental shutdown periods, long lead material procurements, etc..

60 days notice will be required to allow Eversource time to procure Labor and Materials. Frontier will need to set poles at agreed locations behind new curb line.

UTILITY WORK SCHEDULE Rev 3/2015

CTDOT Project Number: **87-145** Town: **NAUGATUCK**

Project Description: **RECONSTRUCTION OF CROSS STREET**

CTDOT Utilities Engineer: **XIUYUN CAI**

Phone: **(860)594-3269** Email: **Xiuyun.Cai@ct.gov**

Utility Company: **CROWN CASTLE FIBER**

Prepared By: **TERENCE J SHEA** Date Prepared: **2/22/2018**

Phone: **(203)649-3905** Email: **terence.shea@crowncastle.com**

Scope of Work

The following is a description of all utility work planned to be completed in conjunction with the CTDOT project. The narrative describes all work to be carried out by the utility or its contractor, including temporary and permanent work required by the project as well as any additional utility infrastructure work the utility intends on performing within the project limits during the construction of the project.

Crown Castle Fiber's work will consist of shifting to poles relocated or replaced by Frontier.

Special Considerations and Constraints

The following describes the limiting factors that must be planned for in the scheduling and performance of the utility work. For example, restrictions on cut-overs, outages, limitations on customer service interruptions (e.g. nights, weekends, holidays), seasonal and environmental shutdown periods, long lead material procurements, etc..

PLEASE NOTE THAT ANY TIME FRAME GIVEN AS A START TIME OR DURATION OF WORK CAN BE AFFECTED BY MANY FACTORS INCLUDING, BUT NOT LIMITED TO, MAKE READY WORK, OTHER UTILITIES, PERMIT APPLICATIONS, CHANGES IN SCOPE, INCLEMENT WEATHER, HOLIDAYS AND EMERGENCY SITUATIONS.

NOTICE TO CONTRACTOR - PERMITS/PERMIT APPLICATIONS

The Contractor is hereby notified that all permits and permit applications contained herein shall be made a part of this Contract, and that the Contractor shall be bound to comply with all requirements of such permits and permit applications as though the Contractor were the permittee. If at the time the permit is received its contents differ from that which is outlined in the application, the permit shall govern. Should the permit be received after the receipt of bids and the permit requirements significantly change the character of the work, adjustment will be made to the contract in accordance with the appropriate articles in Section 1.04. The requirements and conditions set forth in the permit and permit applications shall be binding on the Contractor just as any other specification would be. In the case of a conflict between a provision of the environmental permit or permit application and another provision in the contract documents, the former shall govern.

02a ntc_permits-permit applications.doc



BOROUGH OF NAUGATUCK

229 Church Street
Land Use Office-2nd floor
Naugatuck, CT 06770
TEL (203) 720-3396
FAX (203) 720-5026

Final Wetlands Permit Naugatuck Land Use Office

January 5, 2018

Project Name/Permit # Activities associated with IW Application #17-07
Reconstruction of Cross Street

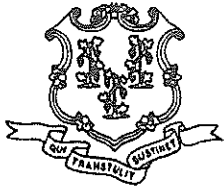
Plans Reviewed: Site Development Plans entitled "Reconstruction of Cross
Street", Naugatuck, Connecticut, CTDOT Project No. 87-
145, Federal Aid Project No. 1087 (111), MMI Project No.
2129-28, Scale: 1"=40', Dated: November 22, 2017 by
Milone & MacBroom

On Wednesday January 3, 2018, the Naugatuck Inland Wetlands Commission approved
IW #17-07 with the following general conditions:

1. This permit shall be valid for a period of 5 years from the date of issue with the provision that:
 - a) The commission may establish a specific time period within which any regulated activity shall be conducted.
2. The permittee shall notify the Inland Wetlands Agent/Borough Engineer 48 hours before the commencement of work and upon its completion.
3. All work and regulated activities conducted pursuant to this authorization shall be consistent with the terms and conditions of this permit. Any structures, excavation, fill, obstructions, encroachments or regulated activities not specifically identified and authorized herein shall constitute a violation of this permit and may result in its modification, suspension or revocation.
4. This authorization is not transferrable without written notification to the Inland Wetlands Commission and the transferee agrees to all conditions of this permit.
5. In evaluating this application, the Commission has relied on information provided by the applicant. If such information subsequently proves to be false, incomplete or misleading, this permit may be modified, suspended or revoked and the permittee may be subject to any other remedies or penalties provided by the law.
6. The permittee shall employ best management practices, consistent with the terms and conditions of this permit, to control storm water discharges and to

prevent erosion and sedimentation and to otherwise prevent pollution of wetlands and watercourses. The permittee shall immediately inform the commission of any problems involving wetlands or watercourses which have developed in the course of, or which are caused by, the authorized work.

7. This permit is subject to and does not derogate any rights or powers of the Borough of Naugatuck, conveys no property rights or exclusive privileges, and is subject to all public and private rights and to all applicable federal, state and local law. In conduction or maintaining any activities authorized herein, the permittee may not cause pollution, impairment or destruction of the inland wetlands and watercourses of Naugatuck.
8. If the activity authorized by the inland wetland permit also involves activity or a project which requires zoning or subdivision approval, special permit, variance or special exception, no work pursuant to the wetland permit may begin until such approval is obtained.
9. Sedimentation and erosion control measures must be installed prior to any commencement of site activity and the Land Use office notified that they are put in. Said measures must be regularly inspected prior to and subsequent to major storm events and maintained during construction and properly removed with all affected land restored prior to requesting final inspection. An authorized representative, responsible for all sedimentation and erosion control measures, must be registered with the Naugatuck Land Use office, in addition to being listed on the drawings (include a name, address, business telephone number, off-hours telephone number and other pertinent contact information). All sedimentation and erosion control measures must be provided and installed in accordance with the Connecticut State Department of Energy and Environmental Protection (DEEP) Guidelines for Soil Erosion and Sediment Control dated 2002, or as updated. In constructing the authorized activities, the permittee shall implement such management practices consistent with the terms and conditions of the permit as needed to control storm water discharges and to prevent erosion and sedimentation and to otherwise prevent pollution of wetlands and watercourses.
10. Long-term maintenance of Best Management Practices.
11. Applicant shall submit reports (monthly, quarterly or annually) with the status of the construction.
12. Prior to the issuance of the wetland permit, all Inland Wetland Development Fees and Regulated Area Fees will be paid to the Borough of Naugatuck.
13. Cement truck tailings shall not be washed off on-site or into any wetland.
14. Wetlands and watercourses shall be cleaned out regularly of any debris.



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION



2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546

Phone:

April 13, 2018

The Honorable N. Warren Hess III
Mayor
Borough of Naugatuck
Town Hall
229 Church Street
Naugatuck, Connecticut 06770

Dear Mayor Hess:

Subject: Flood Management Certification
State Project No. 087-0145
Reconstruction of Cross Street
Borough of Naugatuck

In accordance with the Memorandum of Understanding (MOU) between the Department of Transportation (Department) and the Department of Energy and Environmental Protection (DEEP) regarding flood management certifications for municipal projects, the Department has completed the review of the flood management certification (FMC) prepared and submitted for the borough of Naugatuck for the subject project. The certification states that the proposed activity is consistent with all applicable standards and criteria established in Section 25-68d(b) of the Connecticut General Statutes and Sections 25-68h-1 through 25-68h-3, inclusive, of the Regulations of Connecticut State Agencies.

The project consists of the reconstruction of Cross Street, including the realignment of the intersection of Cross Street and Cotton Hollow Road, as well as upgrading the existing drainage system, as shown on the project plans, dated November 29, 2017, and as documented in the Final Plans for Review Design Report and Drainage Design Report, dated November 2017. Portions of the project are located within the 100-year flood zone and floodway of Beacon Hill Brook.

The certification is complete and approved, subject to the following standard conditions:

Standard Conditions:

1. Time of Year Restriction on In-water Construction
 - a. Between September 30 and May 31 the municipality shall not place fill, excavate material, or conduct any other construction activity in any watercourse unless such activity is confined by a cofferdam or other device which isolates such activity from the watercourse, unless the DEEP Inland Fisheries Division has given written authorization otherwise.

- b. The municipality shall not place fill, excavate material, or conduct any other activity in any watercourse stocked with fish by the Commissioner or any other person, or in any tributary to such watercourse, from 12:01 a.m. on the Monday preceding the third Saturday in April through 12 midnight on the Sunday preceding the fourth Saturday in April.
- c. The municipality shall not place fill, excavate material or conduct any other construction activity in or adjacent to any watercourse, which activity may adversely affect anadromous fish, during the time period when anadromous fish are known or reasonably believed to be migrating in the watercourse.

2. Pollution Prevention/Best Management Practices

The municipality shall not cause or allow the authorized activity, including any construction associated therewith, to result in pollution or other environmental damage and shall employ best management practices to prevent such damage. The municipality shall, in addition to employing any other best management practices necessary to prevent such damage, do the following:

a. Controlling Erosion

The municipality shall install and maintain in optimal condition erosion and sedimentation controls to prevent erosion and discharge of material into any waters of the state, including wetlands, as a result of the authorized activity or any construction associated therewith. Such controls shall be installed and maintained in conformance with the *Connecticut Guidelines for Soil Erosion and Sediment Control*, as revised, published by the Connecticut Council on Soil and Water Conservation pursuant to Section 22a-328 of the Connecticut General Statutes.

b. Proper Disposal of Material

All material and solid waste generated during any construction associated with such activity shall be disposed of in accordance with applicable federal, state and local law.

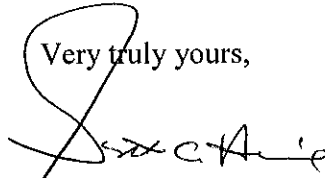
3. Storage of equipment/material within the floodplain should be avoided; but, if absolutely necessary, the municipality will require the contractor to remove equipment and materials from the 100-year floodplain during periods when flood warnings have been issued or are anticipated by a responsible federal, state or local agency. It shall be the contractor's responsibility to be knowledgeable of such warnings when flooding is anticipated.
4. Work shall not be conducted in or adjacent to watercourses and reservoirs used as public drinking water supply sources without coordination with the water supply utility and the Department of Public Health.
5. All temporary structures, cofferdams, and fill shall not impede the movement of flood flows and shall be removed at the completion of their use. The design of such temporary structures, cofferdams and fill shall be based on the DOT Drainage Manual, where applicable. Sheet piling that is cut 1 foot below existing grade shall be considered removed.

6. All fill shall be clean material, free of stumps, rubbish, hazardous, and toxic material.
7. Once work is initiated, it shall proceed rapidly and steadily until completed and stabilized in order to minimize use of temporary structures and to minimize soil erosion.

A copy of the completed certification forms is enclosed for your records. No revisions or alterations to the approved plans are allowed without first obtaining written approval from the Department for such alterations.

If there are any questions, please contact Mr. Michael Masayda, Transportation Principal Engineer for the Hydraulics and Drainage Section, at (860) 594-3238.

Very truly yours,

A handwritten signature in black ink, appearing to read "Scott A. Hill". The signature is written in a cursive style with a large, looping initial "S".

Scott A. Hill, P. E.
Engineering Administrator
Bureau of Engineering and Construction

Enclosures

cc: Mr. Jeff Caiola, DEEP

**Statewide Flood Management Certification for
Federally and State Funded Municipal Projects**

Attachment A: DOT

A-1: Engineering Certification

Name of Subject Facility and DOT Project Number:

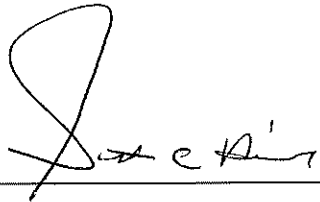
Reconstruction of Cross Street, Naugatuck, CT
DOT Proj. Number: 87-145

Name of floodplain and watercourse:

Naugatuck River
Beacon Hill Brook

I hereby certify, in reliance on the Municipal Official Certification, the Town Engineer / Consultant-Professional Certification, the DOT Hydraulics and Drainage Section and the DOT Environmental Planning reviews, that the above referenced project qualifies for the DEP Commissioner's approval pursuant to Section 25-68d of the General Statutes, and that the proposed activity described in this application is consistent with all applicable standards and criteria established in Sections 25-68d(b) of the General Statutes and Sections 25-68h-1 through 25-68h-3, inclusive, of the Regulations of Connecticut State Agencies.

Signature: _____



4/11/18

Date

Print/Type: _____

SCOTT A. HILL

Transportation Engineering Administrator
Bureau of Engineering and Construction

**Statewide Flood Management Certification for
Federally and State Funded Municipal Projects**

Attachment A: DOT

DOT Project No. 161-140

A-2: Hydraulics and Drainage Section Review

Based on my review and reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the proposed activity described in this application is consistent with all applicable standards and criteria established in Sections 25-68d(b) of the General Statutes and Sections 25-68h-1 through 25-68h-3, inclusive, of the Regulations of Connecticut State Agencies.

Signature: Michael Masayda 4-12-18
Date

Print/Type: Michael Masayda
Transportation Principal Engineer
Hydraulics and Drainage Section

A-3: Environmental Planning Review

Based on my review and reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the proposed activity described in this application is consistent with all applicable standards found in the 2004 Connecticut Stormwater Manual, 2002 Erosion and Sedimentation Control Guidelines (as amended) and that there has been proper coordination with the Inland Fisheries Division and the Natural Diversity Database.

Signature: Andrew Davis 4/12/2018
Date

Print/Type: Andrew Davis
Transportation Supervising Planner
Office of Environmental Planning

**Statewide Flood Management Certification for
Federally and State Funded Municipal Projects**

Attachment B: Municipality

B-1: Municipal Official Certification

Name of Applicant / Municipality: **Borough of Naugatuck**

DOT Project No.: **87-145**

Description of Proposed Project: **Reconstruction of Cross Street from its intersection with Rte 8 to its intersection with Rte 63 (New Haven Road)**

1. The recipient of federal and/or state funding will be:

Name: **N. Warren Hess III, Mayor, Bourough of Naugatuck**

Mailing Address: **229 Church Street**

City/Town: **Naugatuck**

State: **CT**

Zip Code: **06770**

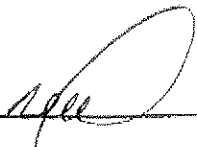
Phone: **203-720-7000 ext.**

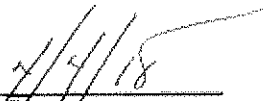
Fax:

Based on my review and reasonable investigation, including my inquiry of those individuals responsible for preparing the information, the proposed activity described in this application is consistent with all applicable standards and criteria established in Sections 25-68d(b) of the General Statutes and Sections 25-68h-1 through 25-68h-3, inclusive, of the Regulations of Connecticut State Agencies.

I understand that a false statement made in the submitted information may, pursuant to Section 22a-6 of the General Statutes, be punishable as a criminal offense under Section 53a-157b of the General Statutes, and may also be punishable under Section 22a-438 of the General Statutes.

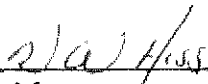
Signature:





Date

Print/Type:



Mayor

Statewide Flood Management Certification for
Federally and State Funded Municipal Projects

Attachment B: Municipality

B-2: Town Engineer / Consultant - Professional Certification

DOT Project No.: 87-145

Description of Proposed Project: Reconstruction of Cross Street from its intersection with Rte 8 to its intersection with Rte 63 (New Haven Road).

Plan Dated and Revised Through:

November 29, 2017

Hydrologic and Hydraulic Study Dated:

Not Applicable

I hereby certify that the prepared information and the proposed activity described in this application is consistent with all applicable standards and criteria established in Sections 25-68d(b) of the General Statutes and Sections 25-68h-1 through 25-68h-3, inclusive, of the Regulations of Connecticut State Agencies.

I understand that a false statement made in the submitted information may, pursuant to Section 22a-6 of the General Statutes, be punishable as a criminal offense under Section 53a-157b of the General Statutes, and may also be punishable under Section 22a-438 of the General Statutes.

Signature: _____

Gary R. Nash

2/12/2018

Date

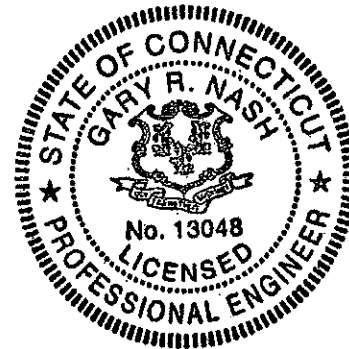
Print/Type: _____

Gary R. Nash

Professional Engineer

P.E. Number: _____

13048



Affix P.E. Stamp Here

NOTICE TO CONTRACTOR – GEOTECHNICAL INFORMATION

The Contactor is hereby given notice that the attached geotechnical report is included as part of this contract.

FREEMAN

COMPANIES

LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES

Geotechnical Report
Reconstruction of Cross Street
Route 8 to Route 63
Naugatuck, Connecticut

December 15, 2016
(Revised from October 22, 2015)

Freeman Project No.: 2014-0803

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

Prepared by:
Freeman Companies, LLC
36 John Street
Hartford, CT 06106



Nathan L. Whetten, P.E., D.GE
Vice President of Geotechnical Engineering

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ATTACHMENTS

Table

1. Subsurface Data

Figures

1. Site Location Map
2. Exploration Location Plan 2A through 2E

Appendices

- A. Test Boring Logs
- B. Results of Laboratory Testing

1.0 INTRODUCTION

1.1 Summary

This report presents our evaluation of subsurface conditions and geotechnical engineering recommendations for the Reconstruction of Cross Street, from Route 8 to Route 63 in Naugatuck, Connecticut. The improvements include full depth reconstruction of the entire length of Cross Street, widening Cross Street with an earth slope northeast of the intersection with Cotton Hollow Road, and embankment walls between Stas. 26+50 and 27+50.

Subsurface conditions beneath the asphalt pavement consisted of medium dense to very dense fill over very dense glaciofluvial deposits. The fill appears to be reworked native soils consisting of sand and gravel with numerous cobbles and boulders. New asphalt pavement, base and subbase materials will be provided. We recommend that pavement edge drains be included in the section to remove water from the subgrade and reduce degradation due to frost impacts.

Our detailed foundation design recommendations follow.

1.2 Scope of Work

Freeman Companies, LLC performed the following tasks:

- Engaged a subsurface exploration contractor to conduct test borings at the site.
- Provided technical monitoring of the explorations.
- Arranged for a testing laboratory to conduct laboratory soil tests.
- Evaluated the subsurface conditions and prepared this report containing geotechnical design recommendations and construction considerations.

1.3 Authorization

The work was completed in accordance with our agreement dated August 25, 2015.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

Cross Street is located in Naugatuck, Connecticut, as indicated on Figure 1, Location Map. It is a two lane, paved road that stretches between Route 8 and Route 63 (New Haven Road). The existing roadway elevation varies, and generally increases in elevation from south to north.

2.2 Project Description

Boring location plans titled *"Reconstruction of Cross Street"*, dated August, 2015 and sheet No. 19 of plans titled *"Roadway Plan"*, dated October 1, 2015 were reviewed. Full-depth reconstruction of the Cross Street pavement is planned. Widening of the roadway will be accomplished with 3 horizontal to 1 vertical (3H:1V) earth slopes. Embankment-type (MSE) retaining walls are planned on the east side of the roadway between approximately Sta. 26+50 and 27+50.

3.0 SUBSURFACE EXPLORATIONS

3.1 Field Explorations

Fifteen test borings (C-1, C-2, RB-1 through RB-10, SB-1, SB-2, and SB-3) were completed by General Borings, Inc. of Prospect, Connecticut on September 16, 17, 18, and 29, 2015 with a truck mounted drill rig using 4.25 inch inside diameter hollow-stem augers to depths ranging from 2.5 feet to 37 feet below existing ground surface. Borings were generally terminated at refusal or at predetermined depths. Standard Penetration Tests (SPTs) were taken semi-continuously to 12 feet and at maximum 5 foot intervals thereafter.

Exploration locations were determined by taping from existing site features and are considered approximate. A Freeman Companies geotechnical engineer observed the drilling and prepared the field boring logs with soil descriptions based on the visual observation of the samples. Test boring logs are included in Appendix A and locations are shown on Figure 2, Subsurface Exploration Location Plan.

3.2 Laboratory Testing

Laboratory tests were performed to aid in classification and determination of engineering properties. Eight grain size distribution analyses were performed on soil samples recovered from the borings by Geotesting Express of Acton, Massachusetts. Laboratory testing results are included in Appendix B.

4.0 SUBSURFACE CONDITIONS

4.1 Subsurface Profile

The site subsurface conditions encountered in the explorations generally consist of fill overlying a native glaciofluvial deposit. Subsurface conditions are known only at the boring locations and may differ significantly between borings. The generalized subsurface conditions follow. See Table 1, attached, for boring specific data.

Stratum	Depth to Bottom of Stratum (feet)	Generalized Description
Fill	1.5 to 22	Brown coarse to fine SAND, some gravel, trace to little silt, frequent cobbles and boulders, trace roots and tree branch (in RB-3 and RB-7), loose to very dense
Glaciofluvial Deposits	Greater than 37	Brown coarse to fine SAND, trace to some gravel, trace to little silt, frequent cobbles and boulders, medium dense to very dense

Each of the test borings except RB-1 and RB-2 encountered asphalt approximately 3 to 12 inches in thickness, and base course gravel approximately 8 to 12 inches in thickness. Borings RB-1 and RB-2 encountered approximately 4 inches of topsoil.

The fill is likely reworked glacialfluvial deposits from the original construction and nearby utility installations. Visual observation of auger cuttings and split spoon sampling in the top two feet indicate the presence of little to no subbase material at various locations. Frequent cobbles and boulders were encountered in all borings.

4.2 Groundwater

Groundwater was encountered in borings SB-1 to SB-3 approximately 15 feet to 27 feet below existing ground surface as follows:

Boring Number	Measured Depth to Groundwater (Feet)
SB-1	24
SB-2	27
SB-3	15

Groundwater level measurements were made during or immediately following drilling and may not represent static conditions. Groundwater levels will fluctuate with season, precipitation, nearby construction activities, and other conditions.

5.0 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

5.1 Pavement

The existing fill and glaciofluvial deposits are considered suitable for support of the reconstructed pavement. Roots and a tree branch were observed in borings RB-3 and RB-7. Organic matter and other unsuitable fill materials, if encountered, should be removed and replaced with compacted gravel subbase.

The following pavement section is recommended:

Item	Thickness (In.)	CTDOT Specification (Form 816)
Pavement Wearing Course	3	HMA S0.5 Superpave
Pavement Binder Course	4	HMA S1.0 Superpave
Subbase Course	12	M.02.06, Grading B (Gravel Subbase)

Edge Drains – The native glaciofluvial deposits are dense, contain “little” (approximately 10 to 20 percent by weight) silt, and are not expected to be free-draining. We recommend installing pavement edge drains to remove water from the base to subbase material and provide further protection to the pavement during freezing weather and the spring thaw period. Refer to the typical Connecticut Department of Transportation (CTDOT) edge drain detail.

5.2 Slopes

It is understood that 3 horizontal to 1 vertical (3H:1V) earth slope will be placed to widen the Cross Street on the east side near the intersection with Cotton Hollow Road. This slope is expected to be stable. We recommend that slopes be loamed and seeded for erosion control.

5.3 Retaining Walls

Embankment walls (MSE-type) are planned between approximately Stas. 26+50 and 27+50. Based on soil conditions encountered in RB-6, soils consist of existing fill and dense glaciofluvial deposits. The glaciofluvial deposits are considered suitable for support of the wall. However, the existing fill is loose and silty, and should be removed prior to placement of the wall.

The following parameters are recommended for design:

- **Foundation Type:** Spread footing bearing on dense glaciofluvial deposits or granular fill.
- **Footings Foundation Depth:** Minimum of 4 feet below the lowest adjacent ground surface.
- **Backfill Material:** Place Pervious Structure Backfill (CTDOT Form 816 M.02.05) behind the wall above a line defined by a 1V:1.5H slope extending up from the heel of the footing to grade.
- **Lateral Earth Pressures** (assumes active earth pressure conditions):
 - Equivalent fluid unit weight of soil: 35 pounds per cubic foot (pcf)
 - Surcharge: 0.3 times the vertical surcharge pressure
- **Subgrade Preparation:** Remove unsuitable existing fill. Place a minimum 12-inch thick layer of gravel subbase.
- **Service Limit Bearing:** Nominal Bearing Resistance = 3,000 pounds per square foot (psf); Resistance Factor = 1.0 (per AASHTO 10.5.5.1); Allowable bearing capacity = 3,000 psf.
- **Strength Limit Bearing:** Nominal Bearing Resistance 5,500 psf; Resistance Factor = 0.55 (AASHTO Table 11.5.7-1).
- **Settlement at Recommended Bearing Pressure:** Estimated total settlement less than 1 inch; differential less than $\frac{3}{4}$ - inch.
- **Coefficient of Friction ($\tan \delta$) Along Bottom:** 0.50 (AASHTO Table 3.11.5.3-1); Resistance factor 0.8 (AASHTO Table 10.5.5.2.2-1).

Drainage of the MSE wall consisting of a crushed stone chimney drain and/or perforated drainage pipe should be provided to remove water from within the reinforced backfill. Drainage pipes should not be allowed within the zone of reinforced backfill due to the potential for leakage, erosion of soil, and possible failure of the wall; drainage pipes should be located behind the grids at a location where they can be maintained.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Excavation

Conventional heavy construction equipment should be suitable for excavation in existing soil materials. Boulders will likely be encountered and may require rock excavation techniques such as controlled drilling and blasting. Trench excavations will require larger trench widths to accommodate boulder removal or the ability to remove the protruding portions of boulders by chiseling, mechanical splitting or blasting. Excavation should conform to OSHA excavation regulations contained in 29 CFR Part 1926, latest edition, but should be confirmed at the time of excavation.

6.2 Subgrade Preparation

Subgrades in most areas will consist of existing fill following removal of the existing pavement. Organic or other unsuitable materials observed at subgrade level should be removed and replaced with compacted gravel subbase up to the bottom of the pavement section. The subgrade should be thoroughly compacted with a large ride-on 10-ton vibratory drum roller.

6.3 Dewatering

We anticipate that excavation dewatering can be accomplished by pumping from properly filtered sumps and be discharged according to federal, state, and local regulations. Surface water entering the construction area should be diverted away from excavations.

6.4 Reuse of Existing Soils

Existing fill and glaciofluvial deposits are typically silty and may not be suitable for reuse as base, subbase, or pervious structure backfill due to the high fines content. They may be reused as embankment fill however, the high fines content will make them difficult or impractical to place and compact to the required degree should they become excessively wet. Drying of the materials will be time consuming or impractical during wet or cold weather.

7.0 FUTURE SERVICES AND LIMITATIONS

We recommend that Freeman Companies be engaged during construction to observe:

- Preparation of subgrades
- Verify that soil conditions exposed in excavations are in general conformance with design assumptions
- Verify that the geotechnical aspects of construction are consistent with the project specifications

This report was prepared for the exclusive use of Milone & MacBroom and the project design team. The recommendations provided herein are based on the project information provided at the time of this report and may require modification if there are any changes in the nature, design, or location or alignment of the roadway or structures.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, expressed or implied, is made.

2014-0803
 Cross Street Reconstruction
 Naugatuck, Connecticut

Table
 Subsurface Data

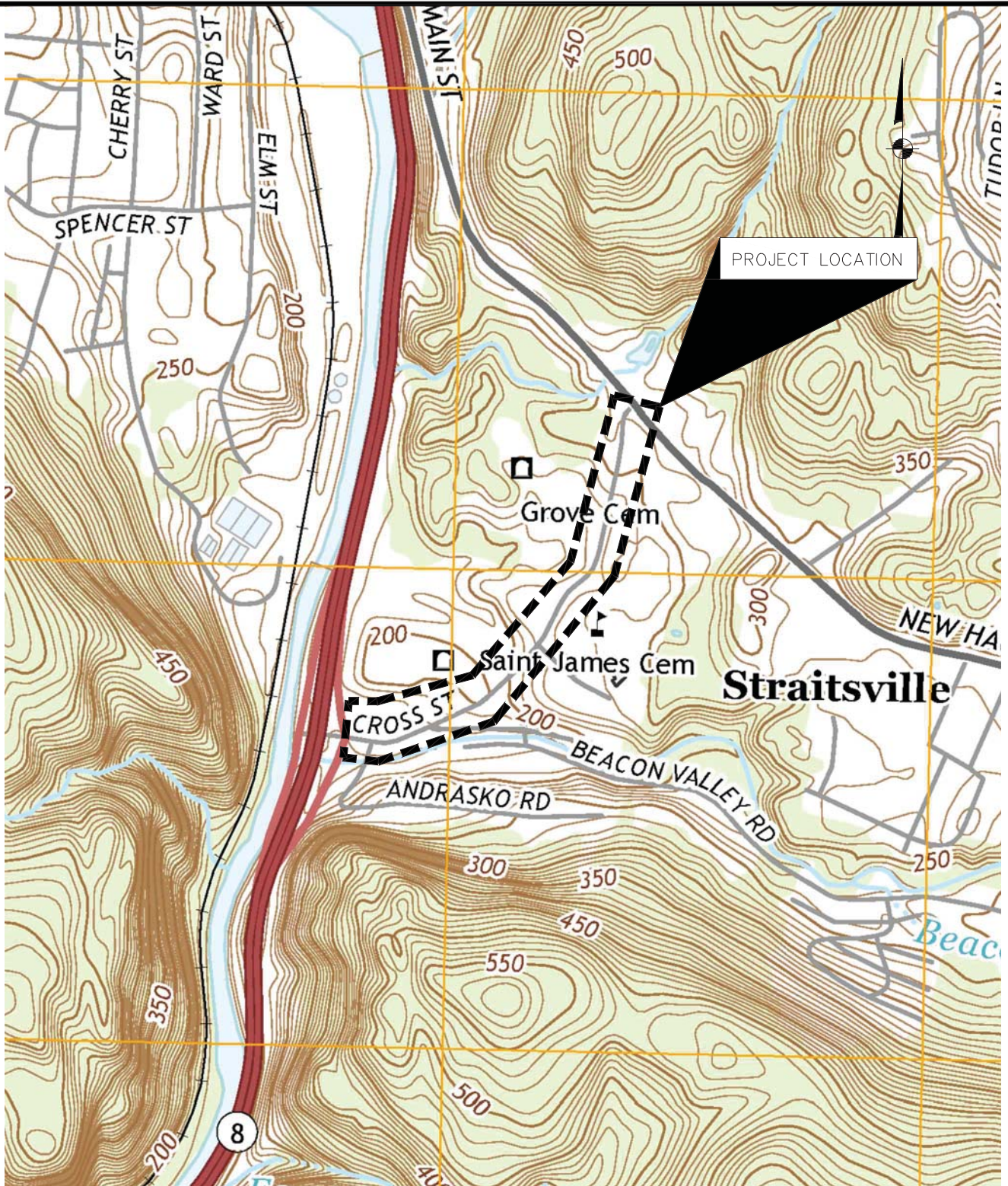
Boring No.	Depth (ft.)	Fill ²	Glaciofluvial Deposits	Groundwater Depth (ft.) ³
C-1	2.5	2.5	Not Encountered	Not Encountered
C-2	2.5	2.5	Not Encountered	Not Encountered
RB-1	8.9	8.9	Not Encountered	Not Encountered
RB-2	8.2	5	>8.2	Not Encountered
RB-3	7.5	5	>7.5	Not Encountered
RB-4	6	5	>6	Not Encountered
RB-5	6	1.5	>6	Not Encountered
RB-6	7	3	>7	Not Encountered
RB-7	9	6	>9	Not Encountered
RB-7A	6.5	5	>6.5	Not Encountered
RB-8	15.3	5	>15.3	Not Encountered
RB-9	6.5	5	>6.5	Not Encountered
RB-10	10	5	>10	Not Encountered
SB-1	37	15	>37	24
SB-2	36.7	22	>36.7	27
SB-3	19	15	>19	15

Notes:

1. Ground surface elevation data was not available.
2. Fill depths are inclusive of topsoil or pavement encountered.
3. Groundwater levels are approximate and were observed during or shortly after drilling activities.
4. ">" - Greater than

FIGURES

Freeman Companies, LLC · Y:\2014\2014-0803_Reconstruction of Cross St_Naugatuck_MM\DWG\Figure 1.dwg Oct 07, 2015-9:09am Plotted By: mkswek



USGS QUADRANGLE MAP
NAUGATUCK, CONNECTICUT
DATE 2015

FREEMAN
COMPANIES

LAND DEVELOPMENT · ENGINEERING DESIGN · CONSTRUCTION SERVICES
 36 JOHN STREET
 HARTFORD, CT 06106
 WWW.FREEMANCOS.COM
 TEL: (860)251-9550
 FAX: (860)986-7161
ELEVATE YOUR EXPECTATIONS

SITE LOCATION MAP




CROSS STREET RECONSTRUCTION
NAUGATUCK, CONNECTICUT

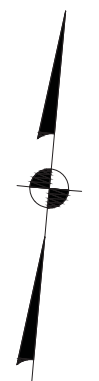
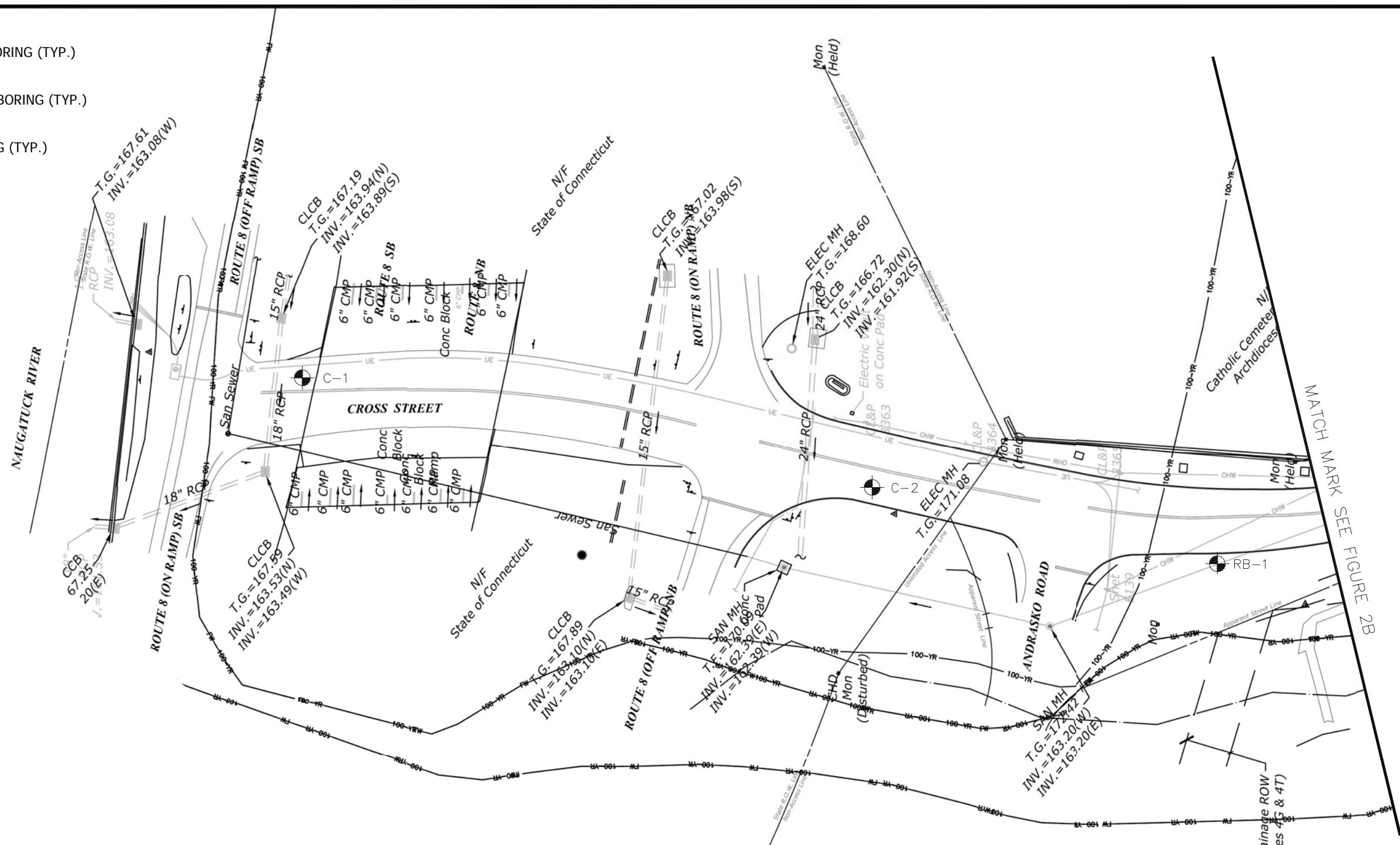
DRAFTED: M.K.
 CHECKED: T.T.
 APPROVED: N.W.
 SCALED: 1" = 1000'
 PROJECT NO.: 2014-0803
 DATE: 10/06/2015

SHEET NO.

FIGURE 1

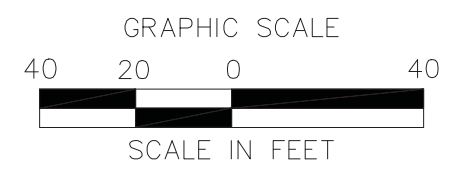
LEGEND:

-  RB-1 ROADWAY BORING (TYP.)
-  SB-1 STRUCTURE BORING (TYP.)
-  C-1 CORE BORING (TYP.)



NOTES:

1. EXPLORATION LOCATIONS WERE TAPED FROM EXISTING SITE FEATURES AND ARE APPROXIMATE
2. REFER TO THE TEXT AND APPENDICES FOR ADDITIONAL INFORMATION
3. BASE PLAN PROVIDED BY MIILONE & MACBROOM



SUBSURFACE EXPLORATION LOCATION PLAN

CROSS STREET RECONSTRUCTION NAUGATUCK, CONNECTICUT

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES

FREEMAN COMPANIES, LLC
 36 JOHN STREET
 HARTFORD, CT 06106
 WWW.FREEMANCOS.COM
 TEL: (860)251-9550
 TOLL FREE: (800)604-5141
 FAX: (860)986-7161

ELEVATE YOUR EXPECTATIONS

No.	Date	Description




REVISIONS

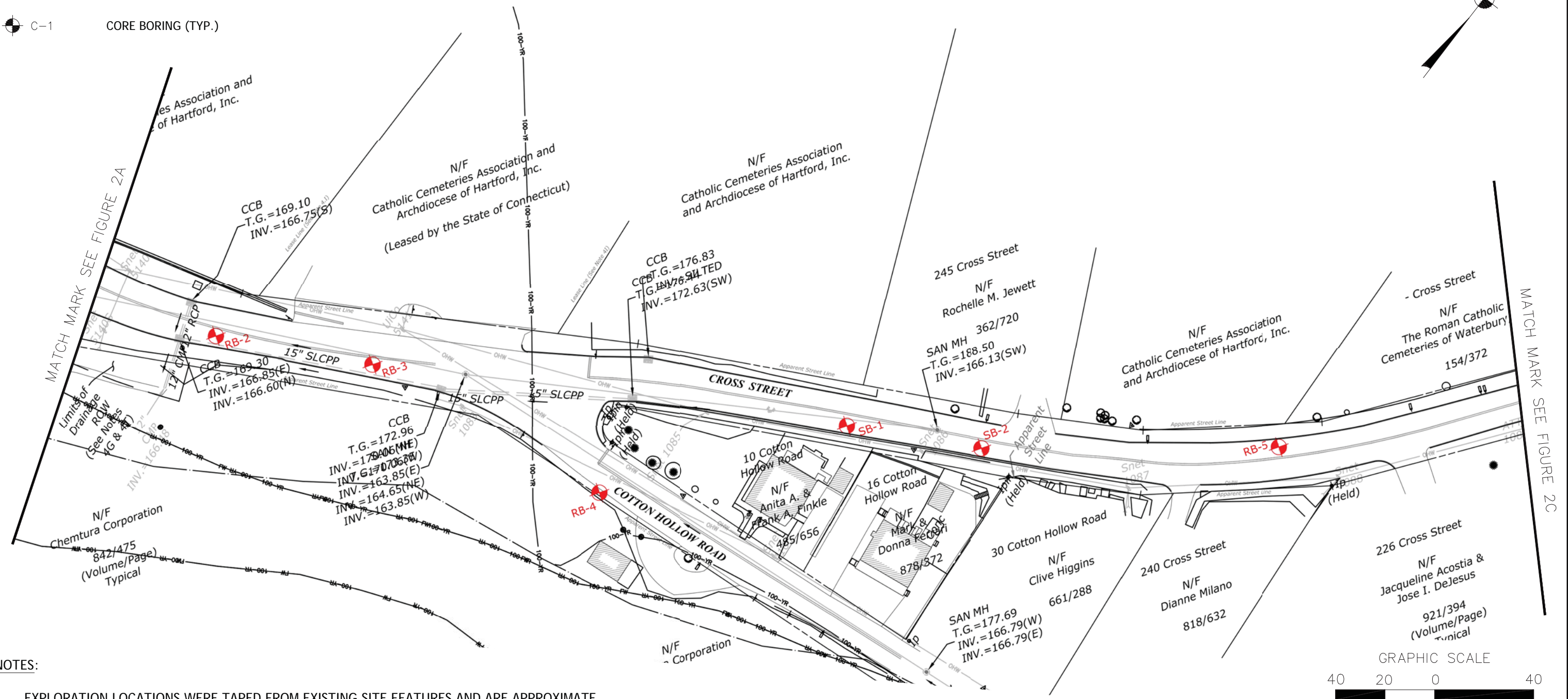
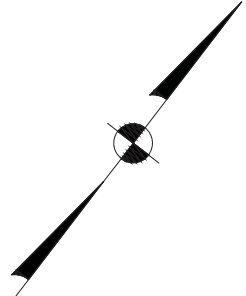
DRAWN:	M.K.
CHECKED:	T.T.
APPROVED:	N.W.
SCALE:	1" = 40'
PROJECT NO.:	2014-0803
DATE:	10/07/2015

SHEET NO.
FIGURE 2A

Freeman Companies, LLC . Y:\2014\2014-0803_Reconstruction of Cross St_Naugatuck_MM\DWG\Figure 2.dwg Oct 07, 2015-2:36pm Plotted By: mkwok

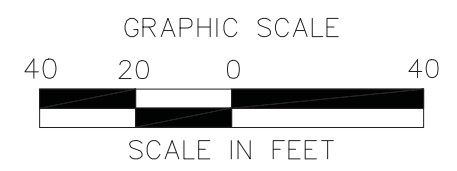
LEGEND:

-  RB-1 ROADWAY BORING (TYP.)
-  SB-1 STRUCTURE BORING (TYP.)
-  C-1 CORE BORING (TYP.)



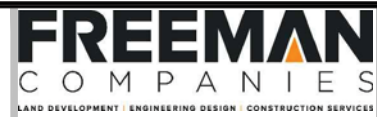
NOTES:

1. EXPLORATION LOCATIONS WERE TAPED FROM EXISTING SITE FEATURES AND ARE APPROXIMATE
2. REFER TO THE TEXT AND APPENDICES FOR ADDITIONAL INFORMATION
3. BASE PLAN PROVIDED BY MIILONE & MACBROOM



SUBSURFACE EXPLORATION LOCATION PLAN

CROSS STREET RECONSTRUCTION NAUGATUCK, CONNECTICUT



FREEMAN COMPANIES, LLC
 36 JOHN STREET
 HARTFORD, CT 06106
 WWW.FREEMANCOS.COM
 TEL: (860) 251-9550
 TOLL FREE: (800) 604-5141
 FAX: (860) 986-7161
ELEVATE YOUR EXPECTATIONS




No.	Date	Description
REVISIONS		

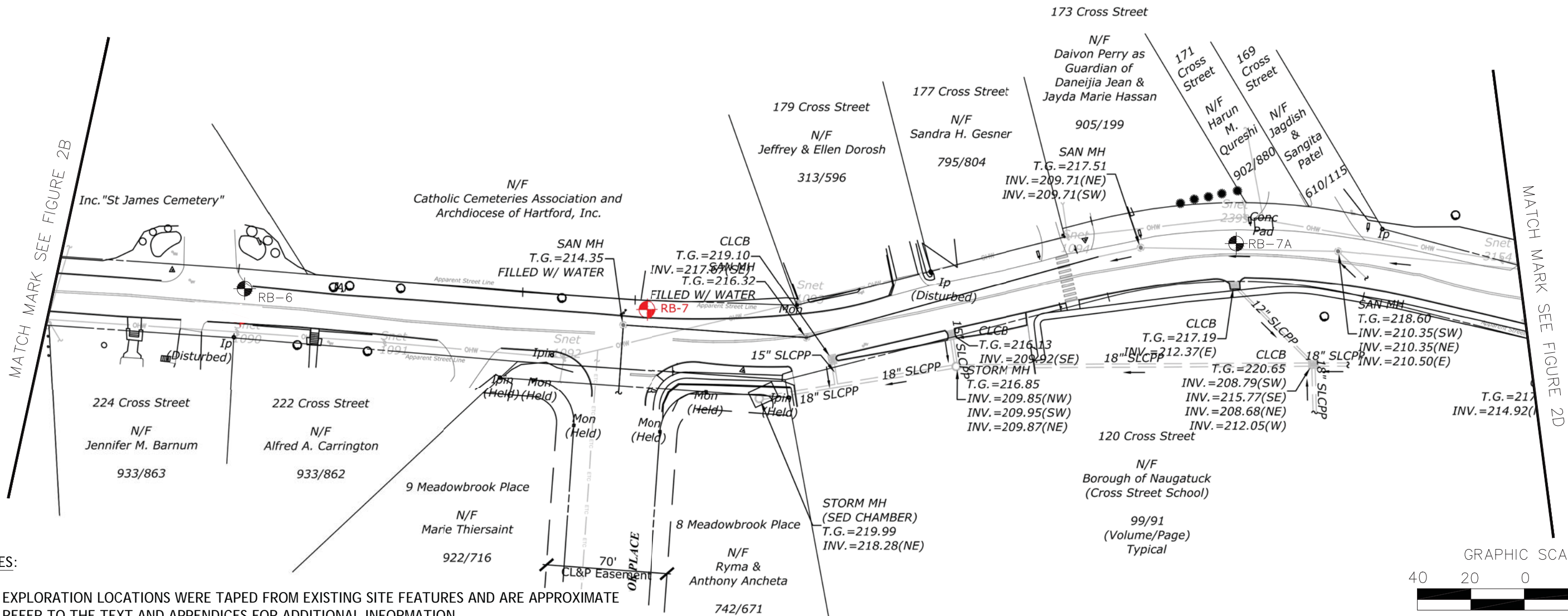
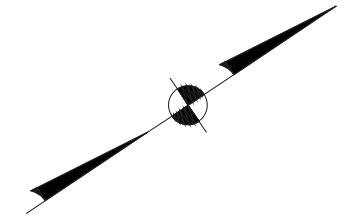
DRAWN: M.K.
 CHECKED: T.T.
 APPROVED: N.W.
 SCALE: 1" = 40'
 PROJECT NO.: 2014-0803
 DATE: 10/07/2015

SHEET NO.
FIGURE 2B

Freeman Companies, LLC . Y:\2014\2014-0803_Reconstruction of Cross St_Naugatuck_MM\DWG\Figure 2.dwg Oct 07, 2015-11:58pm Plotted By: mikwok

LEGEND:

-  RB-1 ROADWAY BORING (TYP.)
-  SB-1 STRUCTURE BORING (TYP.)
-  C-1 CORE BORING (TYP.)



NOTES:

1. EXPLORATION LOCATIONS WERE TAPED FROM EXISTING SITE FEATURES AND ARE APPROXIMATE
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No.	Date	Description

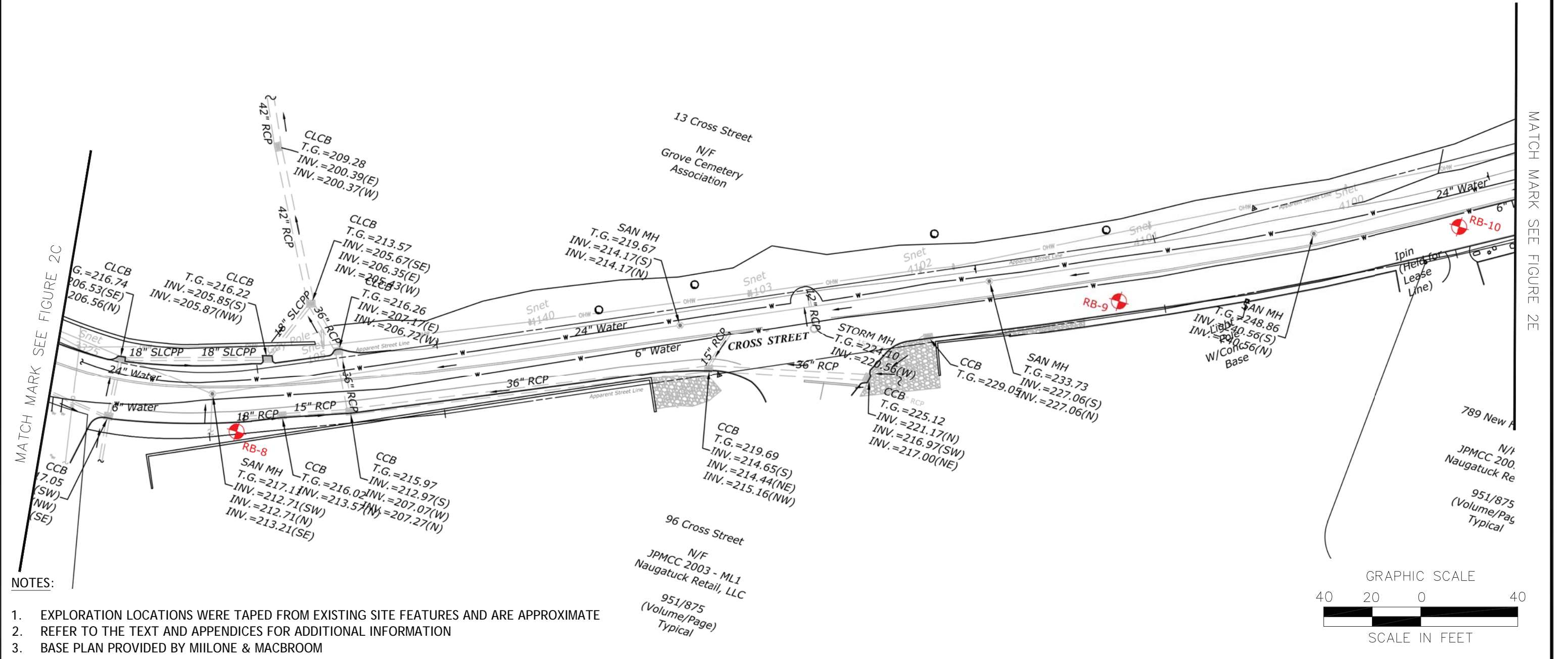
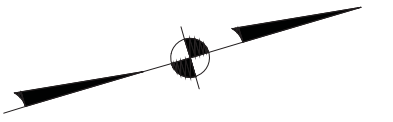
DRAWN: M.K.
 CHECKED: T.T.
 APPROVED: N.W.
 SCALE: 1" = 40'
 PROJECT NO.: 2014-0803
 DATE: 10/07/2015

SHEET NO.
FIGURE 2C

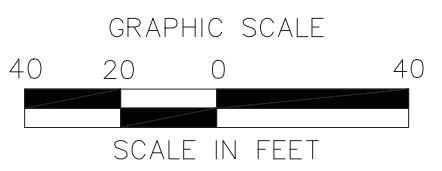
Freeman Companies, LLC . Y:\2014\2014-0803_Reconstruction of Cross St_Naugatuck_MM\DWG\Figure 2.dwg Oct 07, 2015-1:59pm Plotted By: mikwok

LEGEND:

-  RB-1 ROADWAY BORING (TYP.)
-  SB-1 STRUCTURE BORING (TYP.)
-  C-1 CORE BORING (TYP.)



- NOTES:**
1. EXPLORATION LOCATIONS WERE TAPED FROM EXISTING SITE FEATURES AND ARE APPROXIMATE
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No.	Date	Description
REVISIONS		

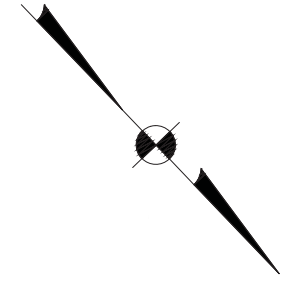
DRAWN: M.K.
 CHECKED: T.T.
 APPROVED: N.W.
 SCALE: 1" = 40'
 PROJECT NO.: 2014-0803
 DATE: 10/07/2015

SHEET NO.
FIGURE 2D

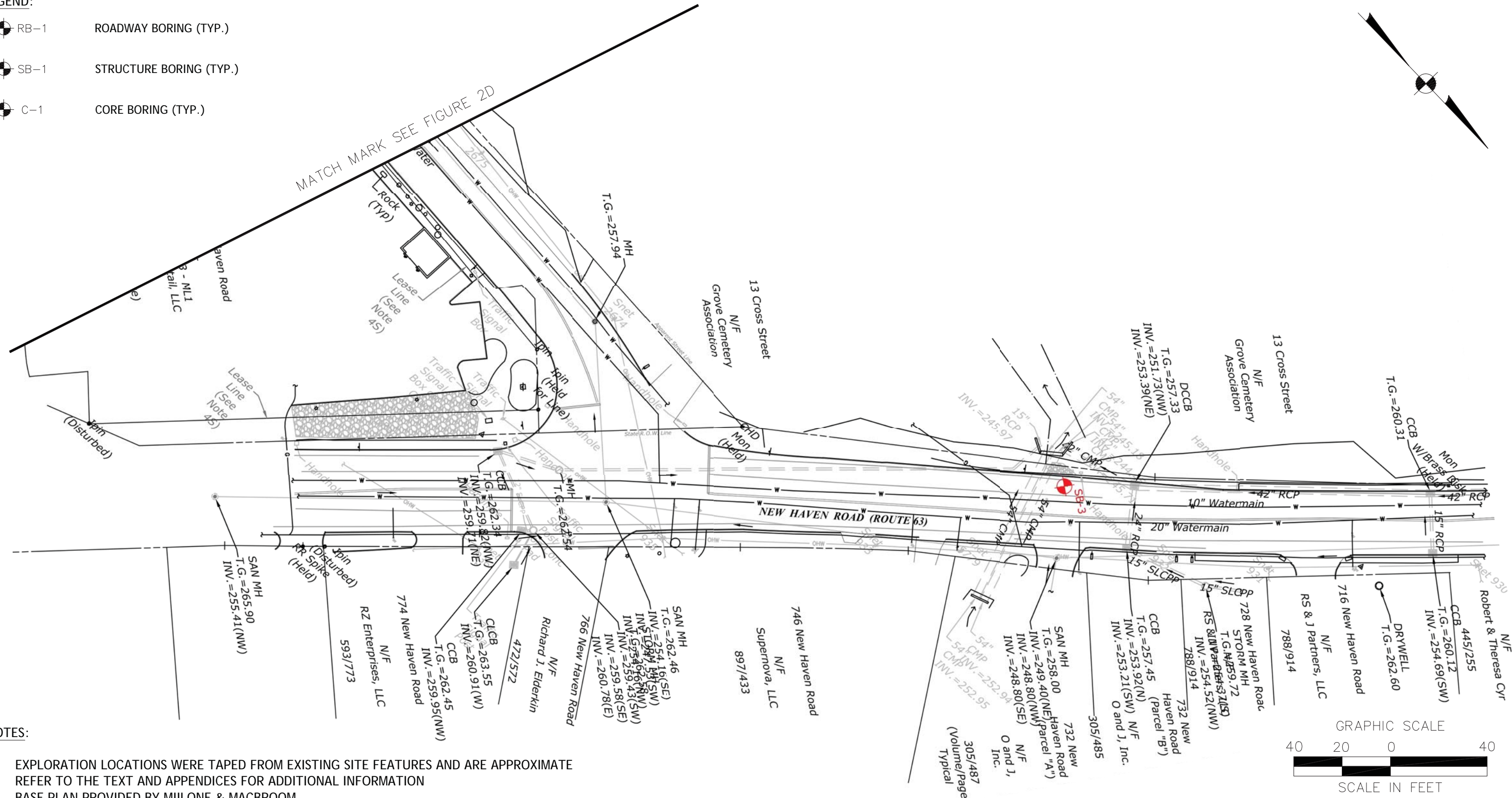
Freeman Companies, LLC . Y:\2014\2014-0803_Reconstruction of Cross St_Naugatuck_MM\DWG\Figure 2.dwg Oct 07, 2015-11:59pm Plotted By: mikwok

LEGEND:

- RB-1 ROADWAY BORING (TYP.)
- SB-1 STRUCTURE BORING (TYP.)
- C-1 CORE BORING (TYP.)

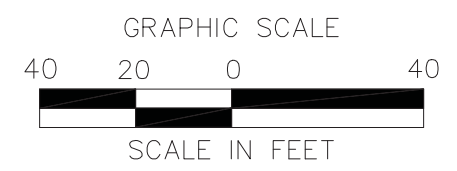


MATCH MARK SEE FIGURE 2D



NOTES:

1. EXPLORATION LOCATIONS WERE TAPED FROM EXISTING SITE FEATURES AND ARE APPROXIMATE
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No.	Date	Description

DRAWN: M.K.
 CHECKED: T.T.
 APPROVED: N.W.
 SCALE: 1" = 40'
 PROJECT NO.: 2014-0803
 DATE: 10/07/2015

SHEET NO.
FIGURE 2E

APPENDIX A
TEST BORING LOGS

Driller: T. MCGOVERN	Connecticut DOT Boring Report		Hole No.: C-1
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-29-15	Route No.: Cross Street	Easting:	
Finish Date: 9-29-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %			
0	S-1	26 53 35 29	24	12		ASPHALT (3")	Brown, c-f SAND, some gravel, trace silt	
						GRAVEL BASE (8")		
						FILL		
							END OF BORING 2.5ft	
5								
10								
15								
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 2.5ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead.	Sheet 1 of 1
No. of Soil Samples: 1 No. of Core Runs: ---		SM-001-M REV. 1/02

Driller: T. MCGOVERN	Connecticut DOT Boring Report		Hole No.: C-2
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-29-15	Route No.: Cross Street	Easting:	
Finish Date: 9-29-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)	
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)
0	S-1	21	42	30	40	24	12	ASPHALT (3") GRAVEL BASE (6") FILL	Brown, c-f GRAVEL and c-f SAND, trace silt
2.5									
5									
10									
15									
20									

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 2.5ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead.	Sheet 1 of 1
No. of Soil Samples: 1 No. of Core Runs: ---		SM-001-M REV. 1/02

Driller: T. MCGOVERN	Connecticut DOT Boring Report		Hole No.: RB-1
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-18-15	Route No.: Cross Street	Easting:	
Finish Date: 9-18-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0							TOPSOIL (4") FILL	
	S-1	6	11	16	18	24	16	Brown, c-f SAND, some gravel, little silt
	S-2	13	36	50	45	24	18	Brown, c-f SAND, little gravel, little silt
5	S-3	50/3"				3		Brown, c-f SAND, some gravel, trace silt, with cobbles and boulders
	S-4	22 50/5"				9		Brown, c-f SAND, some gravel, trace silt, with cobbles and boulders
10								END OF BORING 8.9ft
15								
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 8.9ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Boring terminated on top of an existing sewer line	Sheet 1 of 1
No. of Soil Samples: 4	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. MCGovern	Connecticut DOT Boring Report		Hole No.: RB-2
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-16-15	Route No.: Cross Street	Easting:	
Finish Date: 9-16-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %			
0	S-1	3 10 14 18	24	16		TOPSOIL (4") FILL (5')	Brown, c-f SAND, little gravel, little silt	
	S-2	18 50/4"	10	6			Brown, c-f SAND, some gravel, trace silt, with cobbles and boulders	
5	S-3	22 50/4"	10	8		GLACIO-FLUVIAL DEPOSIT	Brown, c-f SAND, some gravel, trace silt, with cobbles and boulders	
	S-4	50/2"	2	0			Brown, c-f SAND, some gravel, trace silt, with cobbles and boulders	
10							END OF BORING 8.2ft	
15								
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 8.2ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders while drilling	Sheet 1 of 1
No. of Soil Samples: 4 No. of Core Runs: ---		SM-001-M REV. 1/02

Driller: T. MCGOVERN	Connecticut DOT Boring Report		Hole No.: RB-3
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-29-15	Route No.: Cross Street	Easting:	
Finish Date: 9-29-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0						ASHPALT (6") FILL (5')		
	S-1	2	2	3	5	24	14	Brown, c-f SAND, little silt, with organic roots
5	S-2	7	11	48	52	24	12	Brown, c-f SAND, little gravel, little silt, with organic roots and branches
	S-3	40	80	90		18	4	Brown, c-f SAND, little gravel, little silt, with cobbles
								END OF BORING 7.5ft
10								
15								
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 7.5ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Cobbles and boulders directly beneath asphalt	Sheet 1 of 1
No. of Soil Samples: 3	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. MCGovern	Connecticut DOT Boring Report		Hole No.: RB-4
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-29-15	Route No.: Cotton Hollow Road	Easting:	
Finish Date: 9-29-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0							ASHPALT (4") FILL (5')	
	S-1	6	5	6	6	24	12	Black to brown, f-SAND, trace silt
	S-2	5	5	5	7	24	18	Brown, f-SAND, trace silt
5	S-3	50				6	2	Brown to tan, c-f sand, trace gravel, trace silt, with cobbles and boulders
								GLACIO-FLUVIAL DEPOSIT
								END OF BORING 6ft
10								
15								
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 6ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered cobbles and boulders at 5 feet Auger refusal on boulders	Sheet 1 of 1
No. of Soil Samples: 3	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. Mcgovern	Connecticut DOT Boring Report		Hole No.: RB-5
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-17-15	Route No.: Cross Street	Easting:	
Finish Date: 9-17-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %			
0	S-1	3 15 50/4"	16	8		TOPSOIL (4") FILL (1.5') GLACIO-FLUVIAL DEPOSIT	Brown, c-f SAND, some gravel, little silt, with cobbles and boulders	
5	S-2	35 50/3"	9	3			Brown, c-f SAND, some gravel, little silt, with cobbles and boulders	
10							END OF BORING 6ft	
15								
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 6ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders while drilling Auger refusal on boulders	Sheet 1 of 1
No. of Soil Samples: 2	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. Mcgovern	Connecticut DOT Boring Report		Hole No.: RB-6
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-17-15	Route No.: Cross Street	Easting:	
Finish Date: 9-17-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0							ASPHALT (8") FILL (3')	
	S-1	6	2	2	9	24	12	Brown, c-f SAND, trace gravel, some silt
	S-2	20	19	19	18	24	1	Brown, c-f SAND, little gravel, trace silt, with cobbles
5	S-3	1	6	50/4"		16	8	Brown, c-f SAND, trace gravel, trace silt
								END OF BORING 7ft
10								
15								
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 7ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Auger refusal on boulders	Sheet 1 of 1
No. of Soil Samples: 3	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. McGovern	Connecticut DOT Boring Report		Hole No.: RB-7
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-29-15	Route No.: Cross Street	Easting:	
Finish Date: 9-29-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0							ASPHALT (11") FILL (6')	
	S-1	9	10	37	44	24	8	Dark Brown, c-f SAND, little gravel, trace silt, with cobbles and boulders
	S-2	20	20	11	8	24	6	Brown, c-f SAND, trace gravel, little silt, with organic roots
5	S-3	14	17	12	12	24	6	Brown, c-f SAND, trace gravel, little silt, with organic roots
	S-4	12	12	12	18	24	1	Brown, c-f SAND, little gravel, trace silt
10								END OF BORING 9ft
15								
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 9ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles while drilling Auger refusal on boulders	Sheet 1 of 1
No. of Soil Samples: 4 No. of Core Runs: ---		SM-001-M REV. 1/02

Driller: T. MCGovern	Connecticut DOT Boring Report			Hole No.: RB-7A					
Inspector: Thiet Ta	Town: Naugatuck, Connecticut		Stat./Offset:						
Engineer: N. Whetten	Project No.: 2014-0803		Northing:						
Start Date: 9-29-15	Route No.: Cross Street		Easting:						
Finish Date: 9-29-15	Bridge No.:		Surface Elevation:						
Project Description: Cross Street Reconstruction									
Casing Size/Type: 4 1/4" HSA		Sampler Type/Size: 1-3/8 inch ID		Core Barrel Type:					
Hammer Wt.: Fall: in.		Hammer Wt.: 140 Fall: 30in.							
Groundwater Observations: @not encountered									
Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)	
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)
0							ASPHALT (7") FILL (5')		
	S-1	9	12	18	59	24	0	Brown, c-f SAND, little gravel, little silt (from auger cuttings)	
	S-2	50				6	0	Brown, c-f SAND, little gravel, little silt, with cobbles and boulders	
5	S-3	30	47	70		18	12	GLACIO-FLUVIAL DEPOSIT Brown, c-f SAND, some gravel, trace silt, with cobbles and boulders	
		END OF BORING 6.5ft							
10									
15									
20									
Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%									
Total Penetration in Earth: 6.5ft Rock: ft		No. of Soil Samples: 3			No. of Core Runs: ---			NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders while drilling	Sheet 1 of 1
								SM-001-M REV. 1/02	

Driller: T. MCGovern	Connecticut DOT Boring Report		Hole No.: RB-8
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-17-15	Route No.: Cross Street	Easting:	
Finish Date: 9-17-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %			
0						ASHPALT (6") FILL (5')		
	S-1	10 10 10 27	24	12			Brown, c-f SAND, some gravel, little silt	
	S-2	50/5"	5	0			Brown, c-f SAND, and GRAVEL, trace silt, with cobbles and boulders	
5	S-3	36 50/1"	7	4		GLACIO-FLUVIAL DEPOSIT	Brown, c-f SAND, and GRAVEL, trace silt, with cobbles and boulders	
10	S-4	50/2"	2	4			Brown, c-f SAND, and GRAVEL, trace silt, with cobbles and boulders	
15	S-5	50/3"	3	4			Brown, c-f SAND, and GRAVEL, trace silt, with cobbles and boulders	
20							END OF BORING 15.3ft	

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 15.3ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders while drilling	Sheet 1 of 1
No. of Soil Samples: 5	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. MCGovern	Connecticut DOT Boring Report		Hole No.: RB-9
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-16-15	Route No.: Cross Street	Easting:	
Finish Date: 9-16-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %			
0						ASHPALT (6")	Brown, c-f SAND, and GRAVEL, trace silt, with cobbles and boulders	
	S-1	22 50/3"	9	4		FILL (5')		
	S-2	24 65 50/3"	15	8			Brown, c-f SAND, and GRAVEL, trace silt, with cobbles and boulders	
5	S-3	50	6	0		GLACIO-FLUVIAL DEPOSIT	Brown, c-f SAND, and GRAVEL, trace silt, with cobbles and boulders	
							END OF BORING 6.5ft	
10								
15								
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 6.5ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders while drilling Auger refusal on boulders	Sheet 1 of 1
No. of Soil Samples: 3 No. of Core Runs: ---		SM-001-M REV. 1/02

Driller: T. MCGovern	Connecticut DOT Boring Report		Hole No.: RB-10
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-16-15	Route No.: Cross Street	Easting:	
Finish Date: 9-16-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @not encountered

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %			
0						ASHPALT (6") FILL (5')	Brown, c-f GRAVEL, some sand, trace silt, with cobbles and boulders Brown, c-f GRAVEL and SAND, trace silt, with cobbles and boulders	
	S-1	30 80	12	4				
	S-2	50/4"	4	1				
5	S-3	50/3"	3	1		GLACIO-FLUVIAL DEPOSIT	Brown, c-f GRAVEL and SAND, trace silt, with cobbles and boulders	
10	S-4	21 16 21 41	24	12			Brown, c-f GRAVEL and SAND, trace silt, with cobbles and boulders	
15							END OF BORING 10ft	
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 10ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders while drilling	Sheet 1 of 1
No. of Soil Samples: 4 No. of Core Runs: ---		SM-001-M REV. 1/02

Driller: T. MCGovern	Connecticut DOT Boring Report		Hole No.: SB-1
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-17-15	Route No.: Cross Street	Easting:	
Finish Date: 9-17-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @24

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches			Pen. (in.)			
0						ASPHALT (12")	Brown, c-f SAND, and GRAVEL, trace silt, with cobbles and boulders	
	S-1	15	55	50/3"	15	6		
5							Brown, c-f SAND, and GRAVEL, trace silt, with cobbles and boulders	
	S-2	25	21	25 19	24	1		
10							Brown, f-SAND, trace silt	
	S-3	9	7	11 14	24	16		
15							Brown, c-f SAND, trace fine gravel, trace silt	
	S-4	9	12	11 11	24	24		
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 37ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders in fill	Sheet 1 of 2
No. of Soil Samples: 8 No. of Core Runs: ---		SM-001-M REV. 1/02

Driller: T. MCGovern	Connecticut DOT Boring Report		Hole No.: SB-1
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-17-15	Route No.: Cross Street	Easting:	
Finish Date: 9-17-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @24

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)		
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)	Rec. (in.)
20	S-5	12	12	11	10	24	12	GLACIO-FLUVIAL DEPOSIT (con't)	Brown, c-f SAND, little silt	
25	S-6	5	10	10	16	24	18			Brown, c-f SAND, trace silt
30	S-7	4	7	10	13	24	20			Brown, c-f SAND, trace silt
35	S-8	4	8	12	16	24	22			Brown, c-f SAND, trace silt
40									END OF BORING 37ft	

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
 Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 37ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders in fill	Sheet 2 of 2
No. of Soil Samples: 8	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. MCGovern	Connecticut DOT Boring Report		Hole No.: SB-2
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-16-15	Route No.: Cross Street	Easting:	
Finish Date: 9-16-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @27 Feet

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0							ASPHALT (8")	
	S-1	10	16	17	11	24	14	
	S-2	14	50/4"			10	0	
5								
	S-3	35	31	28	32	24	10	
10								
	S-4	10	10	14	20	24	6	
15								
	S-5	20	35	38	30	24	16	
20								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 36.7ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders in fill	Sheet 1 of 2
No. of Soil Samples: 9	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. MCGovern	Connecticut DOT Boring Report		Hole No.: SB-2
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-16-15	Route No.: Cross Street	Easting:	
Finish Date: 9-16-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @27 Feet

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)		
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)	Rec. (in.)
20	S-6	25	32	35	32	24	2		FILL (22') (con't)	Brown, c-f SAND, some gravel, trace silt, with cobbles and boulders
									GLACIO-FLUVIAL DEPOSIT	
25	S-7	16	9	11	14	24	14			
30	S-8	11	11	16	36	24	20			
35	S-9	20	42	60	75/3"	21	20			Brown, c-f SAND, some gravel, trace silt
40										END OF BORING 36.7ft

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 36.7ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders in fill	Sheet 2 of 2
No. of Soil Samples: 9	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. MCGOVERN	Connecticut DOT Boring Report		Hole No.: SB-3
Inspector: Thiet Ta	Town: Naugatuck, Connecticut	Stat./Offset:	
Engineer: N. Whetten	Project No.: 2014-0803	Northing:	
Start Date: 9-29-15	Route No.: New Haven Road (Rte. 63)	Easting:	
Finish Date: 9-29-15	Bridge No.:	Surface Elevation:	

Project Description: Cross Street Reconstruction

Casing Size/Type: 4 1/4" HSA	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @15 Feet

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)	
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)
0						ASPHALT (12')			
	S-1	30	15	15	20	24	12		Brown, c-f SAND, little gravel, trace silt, with cobbles
	S-2	15	20	19	14	24	6		Dark Brown, F - SAND, trace gravel, little silt
5	S-3	5	14	14	16	24	8		Brown, c-f SAND, little gravel, little silt
	S-4	5	9	23	7	24	4		Brown, c-f SAND, little gravel, little silt
10	S-5	10	30	60		18	8		Brown, c-f SAND, some gravel, little silt, with cobbles and boulders
	S-6	17	22	50/1"		13	8		Brown, c-f GRAVEL, some c-f sand, trace silt, with cobbles and boulders
	C-1					35	32	70	Cored through granite boulder
20									END OF BORING 19ft

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

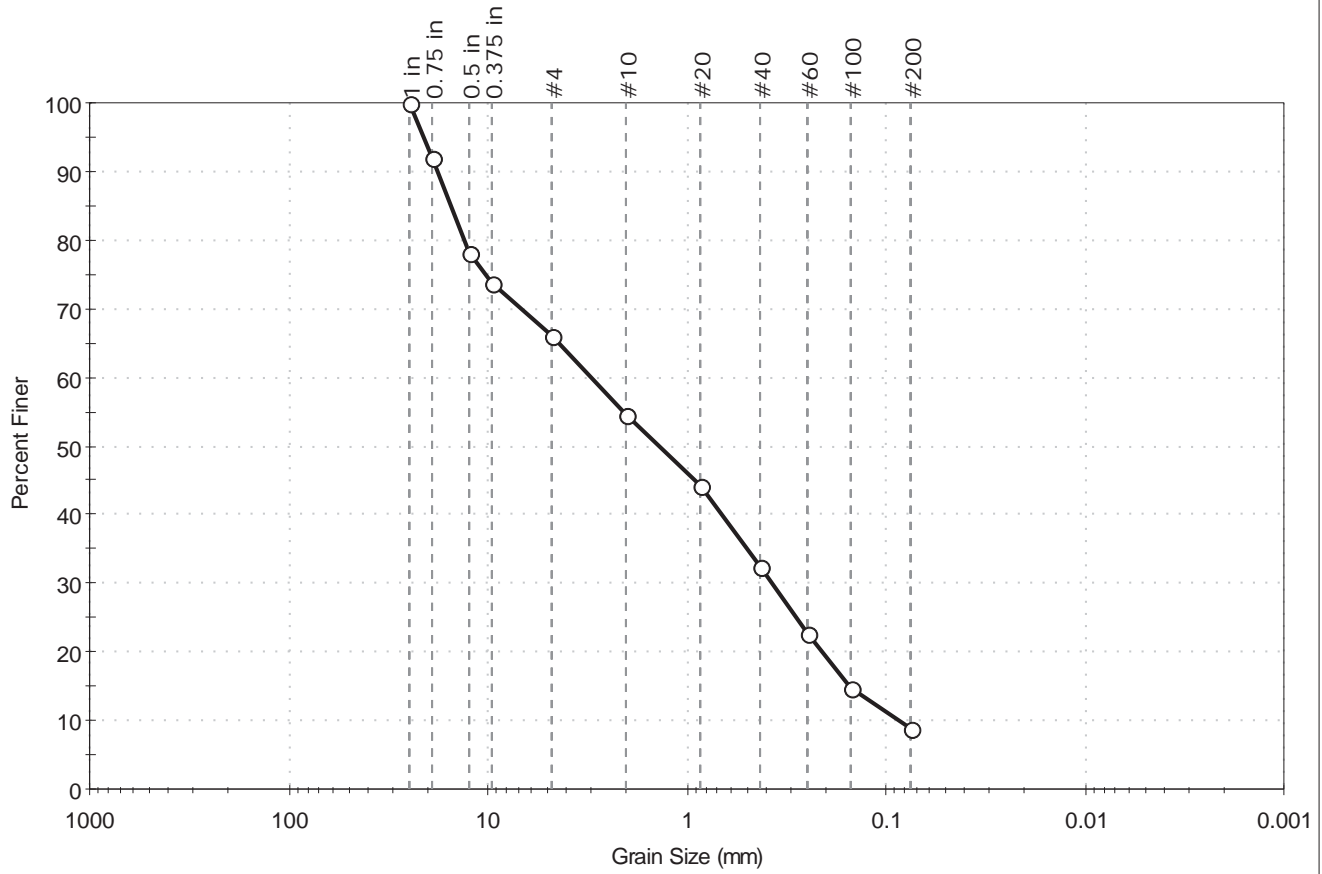
Total Penetration in Earth: 19ft Rock: ft	NOTES: Samples taken with a 2" O.D. split spoon sampler driven by a hammer operated by a rope and cathead. Encountered frequent cobbles and boulders in fill Cored through a boulder from 16 to 19 feet	Sheet 1 of 1
No. of Soil Samples: 6	No. of Core Runs: ---	SM-001-M REV. 1/02

APPENDIX B
RESULTS OF LABORATORY TESTING



Client:	Freeman Companies, LLC		
Project:	Cross Street Reconstruction		
Location:	Naugatuck, CT	Project No:	GTX-303804
Boring ID:	C-1	Sample Type:	bag
Sample ID:	S1	Test Date:	10/08/15
Depth:	0.5-2.5 ft	Test Id:	349143
Test Comment:	---		
Visual Description:	Moist, brown sand with silt and gravel		
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	34.0	57.2	8.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	92		
0.5 in	12.50	78		
0.375 in	9.50	74		
#4	4.75	66		
#10	2.00	55		
#20	0.85	44		
#40	0.42	33		
#60	0.25	23		
#100	0.15	15		
#200	0.075	8.8		

<u>Coefficients</u>	
D ₈₅ = 15.3905 mm	D ₃₀ = 0.3701 mm
D ₆₀ = 3.0039 mm	D ₁₅ = 0.1517 mm
D ₅₀ = 1.3601 mm	D ₁₀ = 0.0863 mm
C _u = 34.808	C _c = 0.528

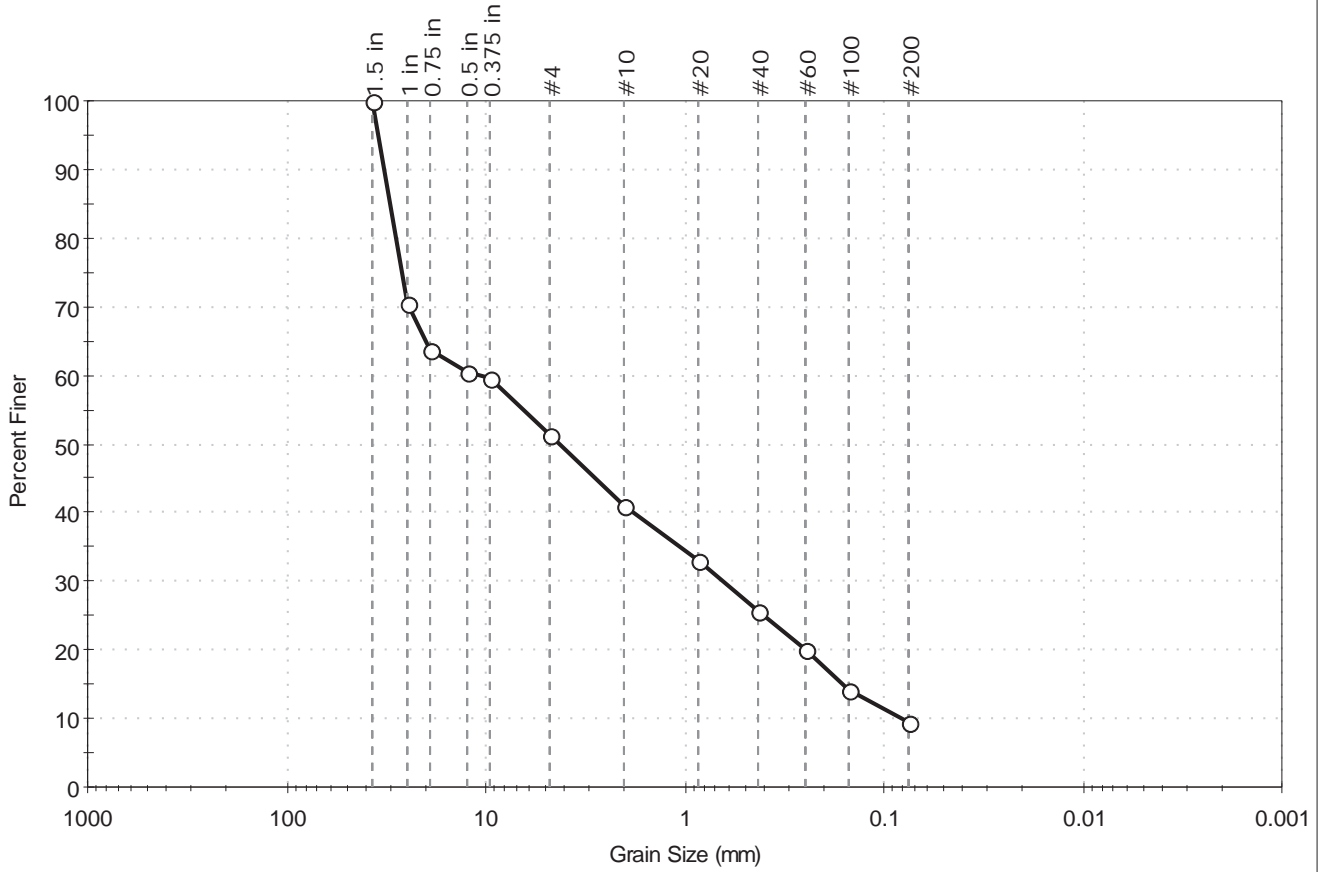
<u>Classification</u>	
<u>ASTM</u>	N/A
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-b (1))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC		
Project:	Cross Street Reconstruction		
Location:	Naugatuck, CT	Project No:	GTX-303804
Boring ID:	C-2	Sample Type:	bag
Sample ID:	S1	Test Date:	10/08/15
Depth :	0.5-2.5 ft	Test Id:	349144
Test Comment:	---		
Visual Description:	Moist, brown gravel with silt and sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	48.7	42.0	9.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	71		
0.75 in	19.00	64		
0.5 in	12.50	60		
0.375 in	9.50	60		
#4	4.75	51		
#10	2.00	41		
#20	0.85	33		
#40	0.42	26		
#60	0.25	20		
#100	0.15	14		
#200	0.075	9.3		

<u>Coefficients</u>	
D ₈₅ = 30.4893 mm	D ₃₀ = 0.6365 mm
D ₆₀ = 11.0299 mm	D ₁₅ = 0.1614 mm
D ₅₀ = 4.2520 mm	D ₁₀ = 0.0824 mm
C _u = 133.858	C _c = 0.446

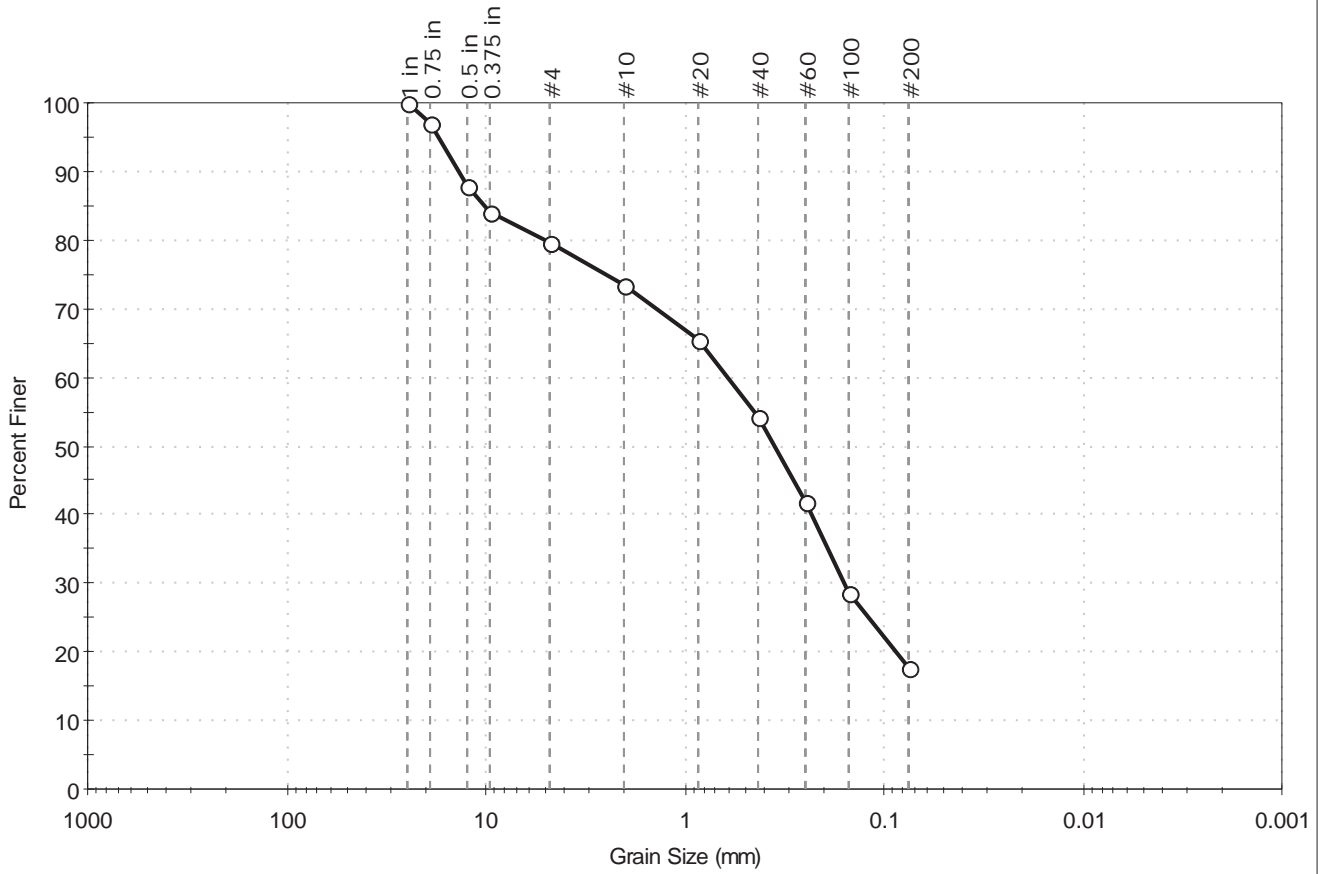
<u>Classification</u>	
<u>ASTM</u>	N/A
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-a (1))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC		Project No:	GTX-303804	
Project:	Cross Street Reconstruction				
Location:	Naugatuck, CT				
Boring ID:	RB-1	Sample Type:	bag	Tested By:	jbr
Sample ID:	S1	Test Date:	10/08/15	Checked By:	emm
Depth :	1-3 ft	Test Id:	349145		
Test Comment:	---				
Visual Description:	Moist, dark brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	20.5	61.9	17.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	97		
0.5 in	12.50	88		
0.375 in	9.50	84		
#4	4.75	80		
#10	2.00	73		
#20	0.85	66		
#40	0.42	54		
#60	0.25	42		
#100	0.15	29		
#200	0.075	18		

<u>Coefficients</u>	
D ₈₅ = 10.0722 mm	D ₃₀ = 0.1582 mm
D ₆₀ = 0.6025 mm	D ₁₅ = N/A
D ₅₀ = 0.3539 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

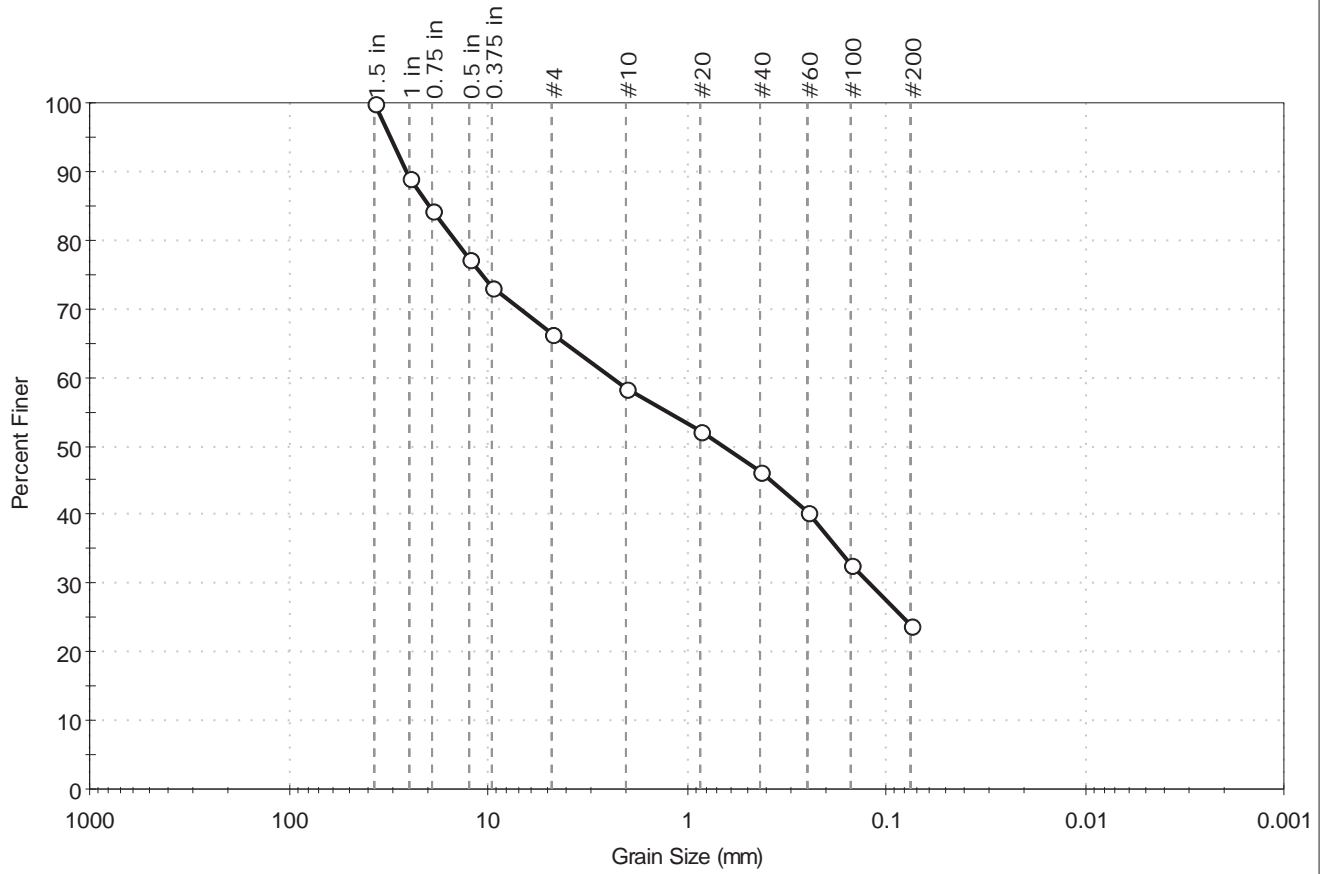
<u>Classification</u>	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC		
Project:	Cross Street Reconstruction		
Location:	Naugatuck, CT	Project No:	GTX-303804
Boring ID:	RB-8	Sample Type:	bag
Sample ID:	S1	Test Date:	10/09/15
Depth :	1-3 ft	Test Id:	349146
Test Comment:	---		
Visual Description:	Moist, reddish brown silty sand with gravel		
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	33.5	42.5	24.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	89		
0.75 in	19.00	84		
0.5 in	12.50	77		
0.375 in	9.50	73		
#4	4.75	66		
#10	2.00	58		
#20	0.85	52		
#40	0.42	46		
#60	0.25	40		
#100	0.15	33		
#200	0.075	24		

<u>Coefficients</u>	
D ₈₅ = 19.6972 mm	D ₃₀ = 0.1202 mm
D ₆₀ = 2.4005 mm	D ₁₅ = N/A
D ₅₀ = 0.6618 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

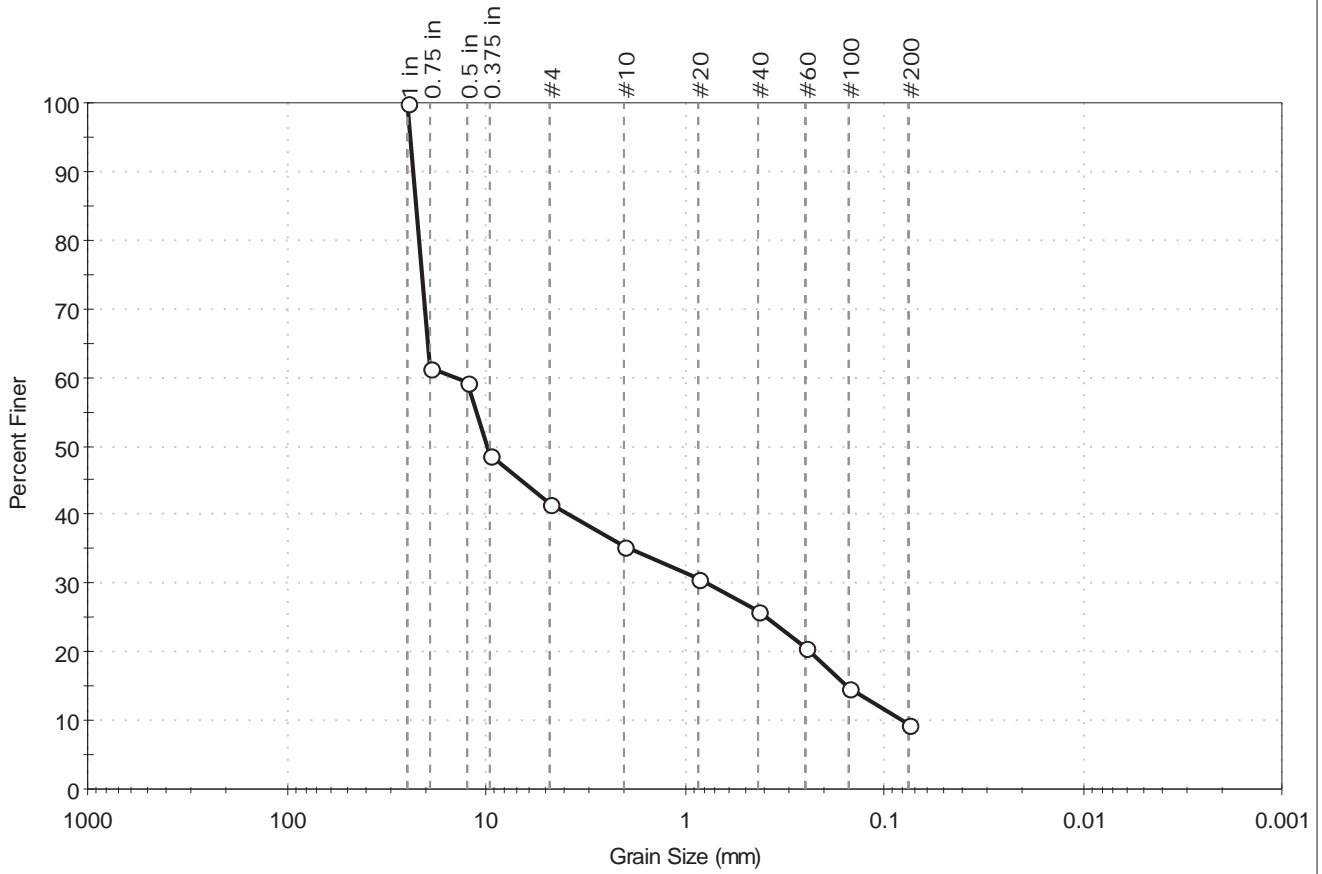
<u>Classification</u>	
<u>ASTM</u>	N/A
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description
 Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC		
Project:	Cross Street Reconstruction		
Location:	Naugatuck, CT	Project No:	GTX-303804
Boring ID:	RB-10	Sample Type:	bag
Sample ID:	S1	Test Date:	10/08/15
Depth:	1-2 ft	Checked By:	emm
Test Comment:	---		
Visual Description:	Moist, pale brown gravel with silt and sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	58.3	32.1	9.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	61		
0.5 in	12.50	59		
0.375 in	9.50	49		
#4	4.75	42		
#10	2.00	35		
#20	0.85	31		
#40	0.42	26		
#60	0.25	21		
#100	0.15	15		
#200	0.075	9.6		

<u>Coefficients</u>	
D ₈₅ = 22.4713 mm	D ₃₀ = 0.7786 mm
D ₆₀ = 14.5505 mm	D ₁₅ = 0.1529 mm
D ₅₀ = 9.8421 mm	D ₁₀ = 0.0793 mm
C _u = 183.487	C _c = 0.525

<u>Classification</u>	
<u>ASTM</u>	N/A
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-a (1))

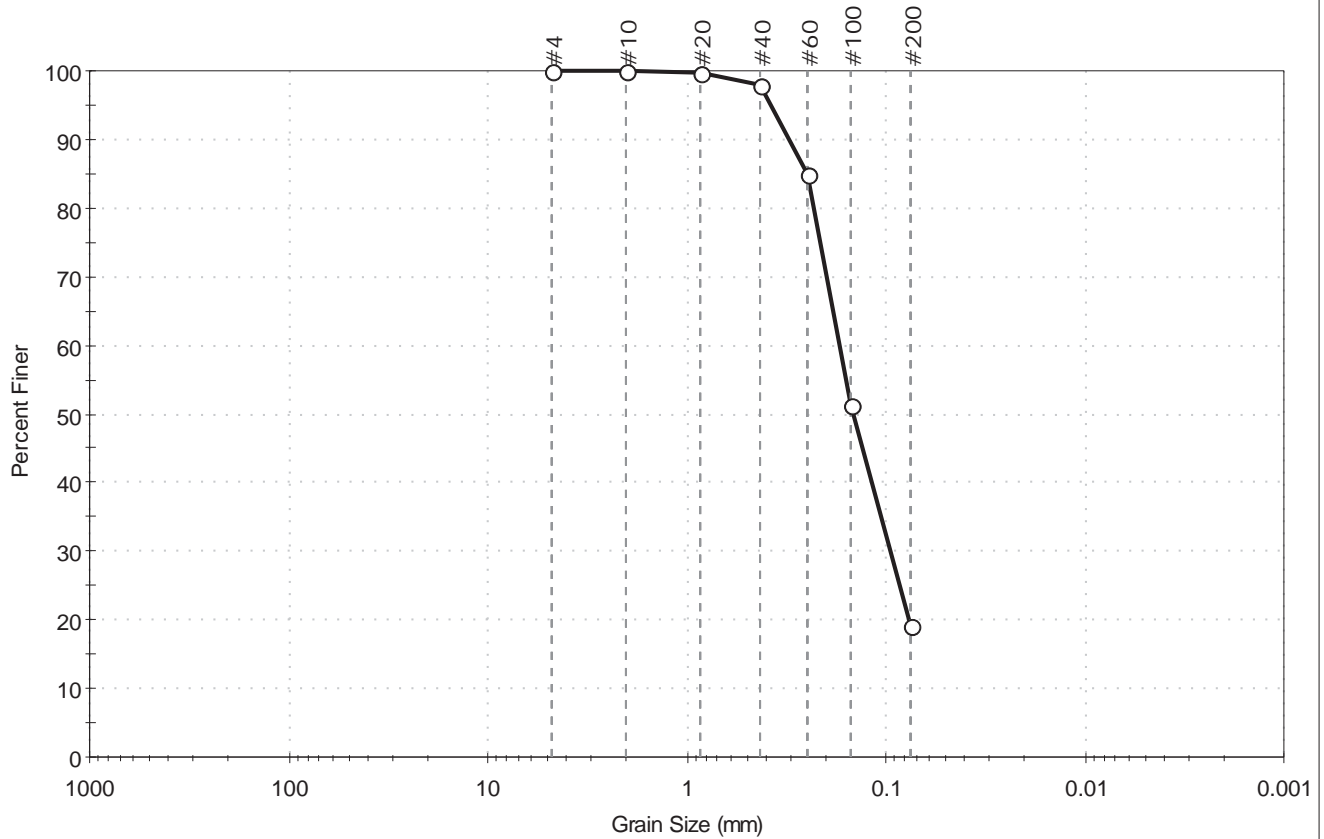
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC		
Project:	Cross Street Reconstruction		
Location:	Naugatuck, CT	Project No:	GTX-303804
Boring ID:	SB-1	Sample Type:	bag
Sample ID:	S5	Test Date:	10/08/15
Depth:	20-22 ft	Test Id:	349148
Test Comment:	---		
Visual Description:	Moist, yellowish brown silty sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	81.0	19.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	98		
#60	0.25	85		
#100	0.15	51		
#200	0.075	19		

<u>Coefficients</u>	
D ₈₅ = 0.2508 mm	D ₃₀ = 0.0949 mm
D ₆₀ = 0.1711 mm	D ₁₅ = N/A
D ₅₀ = 0.1458 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

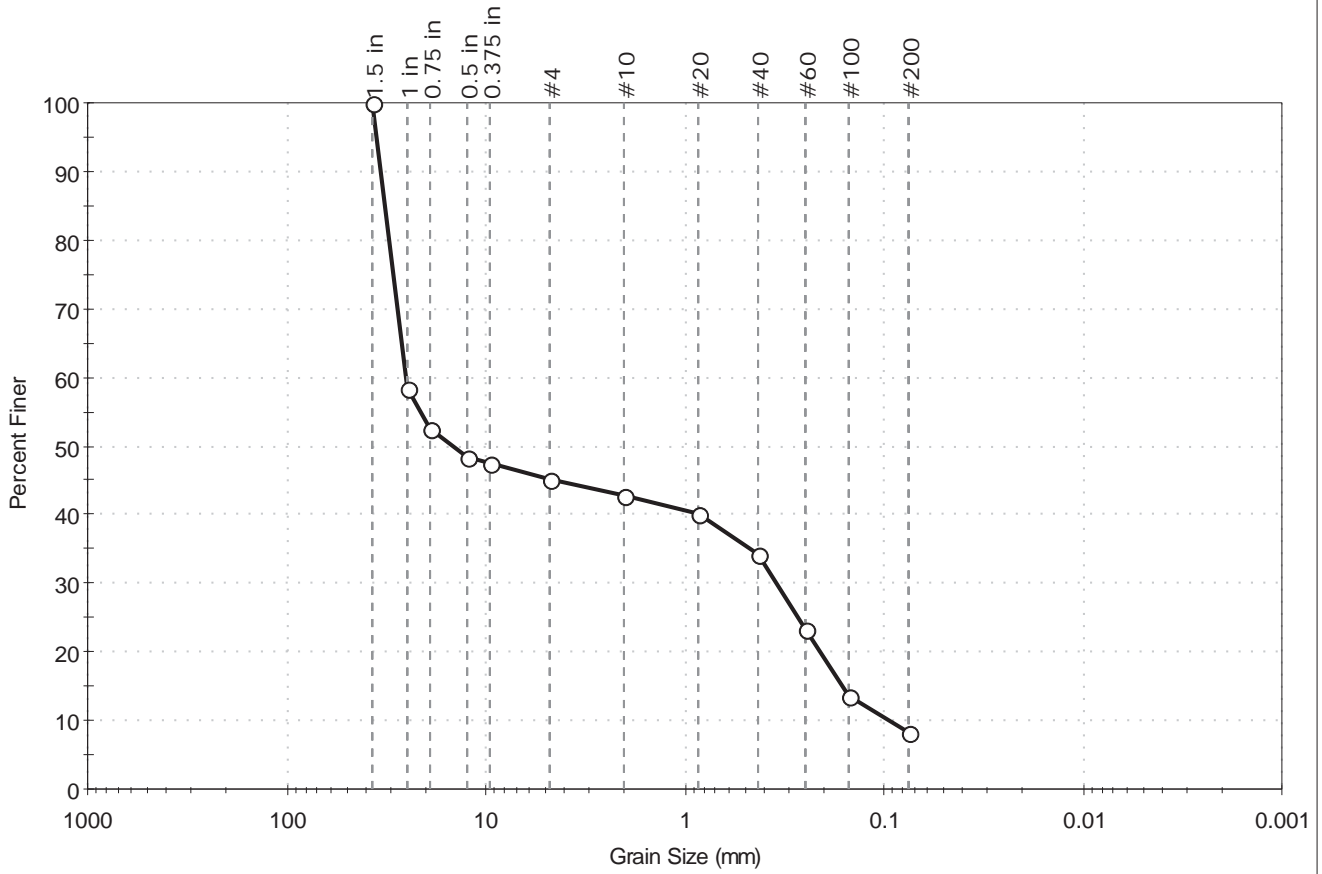
<u>Classification</u>	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC		
Project:	Cross Street Reconstruction		
Location:	Naugatuck, CT	Project No:	GTX-303804
Boring ID:	SB-2	Sample Type:	bag
Sample ID:	S4	Test Date:	10/08/15
Depth :	10-12 ft	Checked By:	emm
Test Comment:	---		
Visual Description:	Moist yellowish brown gravel with silt and sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	55.0	36.8	8.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	58		
0.75 in	19.00	53		
0.5 in	12.50	48		
0.375 in	9.50	47		
#4	4.75	45		
#10	2.00	43		
#20	0.85	40		
#40	0.42	34		
#60	0.25	23		
#100	0.15	14		
#200	0.075	8.2		

<u>Coefficients</u>	
D ₈₅ = 32.4096 mm	D ₃₀ = 0.3466 mm
D ₆₀ = 25.4143 mm	D ₁₅ = 0.1619 mm
D ₅₀ = 14.6229 mm	D ₁₀ = 0.0947 mm
C _u = 268.366	C _c = 0.050

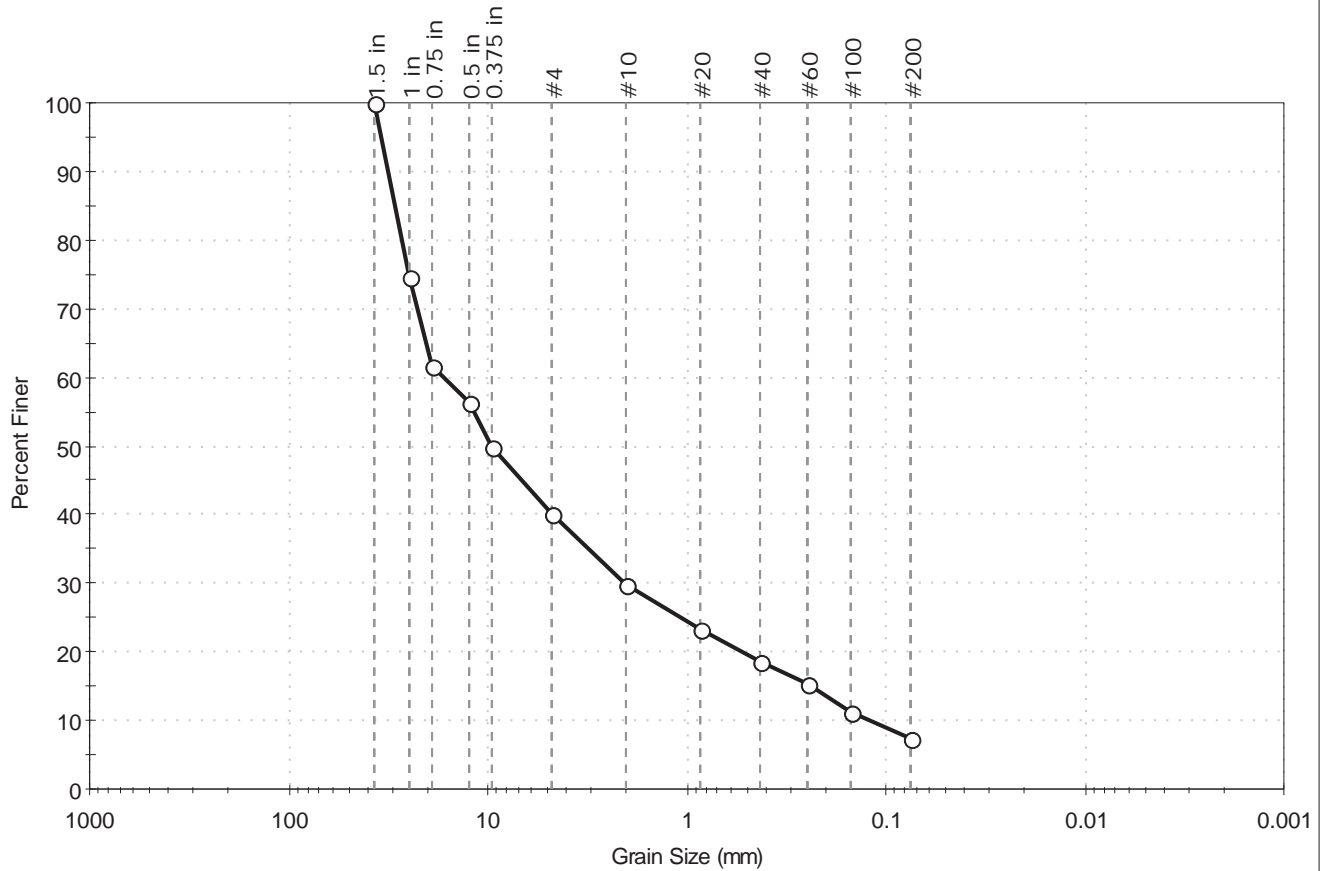
<u>Classification</u>	
ASTM	N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description
 Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC		
Project:	Cross Street Reconstruction		
Location:	Naugatuck, CT	Project No:	GTX-303804
Boring ID:	SB-3	Sample Type:	bag
Sample ID:	S6	Test Date:	10/08/15
Depth:	15-16.1 ft	Test Id:	349150
Test Comment:	---		
Visual Description:	Moist, brown gravel with silt and sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	59.8	32.9	7.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	75		
0.75 in	19.00	62		
0.5 in	12.50	56		
0.375 in	9.50	50		
#4	4.75	40		
#10	2.00	30		
#20	0.85	23		
#40	0.42	18		
#60	0.25	15		
#100	0.15	11		
#200	0.075	7.3		

<u>Coefficients</u>	
D ₈₅ = 29.4740 mm	D ₃₀ = 2.0229 mm
D ₆₀ = 16.7641 mm	D ₁₅ = 0.2440 mm
D ₅₀ = 9.6053 mm	D ₁₀ = 0.1230 mm
C _u = 136.293	C _c = 1.985

<u>Classification</u>	
<u>ASTM</u>	N/A
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-a (1))

<u>Sample/Test Description</u>

NOTICE TO CONTRACTOR – POTENTIAL MODIFIED AWARD SCHEDULE

The contractor is hereby given notice that this contract may not be awarded until all Federal and State financial approvals have been received. If all financial approvals are not received, this contract may be withdrawn and re-advertised at the direction of the Municipality, in consultation with the State. This shall not be the basis for any claims by any bidder.

NOTICE TO CONTRACTOR – EXISTING IMS (INCIDENT MANAGEMENT SYSTEM)

The Contractor is herein made aware of existing Incident Management System (IMS) service cable for CCTV 8N-174/ VMS 8N-99 on Route 8 NB on-ramp and Cross Street in the vicinity of the project area.

The Contractor will be responsible for locating, verifying the location of and protecting all IMS below and above the ground. Prior to the start of construction, the Contractor shall contact “Call Before You Dig” and all utility within the towns along the project corridor. The Contractor shall also contact Robert Kennedy (860-594-3458) of ConnDOT Highway Operations at to mark out IMS conduit and appurtenances.

In areas adjacent to existing incident management system equipment, the Contractor is required to hand excavate. Any damage caused to the IMS conduit/equipment will be the responsibility of the Contractor, and will be replaced by the Contractor at the Contractor’s expense, as directed by the Engineer. Mark out of the IMS will not relieve the Contractor of responsibility for repair of damage caused by the Contractor or the Contractor’s sub-contractors.

NOTICE TO CONTRACTOR – USE OF STATE POLICE OFFICERS

The Department will reimburse services of State Police Officers as a direct payment to the Department of Emergency Services and Public Protection. Payment for State Police Officers must be approved by the Engineer. Any State Police Officers used by the Contractor for its convenience is the responsibility of the Contractor. A separate payment item for State Police Officers is not included in this Contract.

Any costs associated with coordination and scheduling of State Police Officers shall be included in the lump sum bid price for Item No. 0971001A – Maintenance and Protection of Traffic.

SECTION 1.05 - CONTROL OF THE WORK

Replace Article 1.05.02 with the following:

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

1. Contractor Submittals: The plans provided by the Department show the details necessary to give a comprehensive idea of the construction contemplated under the Contract. The plans will generally show the location, character, dimensions, and details necessary to complete the Project. If the plans do not show complete details, they will show the necessary dimensions and details, which when used along with the other Contract documents, will enable the Contractor to prepare working drawings, shop drawings or product data necessary to complete the Project.

The Contractor shall prepare submittals as Portable Document Format (PDF) files. The Contractor is also required to acquire, maintain access and use the Department's document management system for delivery of submittals. The format, digital signing requirements, delivery processes and document tracking procedures shall be performed in accordance with this specification and the [Contractor's Digital Submission Manual](#) (CDSM).

The submittals shall be sent to the Department's reviewer(s), sufficiently in advance of the work detailed, to allow for their review in accordance with the review periods as specified herein (including any necessary revisions, resubmittal, and final review), and acquisition of materials, without causing a delay of the Project.

2. Working Drawings: When required by the Contract or when ordered to do so by the Engineer, the Contractor shall prepare and submit the working drawings, signed, sealed and dated by a qualified Professional Engineer licensed to practice in the State of Connecticut, to the Designer for review. The drawings shall be delivered sufficiently in advance of the work detailed, to allow for their review in accordance with the review periods specified herein (including any necessary revisions, resubmittal, and final review).

There will be no direct payment for furnishing any working drawings, procedures or supporting calculations, but the cost thereof shall be considered as included in the general cost of the work.

a. Working Drawings for Permanent Construction: The Contractor shall supply to the Assistant District Engineer a certificate of insurance in accordance with 1.03.07 at the time that the working drawings for the Project are submitted.

The Contractor's designer, who prepares the working drawings, shall secure and maintain at no direct cost to the State a Professional Liability Insurance Policy for errors and omissions in the minimum amount of \$2,000,000 per error or omission. The Contractor's designer may elect to obtain a policy containing a maximum \$250,000 deductible clause, but if the Contractor's designer should obtain a policy containing such a clause, they shall be liable to the extent of at

least the deductible amount. The Contractor's designer shall obtain the appropriate and proper endorsement of its Professional Liability Policy to cover the indemnification clause in this Contract, as the same relates to negligent acts, errors or omissions in the Project work performed by them. The Contractor's designer shall continue this liability insurance coverage for a period of

- (i) 3 years from the date of acceptance of the work by the Engineer, as evidenced by a State of Connecticut, Department of Transportation form entitled "Certificate of Acceptance of Work," issued to the Contractor; or
- (ii) 3 years after the termination of the Contract, whichever is earlier, subject to the continued commercial availability of such insurance.

b. Working Drawings for Temporary Construction: The Contractor shall submit drawings, calculations, procedures and other supporting data to the Assistant District Engineer.

3. Shop Drawings: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and deliver shop drawings to the Designer for review. Review timeframes and submission locations are as specified herein.

There will be no direct payment for furnishing any shop drawings, but the cost thereof shall be considered as included in the general cost of the work.

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

The Contractor shall submit the product data in a single submittal for each element or group of elements of construction.

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

There will be no direct payment for furnishing any product data, but the cost thereof shall be considered as included in the general cost of the work.

5. Submittal Preparation and Processing – Review Timeframes: The Contractor shall allow 30 calendar days for submittal review by the Department, from the date receipt is acknowledged by the Department's reviewer. For any submittals marked with "Revise and Resubmit" or "Rejected," the Department is allowed an additional 20 calendar days for review of any resubmissions.

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

The furnishing of shop drawings, working drawings or product data, or any comments or suggestions by the Designer or Engineer concerning shop drawings, working drawings or product data, shall not relieve the Contractor of any of its responsibility for claims by the State or by third parties, as per 1.07.10.

The furnishing of the shop drawings, working drawings and product data shall not serve to relieve the Contractor of any part of its responsibility for the safety or the successful completion of the Project construction.

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

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

SECTION 1.06 CONTROL OF MATERIALS

Article 1.06.01 - Source of Supply and Quality:

Add the following:

Traffic Signal Items:

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

- Rigid Metal Conduit
- Loop Vehicle Detection
- Loop Detector
- Loop Sealant
- Loop Wire

SECTION 1.07 - LEGAL RELATIONS AND RESPONSIBILITIES

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

1. Comcast of Connecticut, Inc
Mr. Jim Bitzas,
Senior Manager of Western New England
1110 East Mountain Road
Westfield, MA 01085
PHONE: (413) 562-9923 EXT: 5783252
Mobile: (617)279-7485
E-MAIL: jim_bitzas@cable.comcast.com

2. The Southern New England Telephone Company dba Frontier Communications of Connecticut
Ms. Lynne DeLucia,
Engineering
1441 North Colony Road
Meriden, CT 06450-4101
PHONE: (203) 238-5000
Mobile: 860-967-4389
E-MAIL: Lynne.m.anastasio@ftr.com

3. Lighttower Fiber Networks
Mr. Eric Clark,
Manager Fiber Construction
1781 Highland Avenue
Cheshire, CT 06410
PHONE: (203) 649-3904
MOBILE: (860) 863-8311
E-MAIL: eclark@lighttower.com

4. The Connecticut Light and Power Company dba Eversource Energy – Electric Distribution
Mr. Thomas Woronik
Supervisor-Construction Engineering
22 East High Street
East Hampton, CT 06424
PHONE: (860) 267-3891
E-MAIL: thomas.woronik@eversource.com

5. Yankee Gas Services Company dba Eversource Energy - Gas Distribution
Mr. Thomas Costa
Manager Gas Project Engineering
157 Cordaville Road
Southborough, MA 01772
PHONE: (508) 305-7027
E-MAIL: Thomas.costa@eversource.com

6. The Connecticut Water Company
Mr. Daniel Lesnieski,
Infrastructure Rehabilitation Manager
446 Smith Street
Middletown, CT 06457
PHONE: (860) 292-2834
E-MAIL: dlesnieski@ctwater.com

7. Naugatuck Sanitary and Storm Sewer
Mr. Wayne Zirolli,
Borough Engineer
229 Church Street
Naugatuck, CT 06770
PHONE: (203) 720-7006
FAX: (203) 720-7041
E-MAIL: wzirolli@naugatuck-ct.gov

8. Mr. Mark Russo
District 4 Electrical Supervisor
Department of Transportation
Southbury, Connecticut 06488

9. Ms. Ellen Murray
Fire Chief
Borough of Naugatuck Fire Department
41 Maple Street
Naugatuck, CT 06770
PHONE: (203) 720-7085
E-MAIL: emurray@naugatuck-ct.gov

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.

The Contractor shall notify the project engineer on construction projects, or the district permit agent on permit jobs, when all traffic signal work is completed. This will include all work at signalized intersections including loop replacements, adjusting existing traffic signals or any relocation work including handholes. The project engineer or district permit agent will notify the Division of Traffic Engineering to coordinate a field inspection of all work.

The Contractor shall stake the limits of the concrete sidewalks and ramps in conjunction with staking the locations of foundations to ensure that pedestrian push buttons will be located appropriately and will be accessible from a landing area.

The project will be constructed in various phases as described herein.

1.08.04 – Limitation of Operations: Add the following:

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

Route 8

On the following State observed Legal Holidays:

New Year's Day
Good Friday, Easter*
Memorial Day
Independence Day
Labor Day
Thanksgiving Day**
Christmas Day

The following restrictions also apply:

On the day before and the day after any of the above Legal Holidays.

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

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

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

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

During all other times

The Contractor shall maintain and protect traffic as shown on the accompanying "Limitation of Operations" charts, which dictate the minimum number of lanes that must remain open for each day of the week.

**Limitation of Operations Chart
Minimum Number of Lanes to Remain Open**

Route: 8 Northbound Location: Between Exits 24 and 26 Number of Through Lanes: 2								Route: 8 Southbound Location: Between Exits 26 and 24 Number of Through Lanes: 2							
Hour Beginning	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Hour Beginning	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mid	1	1	1	1	1	1	1	Mid	1	1	1	1	1	1	1
1 AM	1	1	1	1	1	1	1	1 AM	1	1	1	1	1	1	1
2 AM	1	1	1	1	1	1	1	2 AM	1	1	1	1	1	1	1
3 AM	1	1	1	1	1	1	1	3 AM	1	1	1	1	1	1	1
4 AM	1	1	1	1	1	1	1	4 AM	1	1	1	1	1	1	1
5 AM	1	1	1	1	1	1	1	5 AM	1	1	1	1	1	1	1
6 AM	E	E	E	E	E	1	1	6 AM	E	E	E	E	E	1	1
7 AM	E	E	E	E	E	1	1	7 AM	E	E	E	E	E	1	1
8 AM	E	E	E	E	E	2	1	8 AM	E	E	E	E	E	1	1
9 AM	1	1	1	1	2	2	1	9 AM	2	2	2	2	2	1	1
10 AM	1	1	1	1	2	2	2	10 AM	1	1	2	2	1	2	1
11 AM	1	1	1	2	2	2	2	11 AM	1	1	1	1	1	2	2
Noon	2	2	2	2	2	2	2	Noon	1	1	1	1	1	2	2
1 PM	2	2	2	2	2	2	2	1 PM	1	1	1	1	2	2	2
2 PM	2	2	2	2	2	2	2	2 PM	2	2	2	2	2	2	2
3 PM	E	E	E	E	E	2	2	3 PM	E	E	E	E	E	2	2
4 PM	E	E	E	E	E	2	2	4 PM	E	E	E	E	E	2	2
5 PM	E	E	E	E	E	2	1	5 PM	E	E	E	E	E	2	2
6 PM	2	2	2	2	2	1	1	6 PM	1	1	1	1	2	2	2
7 PM	1	1	1	1	2	1	1	7 PM	1	1	1	1	1	2	1
8 PM	1	1	1	1	1	1	1	8 PM	1	1	1	1	1	1	1
9 PM	1	1	1	1	1	1	1	9 PM	1	1	1	1	1	1	1
10 PM	1	1	1	1	1	1	1	10 PM	1	1	1	1	1	1	1
11 PM	1	1	1	1	1	1	1	11 PM	1	1	1	1	1	1	1

On Holidays and within Holiday Periods, all Hours shall be 'E.'

'E' = maintain existing traffic operations = all available travel lanes, including exit only lanes, climbing lanes and all available shoulder widths shall be open to traffic during this period

Ramps and Turning Roadways

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 6:00 p.m.

Route 63

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 6:00 p.m.

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

All Other Roadways

Monday through Friday between 3:00 p.m. and 6:00 p.m.

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

The Contractor will not be allowed to perform any work between 9:00 p.m. and 7:00 a.m. on all days.

Special Events (the Contractor shall be responsible for obtaining a schedule of special events from the Borough of Naugatuck, Cross Street Intermediate School and the Cemeteries adjacent to the project.) Work shall be coordinated and performed in a manner which minimizes impacts to access during these events.

The Contractor will be allowed to close the southbound direction of Cross Street between Route 63 and Cotton Hollow Road and detour traffic for a duration that shall not exceed **70** consecutive days. The detour shall not take place during a Holiday week or while schools are in session.

The Contractor will be allowed to close Cotton Hollow Road and detour traffic between 7:00 a.m. and 3:00 p.m. on weekdays for a duration that shall not exceed **4** consecutive weeks. The detour shall not take place during a Holiday week or while schools are in session.

The Contractor shall notify the Engineer at least 14 days in advance of the start of any closure.

The Contractor will be allowed to halt Cross Street and Cotton Hollow Road traffic for a period not to exceed 10 minutes to perform necessary work, including installing transverse drainage runs and utility relocations, as approved by the Engineer, between 7:00 a.m. and 3:00 p.m. on all non-Holiday days.

Additional Lane Closure Restrictions

It is anticipated that work on adjacent projects will be ongoing simultaneously with this project. The Contractor shall be aware of those projects and anticipate that coordination will be required to maintain proper traffic flow at all times on all project roadways, in a manner consistent with these specifications and acceptable to the Engineer.

The Contractor will not be allowed to perform any work that will interfere with traffic operations on a roadway when traffic operations are being restricted on that same roadway, unless there is at least a one mile clear area length where the entire roadway is open to traffic or the closures have been coordinated and are acceptable to the Engineer. The one mile clear area length shall be measured from the end of the first work area to the beginning of the signing pattern for the next work area.

Other Limitations

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.

Longitudinal dropdowns will not be permitted between new pavement, existing pavement, and/or temporary pavement in areas where traffic will be traveling.

The Contractor shall excavate a reasonable length of the existing roadway, not to exceed 500 feet, at full stage width and depth and install permanent subbase and processed aggregate base to the permanent locations and elevations 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 processed aggregate base or as direct by the Engineer or Borough.

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.

Stage Construction

Construction activities for this contract shall be performed in stages and shall be sequenced as specified below and in accordance with the Maintenance and Protection of Traffic plans contained in the project plans and the Construction Traffic Control Plans contained in Item No. 971001A unless approved otherwise by the Engineer, to minimize disruptions to the public and to accommodate the relocation of utilities unless approved otherwise by the Engineer. Phases within each construction stage shall not be initiated until the completion of work in a prior phase, as noted below, unless approved otherwise by the Engineer. Also, where stage construction plans are provided, the Contractor shall not begin work on a new stage until the previous stage is completed and accepted by the Engineer unless approved otherwise by the Engineer.

The contract time was developed based on this construction staging and in recognition of utility relocation work. The Contractor shall coordinate the construction schedule and all construction activities with the affected utility companies to minimize delays and conflicts.

Construction Staging - Utility Relocations

The Contractor shall coordinate all work activities with the various utility companies to accommodate his work schedules with all utility company schedules.

Utilities shall relocate all facilities as required and install in conjunction to roadway construction and in consultation and coordination with the Contractor to ensure proper utility pole, sub-surface structure and pipe locations to avoid conflicts with proposed drainage and other underground structures.

The Contractor shall also coordinate clearing and grubbing activities concurrently with utility relocations so as to avoid conflicts and minimize interruptions of utility services.

These plan sheets are intended to show proposed work and utility installations to be done by the various utility companies or municipal authorities or both before, during, or after the life of this contract but may not depict all work to be done. In addition to the work indicated on these plans, the utility companies and authorities may make adjustments to or remove their installations other than those indicated on the plans or may install facilities not indicated. It is the Contractor's responsibility to be aware of the proposed utility work, anticipated utility schedule, affect the work will have on the construction schedule and coordinate with the various utility company schedules.

Sequence of Construction

The Contractor shall perform the work on this project in accordance with the following and as outlined in the Special Provision "Maintenance and Protection of Traffic" and the Maintenance and Protection of Traffic plans contained in the project plans. The Contractor is responsible during construction for maintaining appropriate sight lines at all access points.

Stage 1 (Cross Street)

1. Install temporary pavement along the right side of Cross Street between Cotton Hollow Road and Sta. 21+62.5± by utilizing one lane alternating traffic during allowable periods. See Stage-1 (Cross Street) plan for additional information. For additional information regarding signing patterns, see Traffic Control Plans provided in the special provision for the "Maintenance and Protection of Traffic."
2. Detour Cross Street southbound traffic along Route 63 northbound to Route 8, Exit 26. For additional information regarding detour, see Cross Street southbound detour plan.
3. Shift the Cross Street northbound traffic as shown Dwg No. MPT-01.
4. Complete the work along the southbound side of Cross Street. Do not install final lift of HMA S0.5.
5. Proceed to Stage 2.

Stage 2 (Cross Street)

1. Shift the Cross Street northbound traffic to newly constructed pavement during Stage 1 as shown in typical cross section for Stage 2 on Dwg No. MPT-01.

2. Cross Street southbound traffic shall remain along detour route.
3. Install portion of sidewalk at north corner of Meadowbrook Place and Cross Street as shown on Dwg No. Mpt-04.

Note: contractor to direct pedestrians around the work area via the pedestrian path, as shown. The new portion of sidewalk shall then be temporarily transitioned with bituminous concrete to the existing concrete sidewalk until all new sidewalk is complete. Temporary bituminous sidewalk & sidewalk ramps shall be used at the midblock crossing on Cross Street, just north of Meadowbrook Place, to maintain access to the school at all times. Temporary sidewalk shall be paid for under "Maintenance and Protection of Traffic".

4. Complete the work along northbound side of Cross Street. Do not install the final lift of HMA S0.5.
5. Proceed to Stage 3.

Stage 3 – (Cotton Hollow Road)

1. Open Cross Street traffic in both directions.
2. Close Cotton Hollow Road between Cross Street and Sta. 92+45±.
3. See Detour Plan for "Cotton Hollow Road" detour for additional information.
4. Complete the work for Cotton Hollow Road. Do not install the final lift of HMA S0.5.
5. Proceed to Stage 4.

Stage 4 – (From beginning of project to intersection of Cotton Hollow Road)

1. Work in this area could be completed by one lane alternating traffic during allowable period as per Section 1.08 - Prosecution and Progress and Item No. 0971001A "Maintenance and Protection of Traffic". No separate stage construction plans for this stage are provided.
2. Install final lift of HMA S0.5 throughout the project.
3. Restore the normal traffic conditions along Cross Street and Cotton Hollow Road.

Project Completion

When the installation of all the intermediate courses of bituminous concrete pavement is completed for all roadways, the Contractor shall install the final courses of bituminous concrete pavement and perform all remaining roadway improvements and restoration. Final pavement markings shall be installed on the final course of bituminous concrete pavement in accordance with Article 9.71.03 as contained in the Special Provision "Maintenance and Protection of Traffic."

SECTION 4.06 - BITUMINOUS CONCRETE

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

4.06.01—Description

4.06.02—Materials

4.06.03—Construction Methods

4.06.04—Method of Measurement

4.06.05—Basis of Payment

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1. Materials Supply: The bituminous concrete mixture must be from one source of supply and originate from one Plant unless authorized by the Engineer.

2. Recycled Materials: Reclaimed Asphalt Pavement (RAP), Crushed Recycled Container Glass (CRCG), Recycled Asphalt Shingles (RAS), or crumb rubber (CR) from recycled tires may be incorporated in bituminous concrete mixtures in accordance with Project Specifications.

4.06.03—Construction Methods:

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

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

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

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

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

2. Transportation of Mixture: The mixture shall be transported in vehicles that are clean of all foreign material, excessive coating or cleaning agents, and, that have no gaps through which mixture might spill. Any material spilled during the loading or transportation process shall be quantified by re-weighing the vehicle. The Contractor shall load vehicles uniformly so that segregation is minimized. Loaded vehicles shall be tightly covered with waterproof covers acceptable to the Engineer. Mesh covers are prohibited. The cover must minimize air infiltration. Vehicles found not to be in conformance shall not be loaded.

Vehicles with loads of bituminous concrete being delivered to State projects must not exceed the statutory or permitted load limits referred to as gross vehicle weight (GVW). The Contractor shall furnish a list and allowable weights of all vehicles transporting mixture.

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

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

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

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

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

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

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

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

Pneumatic tire rollers shall be equipped with wide-tread compaction tires capable of exerting an average contact pressure from 60 to 90 pounds per square inch uniformly over the surface, The Contractor shall furnish documentation to the Engineer regarding tire size; pressure and loading

to confirm that the proper contact pressure is being developed and that the loading and contact pressure is uniform for all wheels.

Lighting: For paving operations, which will be performed during hours of darkness, the paving equipment shall be equipped with lighting fixtures as described below, or with an approved equal. Lighting shall minimize glare to passing traffic. The lighting options and minimum number of fixtures are listed in Tables 4.06-1 and 4.06-2:

TABLE 4.06-1: Minimum Paver Lighting

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

TABLE 4.06-2: Minimum Roller Lighting

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

*All fixtures shall be mounted above the roller.

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

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

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

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

Material Transfer Vehicle (MTV): A MTV shall be used when placing a bituminous concrete surface course as indicated in the contract documents.

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

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

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

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

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

If a test section fails to meet specifications, the Contractor shall stop production, make necessary adjustments to the job mix formula, Plant operations, or procedures for placement and compaction. The Contractor shall construct test sections, as allowed by the Engineer, until all the required specifications are met. All test sections shall also be subject to removal as set forth in Article 1.06.04.

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

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

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

- a) Posted speed limit is greater than 35 MPH: 30 feet per inch of elevation change.
- b) Posted speed limit is 35 MPH or less: 15 feet per inch of elevation change.

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

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

- a) Posted speed limit is greater than 50 MPH
 - (1) Leading Transitions = 15 feet per inch of vertical change (thickness)
 - (2) Trailing Transitions = 6 feet per inch of vertical change (thickness)
- b) Posted speed limit is 40, 45, or 50 MPH
 - (1) Leading and Trailing = 4 feet per inch of vertical change (thickness)
- c) Posted speed limit is 35 MPH or less
 - (1) Leading and Trailing = 3 feet per inch of vertical change (thickness)

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

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

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

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

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

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

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

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

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

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

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

The Contractor shall inspect the newly placed pavement for defects in the mixture or placement before rolling is started. Any deviation from standard crown or section shall be immediately remedied by placing additional mixture or removing surplus mixture. Such defects shall be corrected to the satisfaction of the Engineer.

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

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

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

TABLE 4.06-3: Thickness Tolerances

Mixture Designation	Lift Tolerance
S1	+/- 3/8 inch
S0.25, S0.375, S0.5	+/- 1/4 inch

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

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

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

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

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

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

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

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

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

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

Surface Requirements:

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

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

7. Longitudinal Joint Construction Methods: The Contractor shall use Method I- Notched Wedge Joint (see Figure 4.06-1) when constructing longitudinal joints where lift thicknesses are between 1½ and 3 inches. S1.0 mixtures shall be excluded from using Method I. Method II Butt Joint (see Figure 4.06-2) shall be used for lifts less than 1½ inches or greater than or equal to 3 inches. During placement of multiple lifts, the longitudinal joint shall be constructed in such a

manner that it is located at least 6 inches from the joint in the lift immediately below. The joint in the final lift shall be at the centerline or at lane lines. Each longitudinal joint shall maintain a consistent offset from the centerline of the roadway along its entire length. The difference in elevation between the two faces of any completed longitudinal joint shall not exceed $\frac{1}{4}$ inch in any location.

Method I - Notched Wedge Joint:

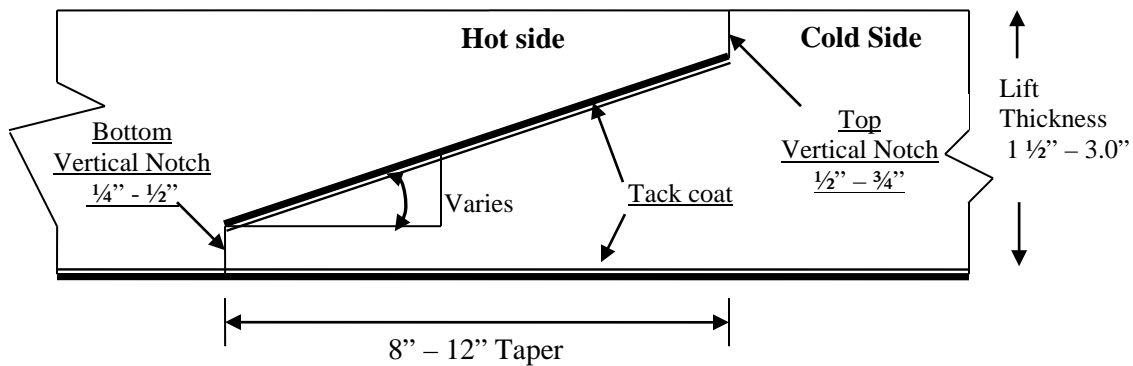


FIGURE 4.06-1: Notched Wedge Joint

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

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

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

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

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

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

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

Method II - Butt Joint:

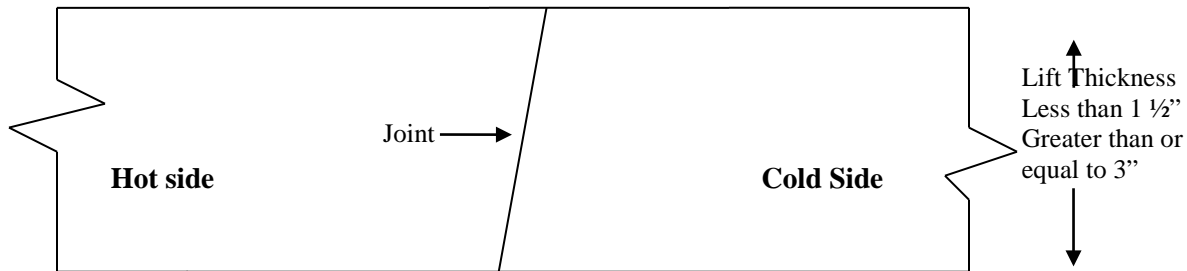


FIGURE 4.06-2: Butt Joint

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

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

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

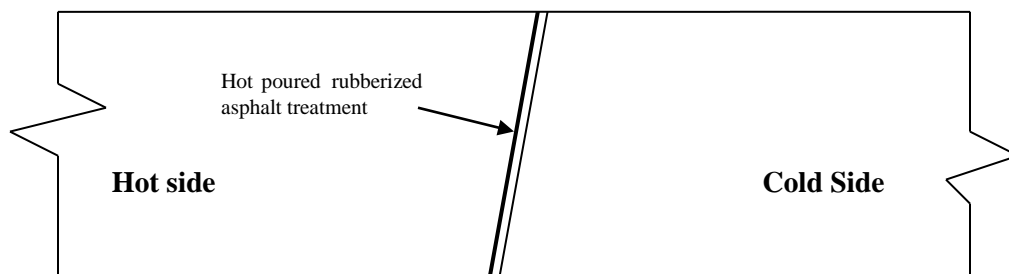


FIGURE 4.06-3: Butt Joint with Hot Poured Rubberized Asphalt Treatment

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- Mixtures shall not be placed when the air or sub base temperature is less than 40°F regardless of the season.
- Should paving operations be scheduled during the Extended Season, the Contractor must submit an Extended Season Paving Plan for the project that addresses minimum delivered mix temperature considering WMA, PMA or other additives, maximum paver speed, enhanced rolling patterns and the method to balance mixture delivery and placement operations. Paving during Extended Season shall not commence until the Engineer has approved the plan.

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

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

by the Engineer. The Engineer must witness the extraction, labeling of cores and filling of the core holes.

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

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

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

Sampling is in accordance with the following tables:

TABLE 4.06-4: Bridge Density Lot(s)

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

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

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

Lot Type	No. of Mat Cores		No. of Joint Cores		Target Lot Size (Tons)
Standard Lot / Without Bridge (s)	4		4		2000
Combo Lot / Lot With Bridge(s) ⁽¹⁾	4 plus	1 per structure (≤ 300')	4 plus	1 per structure (≤ 300')	2000
		2 per structure (301' – 500')		2 per structure (301' – 500')	

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

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

Note:

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

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

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

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

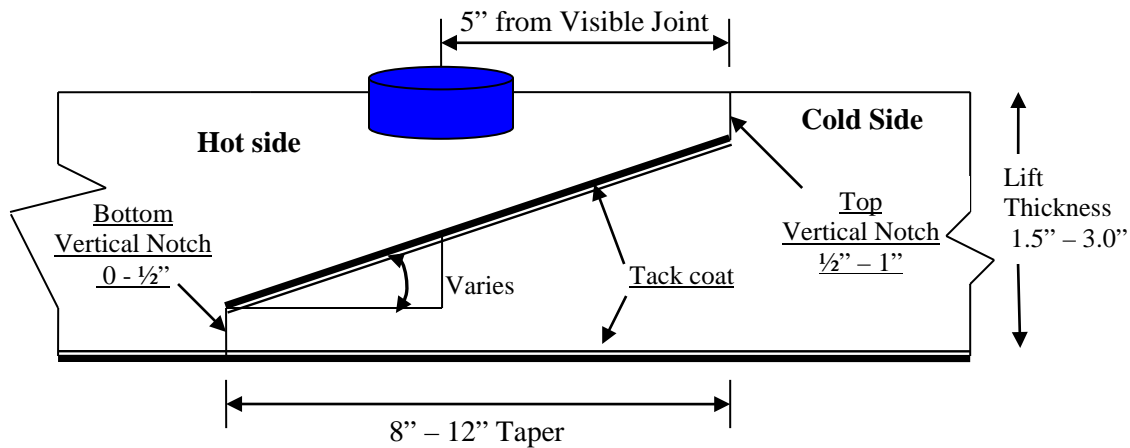


FIGURE 4.06-5: Notched Wedge Joint Cores

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

The cores shall be labeled by the Contractor with the project number, date placed, lot number and sub-lot number. The core's label shall, include "M" for a mat core and "J" for a joint core. A mat core from the second lot and first sub-lot shall be labeled "M2 - 1" (Figure 4.06-4). The Engineer shall fill out a MAT-109 to accompany the cores. The Contractor shall deliver the

cores and MAT-109 to the Department's Central Lab. The Contractor shall use a container approved by the Engineer. The container shall have a lid capable of being locked shut and tamper proof. The Contractor shall use foam, bubble wrap, or another suitable material to prevent the cores from being damaged during handling and transportation. Once the cores and MAT-109 are in the container the Engineer will secure the lid using a security seal. The security seal's identification number must be documented on the MAT-109. Central Lab personnel will break the security seal and take possession of the cores.

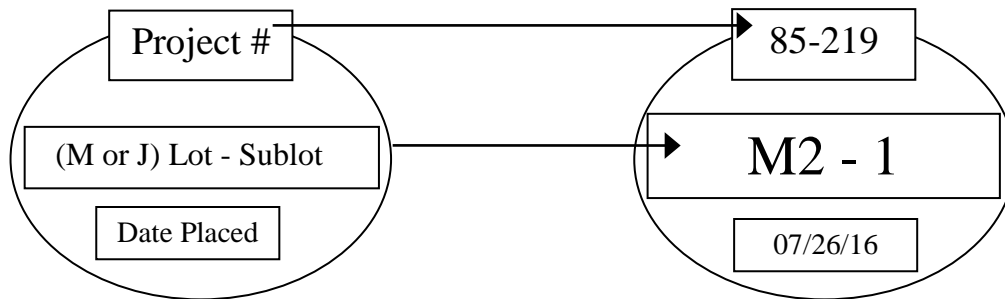


FIGURE 4.06-4: Labeling of Cores

Each core hole shall be filled within four hours upon core extraction. Prior to being filled, the hole shall be prepared by removing any free water and applying tack coat using a brush or other means to uniformly cover the cut surface. The core hole shall be filled using a bituminous concrete mixture at a minimum temperature of 240°F containing the same or smaller nominal maximum aggregate size and compacted with a hand compactor or other mechanical means to the maximum compaction possible. The bituminous concrete shall be compacted to 1/8 inch above the finished pavement.

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

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

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

Density Acceptance: The Engineer will perform all acceptance testing in accordance with AASHTO T 331. The density of each core will be determined using the daily production's

average maximum theoretical specific gravity (Gmm) established during the testing of the parent material at the Plant. When there was no testing of the parent material or any Gmm exceeds the specified tolerances in the Department's current QA Program for Materials, the Engineer will determine the maximum theoretical density value to be used for density calculations.

12. Density Dispute Resolution Process: The Contractor and Engineer will work in partnership to avoid potential conflicts and to resolve any differences that may arise during quality control or acceptance testing for density. Both parties will review their sampling and testing procedures and results and share their findings. If the Contractor disputes the Engineer's test results, the Contractor must submit in writing a request to initiate the Dispute Resolution Process within 7 calendar days of the notification of the test results. No request for dispute resolution will be allowed unless the Contractor provides quality control results within the timeframe described in sub-article 4.06.03-9 supporting its position. No request for Dispute Resolution will be allowed for a Density Lot in which any core was not taken within the required 5 calendar days of placement. Should the dispute not be resolved through evaluation of existing testing data or procedures, the Engineer may authorize the Contractor to obtain a new set of core samples per disputed lot. The core samples must be extracted no later than 14 calendar days from the date of Engineer's authorization.

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

13. Corrective Work Procedure:

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

- a) Propose a corrective procedure to the Engineer for review and approval prior to any corrective work commencing. The proposal shall include:
 - Limits of pavement to be replaced or corrected, indicating stationing or other landmarks that are readily distinguishable.
 - Proposed work schedule.
 - Construction method and sequence of operations.
 - Methods of maintenance and protection of traffic.
 - Material sources.
 - Names and telephone numbers of supervising personnel.
- b) Any corrective courses placed as the final wearing surface shall match the specified lift thickness after compaction.

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

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

4.06.04—Method of Measurement:

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

2. Adjustments: Adjustments may be applied to bituminous concrete quantities and will be measured for payment using the following formulas:

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

Actual Area = [(Measured Length (ft)) x (Avg. of width measurements (ft))]

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

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

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

Where: L = Length (ft)

(t) = Actual thickness (inches)

W_{adj} = (Designed width (ft) + tolerance /12) - Measured Width)

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

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

Where: A = Area = {[L x (Designed width + tolerance (lift thickness)/12)] / 9}

t_{adj} = Adjusted thickness = [(Dt + tolerance) - Actual thickness]

Dt = Designed thickness (inches)

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

$$\text{Tons Adjusted for Weight (Tw)} = \text{GVW} - \text{DGW} = (-) \text{Tons}$$

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

- d) Mixture Adjustment: The quantity of bituminous concrete representing the production lot at the Plant will be adjusted as follow:

- i. Non-PWL Production Lot (less than 3500 tons):

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

$$\text{Tons Adjusted for Superpave Design (TSD)} = [(\text{AdjAV}_t + \text{AdjPB}_t) / 100] \times \text{Tons}$$

$$\text{Percent Adjustment for Air Voids} = \text{AdjAV}_t = [\text{AdjAV}_1 + \text{AdjAV}_2 + \text{AdjAV}_i + \dots + \text{AdjAV}_n] / n$$

Where: AdjAV_t = Total percent air void adjustment value for the lot

AdjAV_i = Adjustment value from Table 4.06-7 resulting from each sub lot or the average of the adjustment values resulting from multiple tests within a sub lot, as approved by the Engineer.

n = number of sub lots based on Table M.04.03-2

TABLE 4.06-6: Adjustment Values for Air Voids

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

$$\text{Percent Adjustment for Asphalt Binder} = \text{AdjPB}_t = [(\text{AdjPB}_1 + \text{AdjPB}_2 + \text{AdjPB}_i + \dots + \text{AdjPB}_n)] / n$$

Where: AdjPB_t = Total percent asphalt binder adjustment value for the lot

AdjPB_i = Adjustment value from Table 4.06-7 resulting from each sub lot

n = number of binder tests in a production lot

TABLE 4.06-7: Adjustment Values for Binder Content

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

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

For each lot, the adjustment values shall be calculated based on PWL for AV, VMA and PB test results. The lot will be considered as being normally distributed and all applicable equations in AASHTO R9 and AASHTO R42 Appendix X4 will apply.

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

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

For PWL between 50 and 90%: $Adj(AV_t \text{ or } PB_t \text{ or } VMA_t) = (55 + 0.5 \text{ PWL}) - 100$

For PWL at and above 90%: $Adj(AV_t \text{ or } PB_t \text{ or } VMA_t) = (77.5 + 0.25 \text{ PWL}) - 100$

Where:

$AdjAV_t$ = Total percent AV adjustment value for the lot

$AdjPB_t$ = Total percent PB adjustment value for the lot

$AdjVMA_t$ = Total percent VMA adjustment value for the lot

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

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

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

iii. Partial Lots:

Lots with less than 4 sublots will be combined with the prior lot. If there is no prior lot with equivalent material or if the last test result of the prior lot is over 30 calendar days old, the adjustment will be calculated as indicated in 4.06.04-2.d.i.

Lots with 4 or more sublots will be calculated as indicated in 4.06.04-2.d.ii.

- e) **Density Adjustment:** The quantity of bituminous concrete measured for payment in a lift of pavement specified to be 1½ inches or greater may be adjusted for density. Separate density adjustments will be made for each lot and will not be combined to establish one density adjustment. The final lot quantity shall be the difference between the total payable tons for the project and the sum of the previous lots. If either the Mat or Joint adjustment value is “remove and replace”, the density lot shall be removed and replaced (curb to curb).

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

Tons Adjusted for Density (T_D) = [(P_M x .50) + (P_J x .50)] / 100] X Density Lot Tons

Where: T_D = Total tons adjusted for density for each lot

P_M = Mat density percent adjustment from Table 4.06-9

P_J = Joint density percent adjustment from Table 4.06-10

TABLE 4.06-9: Adjustment Values for Pavement Mat density

Average Core Result Percent Mat Density	Percent Adjustment (Bridge and Non-Bridge) ⁽¹⁾⁽²⁾
97.1 - 100	-1.667*(ACRPD-98.5)
94.5 – 97.0	+2.5
93.5 – 94.4	+2.5*(ACRPD-93.5)
92.0 – 93.4	0
90.0 – 91.9	-5*(92-ACRPD)
88.0 – 89.9	-10*(91-ACRPD)
87.0 – 87.9	-30
86.9 or less	Remove and Replace (curb to curb)

TABLE 4.06-10: Adjustment Values for Pavement Joint Density

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

⁽¹⁾ ACRPD = Average Core Result Percent Density

⁽²⁾ All Percent Adjustments to be rounded to the second decimal place. For example, 1.667 is to be rounded to 1.67.

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

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

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

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

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

b. Vehicle Method-

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

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

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

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

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

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

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

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

4.06.05—Basis of Payment:

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

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

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

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

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

Density Lot: $T_D \times \text{Unit Price} = \text{Est. (D)}$

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

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

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

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

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

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

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

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

<u>Pay Item*</u>	<u>Pay Unit*</u>
HMA S*	ton
PMA S*	ton
Bituminous Concrete Adjustment Cost	est.
Material for Tack Coat	gal.
Material Transfer Vehicle	ton

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

SECTION M.04 BITUMINOUS CONCRETE MATERIALS

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

M.04.01—Bituminous Concrete Materials and Facilities

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

M.04.03—Production Requirements

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

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

1. Coarse Aggregate:

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

2. Fine Aggregate:

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

3. Mineral Filler:

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

4. Performance Graded (PG) Asphalt Binder:

a. General:

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

ii. The binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29. The Contractor shall submit a Certified Test Report and bill of lading representing each delivery in accordance with AASHTO R 26(M). The Certified Test Report must also indicate the binder specific gravity at 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. Contractor plant personnel shall document specific storage tank(s) where binder will be transferred and stored until used, and provide binder samples to the Engineer upon request. The person(s) shall assure that each shipment is accompanied by a statement certifying that the transport vehicle was inspected before loading and was found acceptable for the material

shipped, and, that the binder is free of contamination from any residual material, along with two (2) copies of the bill of lading.

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

b. Basis of Approval:

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

c. Standard Performance Grade (PG) Binder:

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

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

d. Modified Performance Grade (PG) Binder:

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

e. Warm Mix Additive or Technology:

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

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

iii. The blended binder shall meet the requirements of AASHTO M 332 and shall be graded or verified in accordance with AASHTO R 29 for the specified binder grade. The Contractor shall submit a Certified Test Report showing the results of the testing demonstrating the binder grade. In addition, it must include the grade of the virgin

binder, the brand name of the warm mix additive, the manufacturer's suggested rate for the WMA additive, the water injection rate (when applicable) and the WMA Technology manufacturer's recommended mixing and compaction temperature ranges.

5. Emulsified Asphalts:

a. General:

- i. The emulsified asphalt shall meet the requirements of AASHTO M 140 or AASHTO M 208 as applicable.
- ii. The emulsified asphalts shall be free of contaminants such as fuel oils and other solvents.
- iii. The blending at mixing plants of emulsified asphalts from different suppliers is prohibited.

b. Basis of Approval

- i. The request for approval of the source of supply shall list the location where the material is manufactured, the handling and storage methods, and certifications in accordance with AASHTO PP 71. Only suppliers that have an approved "Quality Control Plan for Emulsified Asphalt" formatted in accordance with AASHTO PP 71 and submit monthly split samples per grade to the Engineer may supply emulsified asphalt to Department projects.
- ii. Each shipment of emulsified asphalt delivered to the project site shall be accompanied with the corresponding Certified Test Report listing Saybolt viscosity, residue by evaporation, penetration of residue, and weight per gallon at 77°F and Material Certificate.
- iii. Anionic emulsified asphalts shall conform to the requirements of AASHTO M-140. Materials used for tack coat shall not be diluted and meet grade RS-1 or RS-1H. When ambient temperatures are 80°F and rising, grade SS-1 or SS-1H may be substituted if permitted by the Engineer.
- iv. Cationic emulsified asphalt shall conform to the requirements of AASHTO M-208. Materials used for tack coat shall not be diluted and meet grade CRS-1. The settlement and demulsibility test will not be performed unless deemed necessary by the Engineer. When ambient temperatures are 80°F and rising, grade CSS-1 or CSS-1h may be substituted if permitted by the Engineer.

6. Reclaimed Asphalt Pavement (RAP):

- a. General: RAP is a material obtained from the cold milling or removal and processing of bituminous concrete pavement. RAP material shall be crushed to 100% passing the ½ inch sieve and free from contaminants such as joint compound, wood, plastic, and metals.
- b. Basis of Approval: The RAP material will be accepted on the basis of one of the following criteria:
 - i. When the source of all RAP material is from pavements previously constructed on Department projects, the Contractor shall provide a Materials Certificate listing the detailed locations and lengths of those pavements and that the RAP is only from those locations listed.
 - ii. When the RAP material source or quality is not known, the Contractor shall request for approval to the Engineer at least 30 calendar days prior to the start of the paving operation. The request shall include a Material Certificate and applicable test results stating that the RAP consists of aggregates that meet the specification requirements of sub articles M.04.01-1 through 3, and, that the binder in the RAP is substantially free of solvents, tars and other contaminants. The Contractor is prohibited from using unapproved material on Department projects and shall take necessary action to prevent contamination of approved RAP stockpiles. Stockpiles of unapproved material shall remain separate from all other RAP materials at all times. The request for approval shall include the following:
 - 1. A 50-pound sample of the RAP to be incorporated into the recycled mixture.
 - 2. A 25-pound sample of the extracted aggregate from the RAP.

7. Crushed Recycled Container Glass (CRCG):

- a. Requirements: The Contractor may propose to use clean and environmentally-acceptable CRCG in an amount not greater than 5% by weight of total aggregate.
- b. Basis of Approval: The Contractor shall submit to the Engineer a request to use CRCG. The request shall state that the CRCG contains no more than 1% by weight of contaminants such as paper, plastic and metal and conform to the following gradation:

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

The Contractor shall submit a Materials Certificate to the Engineer stating that the CRCG complies with all the applicable requirements in this specification.

8. Joint Seal Material:

- a. Requirements: Joint seal material must meet the requirements of ASTM D 6690 – Type 2. The Contractor shall submit a Material Certificate in accordance with Article 1.06.07 certifying that the joint seal material meets the requirements of this specification.

9. Recycled Asphalt Shingles (RAS)

- a. Requirements: RAS shall consist of processed asphalt roofing shingles from post-consumer asphalt shingles or from manufactured shingle waste. The RAS material under consideration for use in bituminous concrete mixtures must be certified as being asbestos free and shall be entirely free of whole, intact nails. The RAS material shall meet the requirements of AASHTO MP 23.

The producer shall test the RAS material to determine the asphalt content and the gradation of the RAS material. The producer shall take necessary action to prevent contamination of RAS stockpiles.

The Contractor shall submit a Materials Certificate to the Engineer stating that the RAS complies with all the applicable requirements in this specification.

10. Plant Requirements:

- a. General: The Plant producing bituminous concrete shall comply with AASHTO M 156.
- b. Storage Silos: The Contractor may use silos for short-term storage with the approval of the Engineer. A silo must have heated cones and an unheated silo cylinder if it does not contain a separate internal heating system. When multiple silos are filled, the Contractor shall discharge one silo at a time. Simultaneous discharge of multiple silos for the same Project is not permitted.

<u>Type of silo cylinder</u>	<u>Maximum storage time for all classes (hr)</u>	
	HMA	WMA/PMA
Open Surge	4	Mfg Recommendations*
Unheated – Non-insulated	8	Mfg Recommendations*
Unheated – Insulated	18	Mfg Recommendations*
Heated – No inert gas	TBD by the Engineer	

*Not to exceed HMA limits

- c. Documentation System: The mixing plant documentation system shall include equipment for accurately proportioning the components of the mixture by weight and in the proper order, controlling the cycle sequence and timing the mixing operations. Recording equipment shall monitor the batching sequence of each component of the

mixture and produce a printed record of these operations on each Plant ticket, as specified herein.

If recycled materials are used, the Plant tickets shall include their dry weight, percentage and daily moisture content.

If a WMA Technology is added at the Plant, the Plant tickets shall include the actual dosage rate.

For drum Plants, the Plant ticket shall be produced at 5 minute intervals and maintained by the vendor for a period of three years after the completion of the project.

For batch Plants, the Plant ticket shall be produced for each batch and maintained by the vendor for a period of three years after the completion of the project. In addition, an asterisk (*) shall be automatically printed next to any individual batch weight(s) exceeding the following tolerances:

Each Aggregate Component	±1.5% of individual or cumulative target weight for each bin
Mineral Filler	±0.5% of the total batch
Bituminous Material	±0.1% of the total batch
Zero Return (Aggregate)	±0.5% of the total batch
Zero Return (Bituminous Material)	±0.1% of the total batch

The entire batching and mixing interlock cut-off circuits shall interrupt and stop the automatic batching operations when an error exceeding the acceptable tolerance occurs in proportioning.

The scales shall not be manually adjusted during the printing process. In addition, the system shall be interlocked to allow printing only when the scale has come to a complete rest. A unique printed character (m) shall automatically be printed on the ticket when the automatic batching sequence is interrupted or switched to auto-manual or full manual during proportioning.

- d. Aggregates: Aggregate stockpiles shall be managed to prevent segregation and cross contamination. For drum plants only, the percent moisture content at a minimum prior to production and half way through production shall be determined.
- e. Mixture: The dry and wet mix times shall be sufficient to provide a uniform mixture and a minimum particle coating of 95% as determined by AASHTO T 195(M) .

Bituminous concrete mixtures shall contain no more than 0.5% moisture when tested in accordance with AASHTO T 329.

- f. RAP: RAP moisture content shall be determined a minimum of twice daily (prior to production and halfway through production).
- g. Asphalt Binder: A binder log shall be submitted to the Department's Central Lab on a monthly basis.
- h. Warm mix additive: For mechanically foamed WMA, the water injection rate shall be monitored during production and not exceed 2.0% by total weight of binder. For additive added at the Plant, the dosage rate shall be monitored during production.
- i. Plant Laboratory: The Contractor shall maintain a laboratory at the production facility to test bituminous concrete mixtures during production. The laboratory shall have a minimum of 300 square feet, have a potable water source and drainage in accordance with the CT Department of Public Health Drinking Water Division, and be equipped with all necessary testing equipment as well as with a PC, printer, and telephone with a dedicated hard-wired phone line. In addition, the PC shall have internet connection and a functioning web browser with unrestricted access to <https://ctmail.ct.gov>. This equipment shall be maintained in working order at all times and be made available for use by the Engineer.

The laboratory shall be equipped with a heating system capable of maintaining a minimum temperature of 65°F. It shall be clean and free of all materials and equipment not associated with the laboratory. Sufficient light and ventilation must be provided. During summer months, adequate cooling or ventilation must be provided so the indoor air temperature shall not exceed the ambient outdoor temperature.

The laboratory testing apparatus, supplies, and safety equipment shall be capable of performing all tests in their entirety that are referenced in AASHTO R 35 and AASHTO M 323. The Contractor shall ensure that the Laboratory is adequately supplied at all times during the course of the project with all necessary testing supplies and equipment.

The Contractor shall maintain a list of laboratory equipment used in the acceptance testing processes including but not limited to, balances, scales, manometer/vacuum gauge, thermometers, gyratory compactor, clearly showing calibration and/or inspection dates, in accordance with AASHTO R 18. The Contractor shall notify the Engineer if any modifications are made to the equipment within the laboratory. The Contractor shall take immediate action to replace, repair, and/or recalibrate any piece of equipment that is out of calibration, malfunctioning, or not in operation.

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

1. Curb Mix:

- a. Requirements: The Contractor shall use bituminous concrete that meets the requirements of Table M.04.02-1. RAP may be used in 5% increments by weight up to 30%.

- b. **Basis of Approval:** Annually, an approved JMF based on a mix design for curb mix must be on file with the Engineer prior to use. .
Any change in component source of supply or consensus properties must be approved by the Engineer. A revised JMF shall be submitted prior to use.

**TABLE M.04.02 – 1:
Control Points for Curb Mix Mixtures**

Notes: (a) Compaction Parameter 50gyration N_{des} . (b) The percent passing the #200 sieve shall not exceed the percentage of bituminous asphalt binder.		
Mix	Curb Mix	Production Tolerances from JMF target
Grade of PG Binder content %	PG 64S-22 6.5 - 9.0	0.4
Sieve Size		
# 200	3.0 – 8.0 (b)	2.0
# 50	10 - 30	4
# 30	20 - 40	5
# 8	40 - 70	6
# 4	65 - 87	7
¼"		
3/8 "	95 - 100	8
½ "	100	8
¾"		8
1"		
2"		
Additionally, the fraction of material retained between any two consecutive sieves shall not be less than 4%		
Mixture Temperature		
Binder	325°F maximum	
Aggregate	280-350° F	
Mixtures	265-325° F	
Mixture Properties		
Air Voids (VA) %	0 – 4.0 (a)	

2. Superpave Design Method – S0.25, S0.375, S0.5, and S1

- a. **Requirements:** All designated mixes shall be designed using the Superpave mix design method in accordance with AASHTO R 35. A JMF based on the mix design shall meet the requirements of Tables M.04.02-2 through Table M.04.02-5. Each JMF must be submitted no less than seven (7) days prior to production and must be approved by the Engineer prior to use. All approved JMFs expire at the end of the calendar year.

All aggregate component consensus properties and tensile strength ratio (TSR) specimens shall be tested at an AASHTO Materials Reference Laboratory (AMRL) by NETTCP certified technicians.

All bituminous concrete mixes shall be tested for stripping susceptibility by performing the tensile strength ratio (TSR) test procedure in accordance with AASHTO T 283(M) at a minimum every 36 months. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. TSR specimens, and corresponding JMF shall be submitted with each test report.

i. Superpave Mixtures with RAP: RAP may be used with the following conditions:

- RAP amounts up to 15% may be used with no binder grade modification.
- RAP amounts up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance with AASHTO M 323 Appendix X1, or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
- Two representative samples of RAP shall be obtained. Each sample shall be split and one split sample shall be tested for binder content in accordance with AASHTO T 164 and the other in accordance AASHTO T 308.
- RAP material shall not be used with any other recycling option.

ii. Superpave Mixtures with RAS: RAS may be used solely in HMA S1 mixtures with the following conditions:

- RAS amounts up to 3% may be used.
- RAS total binder replacement up to 15% may be used with no binder grade modification.
- RAS total binder replacement up to 20% may be used provided a new JMF is approved by the Engineer. The JMF submittal shall include the grade of virgin binder added. The JMF shall be accompanied by a blending chart and supporting test results in accordance to AASHTO M 323 appendix X1 or by testing that shows the combined binder (recovered binder from the RAP, virgin binder at the mix design proportions, warm mix asphalt additive and any other modifier if used) meets the requirements of the specified binder grade.
- Superpave Mixtures with RAS shall meet AASHTO PP 78 design considerations. The RAS asphalt binder availability factor (F) used in AASHTO PP 78 shall be 0.85.

iii. Superpave Mixtures with CRCG: CRCG may be used solely in HMA S1 mixtures. One percent of hydrated lime, or other accepted non-stripping agent, shall be added to all mixtures containing CRCG. CRCG material shall not be used with any other recycling option.

- b. Basis of Approval: The following information must be included with the JMF submittal:
- Gradation, consensus properties and specific gravities of the aggregate, RAP or RAS.
 - Average asphalt content of the RAP or RAS by AASHTO T 164.
 - Source of RAP or RAS, and percentage to be used.
 - Warm mix Technology, manufacturer's recommended additive rate and tolerances and manufacturer recommended mixing and compaction temperatures.
 - TSR test report and anti-strip manufacturer and recommended dosage rate if applicable.
 - Mixing and compaction temperature ranges for the mix with and without the warm-mix technology incorporated.
 - JMF ignition oven correction factor by AASHTO T 308.

With each JMF submittal, the following samples shall be submitted to the Division of Materials Testing:

- 4 - one quart cans of PG binder, with corresponding Safety Data Sheet (SDS)
- 1 - 50 lbs bag of RAP
- 2 - 50 lbs bag of plant blended virgin aggregate

A JMF may not be approved if any of the properties of the aggregate components or mix do not meet the verification tolerances as described in the Department's current QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures.

Any material based on a JMF, once approved, shall only be acceptable for use when it is produced by the designated plant, it utilizes the same components, and the production of material continues to meet all criteria as specified herein, and component aggregates are maintained within the tolerances shown in Table M.04.02-2. A new JMF must be submitted to the Engineer for approval whenever a new component source is proposed.

Only one mix with one JMF will be approved for production at any one time. Switching between approved JMF mixes with different component percentages or sources of supply is prohibited.

- c. Mix Status: Each facility will have each type of mixture rated based on the results of the previous year's production. Mix Status will be provided to each bituminous concrete producer annually prior to the beginning of the paving season.

The rating criteria are based on compliance with Air Voids and Voids in Mineral Aggregate (VMA) as indicated in Table M.04.03-4 and are calculated as follows:

Criteria A: Percentage of acceptance test results with compliant air voids.

Criteria B: The average of the percentage of acceptance test results with compliant VMA, and percentage of acceptance test results with compliant air voids.

The final rating assigned will be the lower of the rating obtained with Criteria A or B.

Mix status is defined as:

“A” – Approved:

Assigned to each mixture type from a production facility with a current rating of 70% or greater, or to each mixture type completing a successful PPT.

“PPT” – Pre-Production Trial:

Temporarily assigned to each mixture type from a production facility when:

1. there are no compliant acceptance production test results submitted to the Department from the previous year;
2. there is a source change in one or more aggregate components
3. there is a component percentage change of more than 5% by weight;
4. there is a change in RAP percentage;
5. the mixture has a rating of less than 70% from the previous season;
6. a new JMF not previously submitted.

Bituminous concrete mixtures with a “PPT” status cannot be used on Department projects. Testing shall be performed by the Producer with NETTCP certified personnel on material under this status. Test results must confirm that specifications requirements in Table M.04.02-2 and Table M.04.02-5 are met before material can be used. One of the following methods must be used to verify the test results:

Option A: Schedule a day when a Department Inspector can be at the facility to witness testing or,

Option B: When the Contractor or their representative performs testing without being witnessed by an Inspector, the Contractor shall submit the test results and a split sample including 2 gyratory molds, 5,000 grams of boxed bituminous concrete, and 5,000 grams of cooled loose bituminous concrete for verification testing and approval.

Option C: When the Contractor or their representative performs testing without being witnessed by a Department Inspector, the Engineer may verify the mix in the Contractor’s laboratory.

Witnessing or verifying by the Department of compliant test results will change the mix’s status to an “A”.

The differences between the Department’s test results and the Contractor’s must be within the “C” tolerances included in the Department’s QA Program for Materials, Acceptance and Assurance Testing Policies and Procedures in order to be verified.

“U” – Not Approved:

Status assigned to a type of mixture that does not have an approved JMF. . Bituminous concrete mixtures with a “U” status cannot be used on Department projects.

TABLE M.04.02 – 2: Superpave Mixture Design Criteria

Notes: ⁽¹⁾ For all mixtures using a WMA technology, the mix temperature shall meet PG binder and WMA manufacturer's recommendations.								
Sieve	S0.25		S0.375		S0.5		S1	
	CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		CONTROL POINTS	
inches	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)
2.0	-	-	-	-	-	-	-	-
1.5	-	-	-	-	-	-	100	-
1.0	-	-	-	-	-	-	90	100
3/4	-	-	-	-	100	-	-	90
1/2	100	-	100	-	90	100	-	-
3/8	97	100	90	100	-	90	-	-
#4	75	90	-	75	-	-	-	-
#8	32	67	32	67	28	58	19	45
#16	-	-	-	-	-	-	-	-
#30	-	-	-	-	-	-	-	-
#50	-	-	-	-	-	-	-	-
#100	-	-	-	-	-	-	-	-
#200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0
VMA (%)	16.5 ± 1		16.0 ± 1		15.0 ± 1		13.0 ± 1	
VA (%)	4.0 ± 1		4.0 ± 1		4.0 ± 1		4.0 ± 1	
Gse	JMF value		JMF value		JMF value		JMF value	
Gmm	JMF ± 0.030		JMF ± 0.030		JMF ± 0.030		JMF ± 0.030	
Dust / binder	0.6 – 1.2		0.6 – 1.2		0.6 – 1.2		0.6 – 1.2	
Mix Temp ⁽¹⁾	265 – 325°F		265 – 325°F		265 – 325°F		265 – 325°F	
TSR	> 80%		> 80%		> 80%		> 80%	
T-283 Stripping	Minimal, as determined by the Engineer							

TABLE M.04.02–3: Superpave Consensus Properties Requirements for Combined Aggregate

Notes: (1) 95/90 denotes that a minimum of 95% of the coarse aggregate, by mass, shall have one fractured face and that a minimum of 90% shall have two fractured faces.. (2) Criteria presented as maximum Percent by mass of flat and elongated particles of materials retained on the #4 sieve, determined at 5:1 ratio.					
Traffic Level	Design ESALs (80 kN), Millions	Coarse Aggregate Angularity ⁽¹⁾ ASTM D 5821, Minimum %	Fine Aggregate Angularity AASHTO T 304, Method A Minimum %	Flat and Elongated Particles ⁽²⁾ ASTM D 4791, Maximum %	Sand Equivalent AASHTO T 176, Minimum %
1	< 0.3	55/- -	40	10	40
2	0.3 to < 3.0	75/- -	40	10	40
3	≥ 3.0	95/90	45	10	45

TABLE M.04.02– 4: Superpave Traffic Levels and Design Volumetric Properties

Traffic Level	Design ESALs (million)	Number of Gyration by Superpave Gyrotory Compactor			Percent Density of Gmm from HMA/WMA specimen			Voids Filled with Asphalt (VFA) Based on Nominal mix size – inch			
		Nini	Ndes	Nmax	Nini	Ndes	Nmax	0.25	0.375	0.5	1
1	< 0.3	6	50	75	≤ 91.5	96.0	≤ 98.0	70 - 80	70 - 80	70 - 80	67 - 80
2	0.3 to < 3.0	7	75	115	≤ 90.5	96.0	≤ 98.0	65 - 78	65 - 78	65 - 78	65 - 78
3	≥ 3.0	8	100	160	≤ 90.0	96.0	≤ 98.0	65 - 77	73 - 76	65 - 75	65 - 75

**TABLE M.04.02– 5:
Superpave Minimum Binder Content by Mix Type and Level**

Mix Type	Level	Binder Content Minimum
S0.25	1	5.70
S0.25	2	5.60
S0.25	3	5.50
S0.375	1	5.70
S0.375	2	5.60
S0.375	3	5.50
S0.5	1	5.10
S0.5	2	5.00
S0.5	3	4.90
S1	1	4.60
S1	2	4.50
S1	3	4.40

M.04.03— Production Requirements:

1. Standard Quality Control Plan (QCP) for Production:

The QCP for production shall describe the organization and procedures which the Contractor shall use to administer quality control. The QCP shall include the procedures used to control the production process, to determine when immediate changes to the processes are needed, and to implement the required changes. The QCP must detail the inspection, sampling and testing protocols to be used, and the frequency for each.

Control Chart(s) shall be developed and maintained for critical aspect(s) of the production process as determined by the Contractor. The control chart(s) shall identify the material property, applicable upper and lower control limits, and be updated with current test data. As a minimum, the following quality characteristics shall be included in the control charts: percent passing #4 sieve, percent passing #200 sieve, binder content, air voids, Gmm and VMA. The control chart(s) shall be used as part of the quality control system to document variability of the bituminous concrete production process. The control chart(s) shall be submitted to the Engineer the first day of each month.

The QCP shall also include the name and qualifications of a Quality Control Manager. The Quality Control Manager shall be responsible for the administration of the QCP, including compliance with the plan and any plan modifications.

The Contractor shall submit complete production testing records to the Engineer within 24 hours in a manner acceptable to the Engineer.

The QCP shall also include the name and qualifications of any outside testing laboratory performing any QC functions on behalf of the Contractor. The QCP must also include a list of sampling & testing methods and frequencies used during production, and the names of all Quality Control personnel and their duties.

Approval of the QCP does not imply any warranty by the Engineer that adherence to the plan will result in production of bituminous concrete that complies with these specifications. The Contractor shall submit any changes to the QCP as work progresses.

2. Acceptance Requirements:

i. General:

Acceptance samples shall be obtained from the hauling vehicles and tested by the Contractor at the Plant.

The Contractor shall submit all acceptance tests results to the Engineer within 24 hours or prior to the next day's production. All acceptance test specimens and supporting documentation must be retained by the Contractor and may be disposed of with the approval of the Engineer. All quality control specimens shall be clearly labeled and separated from the acceptance specimens.

Contractor personnel performing acceptance sampling and testing must be present at the facility prior to, during, and until completion of production, and be certified as a NETTCP HMA Plant Technician or Interim HMA Plant Technician and be in good standing. Production of material for use on State projects must be suspended by the Contractor if such personnel are not present. Technicians found by the Engineer to be non-compliant with NETTCP policies and procedures or Department policies may be removed by the Engineer from participating in the acceptance testing process for Department projects until their actions can be reviewed.

Anytime during production that testing equipment becomes defective or inoperable, production can continue for a maximum of 1 hour. The Contractor shall obtain box sample(s) in accordance with Table M.04.03-2 to satisfy the daily acceptance testing requirement for the quantity shipped to the project. The box sample(s) shall be tested once the equipment issue has been resolved to the satisfaction of the Engineer. Production beyond 1 hour may be considered by the Engineer. Production will not be permitted beyond that day until the subject equipment issue has been resolved.

Verification testing will be performed by the Engineer in accordance with the Department's QA Program for Materials.

Should the Department be unable to verify the Contractor's acceptance test result(s) due to a failure of the Contractor to retain acceptance test specimens or supporting documentation, the Contractor shall review its quality control plan, determine the cause of the nonconformance and

respond in writing within 24 hours to the Engineer describing the corrective action taken. In addition, the Contractor must provide supporting documentation or test results to validate the subject acceptance test result(s). The Engineer may invalidate any adjustments for material corresponding to the subject acceptance test(s). Failure of the Contractor to adequately address quality control issues at a facility may result in suspension of production for Department projects at that facility.

ii. Curb Mix Acceptance Sampling and Testing Procedures:

Curb Mix shall be tested in accordance to Table M.04.03-1 by the Contractor at a frequency of one test per every 250 tons of cumulative production, regardless of the day of production.

TABLE M.04.03 – 1: Curb Mix Acceptance Test Procedures

Protocol	Reference	Description
1	AASHTO T 30(M)	Mechanical Analysis of Extracted Aggregate
2	AASHTO T 168	Sampling of Bituminous Concrete
3	AASHTO T 308	Binder content by Ignition Oven method (adjusted for aggregate correction factor)
4	AASHTO T 209(M)⁽²⁾	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
5	AASHTO T 312⁽²⁾	⁽¹⁾ Superpave Gyration molds compacted to N _{des}
6	AASHTO T 329	Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method

Notes: ⁽¹⁾ One set equals two six-inch molds. Molds to be compacted to 50 gyrations

⁽²⁾ Once per year or when requested by the Engineer

a. Determination of Off-Test Status:

- i. Curb Mix is considered “off test” when the test results indicate that any single value for bitumen content or gradation are not within the tolerances shown in Table M.04.02-1. If the mix is “off test”, the Contractor must take immediate actions to correct the deficiency and a new acceptance sample shall be tested on the same day or the following day of production.
- ii. When multiple silos are located at one site, mixture supplied to one project is considered as coming from one source for the purpose of applying the “off test” status.
- iii. The Engineer may cease supply from the plant when test results from three consecutive samples are not within the JMF tolerances or the test results from two consecutive samples not within the control points indicated in Table M.04.02-1 regardless of production date.

b. JMF revisions

- i. If a test indicates that the bitumen content or gradation are outside the tolerances, the Contractor may make a single JMF revision as allowed by the Engineer prior to any additional testing. Consecutive test results outside the requirements of Table M.04.02-1 JMF tolerances may result in rejection of the mixture.
- ii. Any modification to the JMF shall not exceed 50% of the JMF tolerances indicated in Table M.04.02-1 for any given component of the mixture without approval of the Engineer. When such an adjustment is made to the bitumen, the corresponding production percentage of bitumen shall be revised accordingly.

iii. Superpave Mix Acceptance:

a. Sampling and Testing Procedures

Production Lot: The Lot will be defined as one of the following types:

- Non-PWL Production Lot for total estimated project quantities per mixture less than 3500 tons: All mixture placed during a single continuous paving operation.
- PWL Production Lot for total estimated project quantities per mixture of 3500 tons or more: Each 3500 tons of mixture produced within 30 calendar days.

Production Sub Lot:

- For Non-PWL: As defined in Table M.04.03 – 2
- For PWL: 500 tons (the last Sub Lot may be less than 500 tons)

Partial Production Lots (For PWL only): A Lot with less than 3500 tons due to:

- completion of the Course
- a Job Mix Formula revision due to changes in:
 - o cold feed percentages over 5%
 - o target combined gradation over 5%
 - o target binder over 0.15%
 - o any component specific gravity
- a Lot spanning 30 calendar days

The acceptance sample(s) location(s) shall be selected using stratified – random sampling in accordance with ASTM D 3665 based on:

- the total daily estimated tons of production for non-PWL lots, or
- the total lot size for PWL lots.

One acceptance sample shall be obtained and tested per Sub Lot. The Engineer may direct that additional acceptance samples be obtained. For non-PWL lots, one acceptance test shall always be performed in the last sub-lot based on actual tons of material produced.

For Non-PWL lots, quantities of the same mixture per plant may be combined daily for multiple State projects to determine the number of sub lots.

The payment adjustment will be calculated as described in 4.06.

**TABLE M.04.03 – 2:
Superpave Acceptance Testing Frequency per Type/Level/Plant for Non-PWL lots**

Daily quantity produced in tons (lot)	Number of Sub Lots/Tests
0 to 150	0, Unless requested by the Engineer
151 to 500	1
501 to 1,000	2
1,001 to 2,000	3
2,001 or greater	1 per 500 tons or portions thereof

The following test procedures shall be used for acceptance:

TABLE M.04.03– 3: Superpave Acceptance Testing Procedures

Protocol	Procedure	Description
1	AASHTO T 168	Sampling of bituminous concrete
2	AASHTO R 47	Reducing samples to testing size
3	AASHTO T 308	Binder content by ignition oven method (adjusted for aggregate correction factor)
4	AASHTO T 30(M)	Gradation of extracted aggregate for bituminous concrete mixture
5	AASHTO T 312	⁽¹⁾ Superpave gyratory molds compacted to N_{des}
6	AASHTO T 166	⁽²⁾ Bulk specific gravity of bituminous concrete
7	AASHTO R 35	⁽²⁾ Air voids, VMA
8	AASHTO T 209(M)	Maximum specific gravity of bituminous concrete (average of two tests)
9	AASHTO T 329	Moisture content of bituminous concrete

Notes: ⁽¹⁾ One set equals two six-inch molds. Molds to be compacted to N_{max} for PPTs and to N_{des} for production testing. The first subplot of the year will be compacted to N_{max}

⁽²⁾ Average value of one set of six-inch molds.

If the average ignition oven corrected binder content differs by 0.3% or more from the average of the Plant ticket binder content in five (5) consecutive tests regardless of the production date (moving average), the Contractor shall immediately investigate, determine an assignable cause and correct the issue. When two consecutive moving average differences are 0.3% or more and no assignable cause has been established, the Engineer may require a new ignition oven aggregate correction factor to be performed or to adjust the current factor by the average of the differences between the corrected binder content and production Plant ticket for the last five (5) acceptance results.

The test specimen must be placed in an ignition oven for testing in accordance with AASHTO T 308 within thirty minutes of being obtained from the hauling vehicle and the test shall start immediately after.

The Contractor shall perform TSR testing within 30 days after the start of production for all design levels of HMA- and PMA- S0.5 plant-produced mixtures, in accordance with AASHTO T 283(M). The TSR test shall be performed at an AMRL certified laboratory by NETTCP certified technicians. The compacted specimens may be fabricated at the Plant and then tested at an AMRL accredited facility. The test results and specimens shall be submitted to the Engineer for review. Superpave mixtures that require anti-strip additives (either liquid or mineral) shall continue to meet all requirements specified herein for binder and bituminous concrete. The Contractor shall submit the name, manufacturer, percent used, technical datasheet and SDS for the anti-strip additive (if applicable) to the Engineer.

b. Determination of Off-Test Status:

- i. Superpave mixes shall be considered “*off test*” when any Control Point Sieve, binder content, VA, VMA, or Gmm value is outside of the limits specified in Table M.04.03-4 or the target binder content at the Plant is below the minimum binder content stated in Table M.04.02-5. Note that further testing of samples or portions of samples not initially tested for this purpose cannot be used to change the status.
- ii. Any time the bituminous concrete mixture is considered Off-test:
 1. The Contractor shall notify the Engineer when the Plant is “*off test*” for any mix design that is delivered to the project in any production day. When multiple silos are located at one site, mixture supplied to one project is considered as coming from one source for the purpose of applying the “*off test*” determination.
 2. The Contractor must take immediate actions to correct the deficiency, minimize “*off test*” production to the project, and obtain an additional Process Control (PC) test after any corrective action to verify production is in conformance to the specifications. A PC test will not be used for acceptance and is solely for the use of the Contractor in its quality control process.

c. Cessation of Supply for Superpave Mixtures in non-PWL lots:

A mixture shall not be used on Department’s projects when it is “off test” for:

- i. four (4) consecutive tests in any combination of VA, VMA or Gmm, regardless of date of production, or,
- ii. two (2) consecutive tests in the Control Point sieves in one production shift.

As a result of cessation of supply, the mix status will be changed to PPT.

d. JMF revisions:

JMF revisions are only permitted prior to or after a production shift. A JMF revision is effective from the time it was submitted and is not retroactive to the previous test(s).

JMF revisions shall be justified by a documented trend of test results.

Revisions to aggregate and RAP specific gravities are only permitted when testing is performed at an AMRL certified laboratory by NETTCP certified technicians.

A JMF revision is required when the Plant target RAP and/or bin percentage deviates by more than 5% and/or the Plant target binder content deviates by more than 0.15% from the active JMF.

TABLE M.04.03– 4: Superpave Mixture Production Requirements

Notes: (1) 300°F minimum after October 15. (2) JMF tolerances shall be defined as the limits for production compliance. (3) For all mixtures with WMA technology, changes to the minimum aggregate temperature will require Engineer's approval. (4) For PMA and mixtures with WMA technology, the mix temperature shall meet manufacturer's recommendations. In addition, for all mixtures with WMA technology, the maximum mix temperature shall not exceed 325°F.(5) 0.4 for PWL lots (6) 1.3 for PWL lots (7) 1.2 for PWL lots									
	S0.25		S0.375		S0.5		S1		Tolerances
Sieve	CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		From JMF Targets (2)
inches	Min(%)	Max(%)	Min(%)	Max(%)	Min(%)	Max(%)	Min(%)	Max(%)	±Tol
1.5	-	-	-	-	-	-	100	-	
1.0	-	-	-	-	-	-	90	100	
3/4	-	-	-	-	100	-	-	90	
1/2	100	-	100	-	90	100	-	-	
3/8	97	100	90	100	-	90	-	-	
#4	75	90	-	75	-	-	-	-	
#8	32	67	32	67	28	58	19	45	
#16	-	-	-	-	-	-	-	-	
#200	2.0	10.0	2.0	10.0	2.0	10.0	1.0	7.0	
Pb	JMF value		JMF value		JMF value		JMF value		0.3 ⁽⁵⁾
VMA (%)	16.5		16.0		15.0		13.0		1.0 ⁽⁶⁾
VA (%)	4.0		4.0		4.0		4.0		1.0 ⁽⁷⁾
Gmm	JMF value		JMF value		JMF value		JMF value		0.030
Agg. Temp ⁽³⁾	280 – 350F		280 – 350F		280 – 350F		280 – 350F		
Mix Temp ⁽⁴⁾	265 – 325 F ⁽¹⁾		265 – 325 F ⁽¹⁾		265 – 325 F ⁽¹⁾		265 – 325 F ⁽¹⁾		
Prod. TSR	N/A		N/A		≥80%		N/A		
T-283 Stripping	N/A		N/A		Minimal as determined by the Engineer		N/A		

**TABLE M.04.03– 5:
Superpave Traffic Levels and Design Volumetric Properties**

Traffic Level	Design ESALs	Number of Gyration by Superpave Gyratory Compactor	
	(million)	Nini	Ndes
1	< 0.3	6	50
2	0.3 to < 3.0	7	75
3	≥3.0	8	100

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

AASHTO Standard Method of Test	
Reference	Modification
T 30	Section 7.2 thru 7.4 Samples are not routinely washed for production testing
T 168	<p>Samples are taken at one point in the pile. Samples from a hauling vehicle are taken from only one point instead of three as specified.</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 be determine conformance to material specifications and to prioritize inspections by laboratory personnel.</p>
T 195	Section 4.3 only one truck load of mixture is sampled. Samples are taken from opposite sides of the load.
T 209	<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>
T 283	When foaming technology is used, the material used for the fabrication of the specimens shall be cooled to room temperature, and then reheated to the manufactures recommended compaction temperature prior to fabrication of the specimens.

AASHTO Standard Recommended Practices	
Reference	Modification
R 26	<p>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.</p> <p>All laboratories testing binders for the Department are required to be accredited by the AASHTO Materials Reference Laboratory (AMRL).</p> <p>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.</p> <p>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.</p> <p>All AASHTO M 320 references shall be replaced with AASHTO M 332.</p> <p>Once a month, one split sample and test results for each asphalt binder grade and each lot shall be submitted by the PG binder supplier to the Department’s Central Lab. Material remaining in a certified lot shall be re-certified no later than 30 days after initial certification. Each April and September, the PG binder supplier shall submit test results for two (2) BBR tests at two (2) different temperatures in accordance with AASHTO R 29.</p>

SECTION 10.00 - GENERAL CLAUSES FOR HIGHWAY ILLUMINATION AND TRAFFIC SIGNAL PROJECTS

Article 10.00.03 – Plans:

In the first paragraph, replace the 2nd, 3rd, and 4th sentences with the following:

The Contractor shall digitally mark, in red, any changes on the plan(s) using a pdf program.

The Contractor shall submit the digital pdf file(s) to the Engineer and to DOT.TrafficElectrical@ct.gov, for Traffic Signals, prior to requesting the Functional Inspection.

Also prior to requesting the Functional Inspection, the Contractor shall deliver to the Engineer the following:

In the first paragraph, last sentence, in item no. 1, replace “Four (4)” with “Digital PDF Files and Five (5)” [paper prints of schematics and wiring diagrams...].

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

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

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

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

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

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

ITEM #0201001A – CLEARING AND GRUBBING

All of the provisions of Section 2.01 of the Standard Specifications shall apply except as amended below:

Article 2.01.01 – Description: Add the following:

This item shall include the removal of shrubs, planter boxes, boulders, fences (all types), concrete fence pads and foundations, guiderail, and concrete or brick pavers; removal and resetting of landscape edging; protection of landscape beds and existing trees all as identified on the plans or as directed by the Engineer. It shall also include the removal and resetting of riprap as shown on the plans or directed by the Engineer.

In addition, the Contractor shall remove all miscellaneous debris, including garbage/trash/rubbish, as directed by the Engineer.

All material shall be disposed of offsite by the Contractor in a proper manner in accordance with current regulatory standards and in legally acceptable disposal areas at no additional cost to the Owner.

The resetting of iron pins and/or monuments disturbed by construction activities shall also be included in this item and shall be reset by a Connecticut licensed surveyor.

Two weeks prior to the start of any clearing operations the contractor shall notify the Engineer in writing.

Article 2.01.05 - Basis for Payment: Add the following:

All costs incidental to the work included in the “Description” section above shall be included in the lump sum price for “Clearing and Grubbing”.

<u>Description</u>	<u>Unit</u>
Clearing and Grubbing	L.S.

ITEM #0202452A - TEST PIT

Description:

The Contractor shall excavate test pits to locate or examine utilities, subsurface structures, soils, groundwater, drains, pipes, rock, or any other obstacles or conditions when ordered by the Engineer or indicated on the Contract Drawings.

The Contractor shall notify the Engineer when test pits will be made in a specific area, for any purpose.

This work shall include sawcutting of bituminous concrete pavement (if required), excavation of material, satisfactory stockpiling or disposal of surplus or unsuitable material, backfilling and compaction, and placement of temporary pavement patch (if required). Work shall be done in conformance with all applicable safety codes and applicable sections of these specifications.

Construction Methods:

Unless otherwise specified, the Contractor shall dig the test pits as indicated on the Contract Drawings or as directed by the Engineer, and notify the Engineer of the results prior to the start of ANY excavation work. The Contractor shall notify the Engineer of any conflicts which may require design revisions, relocations and/or adjustment. No work shall be started within these areas of conflict until authorized by the Engineer.

For test pits in the existing paved road, the pavement shall be neatly sawcut prior to digging the test pits. Test pits shall be a minimum of 2 ft. x 2 ft. for shallow (2-3 ft. deep) utilities and a maximum of 6 ft. x 10 ft. for deep (8-10 ft. deep) or hard to find utilities. All material except pavement removed from the test pit shall be used to backfill the test pit after the subsurface conditions have been measured and verified. The top two inches of test pits in the paved roadway shall be repaved with Class 2 bituminous concrete that has been thoroughly compacted to match the existing road grade, unless otherwise approved by the Engineer.

Test pit excavations shall have neat, clean-cut and vertical sides; hand-digging shall be employed when required by the Engineer. Excavation of test pits shall be accomplished by such means as are required to ensure that any underground utilities or structures may be encountered are not damaged. It shall be the Contractor's sole responsibility for any damages incurred during the excavation operations. Any such damages shall be repaired or replaced by the Contractor (if permitted) to the satisfaction of the Engineer at the Contractor's own expense. Where the repair and/or replacement must be done by the Owner, any and all costs thereof shall be borne by the Contractor.

Protect each pit with steel plates, other coverings, fences, barriers or other appropriate materials as deemed necessary. Do not backfill test pits until authorized. Compact backfill materials to 95% to the subgrade elevation or as otherwise directed. The surface of the test pit area shall be restored as directed by the Engineer.

The Contractor shall measure and record the sizes, configurations, exact horizontal and vertical locations of all utilities, pipes or other obstacles uncovered in the various pits dug under this section. Existing utility information determined by the test pits shall be added to the as-built drawings.

Method of Measurement:

Test pits shall be measured by the number of test pits excavated, as directed by the Engineer. The volume of material excavated or time required to dig test pits, the sawcutting of bituminous concrete pavement, and the placement of temporary pavement patch shall not be measured for payment, but the cost thereof shall be included in the contract unit price for this item.

Basis of Payment:

This work will be paid for at the contract unit price per each excavated "Test Pit", which price shall include excavation, sheeting, shoring, dewatering, disposal of unsuitable or excess material, compacted backfill, bituminous pavement, sawcutting, pavement repair, all utility costs, all equipment, tools, labor, and work incidental thereto.

<u>Description</u>	<u>Unit</u>
Test Pit	EA

ITEM #0202911A – CONDITION SURVEY

Description: This work shall involve the documentation of pre-existing and post construction conditions, prior to commencement and after completion, respectively, of construction activities for one property adjacent to the proposed work, as identified below and at the direction of the Engineer. Such documentation shall be performed by an independent, licensed structural professional engineer experienced in such work. The work shall involve the use of still photography and high resolution video equipment for the purpose of recording interior and exterior portions of buildings, including foundations, facades, and any portions of the structure deemed necessary and shall denote any pre-existing defects such as cracks, separations, water damage, settlement, holes, and/or other typical conditions or deteriorations often present in structures that may be affected by vibrations. Where applicable, the work shall also include review of parking areas, sidewalks, retaining walls, and other structures accessory to the location. Where defects are noted, such notations shall indicate severity or extent of condition (i.e., crack width, length, depth, etc.). A final report shall be prepared and submitted to the Town, including the data gathered, photographs and an analysis of pre and post conditions.

Location

N/F Alfred A. Carrington
222 Cross Street
Naugatuck, CT 06770

Materials:

Equipment and materials proposed by the Contractor shall be subject to Town approval. Still photographs shall be 35mm, 5400 x 3600 pixel resolution (min.), and developed on high quality medium. Video and photographic equipment shall be capable of transferring all data in electronic format to DVD.

Construction Methods:

The specific properties to be inspected have been identified above by the Engineer. This work shall be performed by an individual or firm experienced in conducting such work. Access shall be properly coordinated by the Contractor's independent engineer with each property owner at least 48 hours in advance. The property owner and tenants shall be provided written notice of the date(s) of inspection(s) and shall be provided the opportunity to be present during such inspection(s). Property owner denial for access to exterior and/or interior portions of the building shall be carefully documented.

The work shall be performed in the most expeditious manner possible to minimize disruption. The property owner's privacy shall be respected at all times. Methods of documentation shall be nondestructive. The Contractor shall maintain original copies of all photographs and video recordings and shall furnish the Engineer with two (2) high quality copies or duplicates of each. Video recordings shall include a good quality audio description of conditions and defects noted.

Upon completion of construction activities a post construction inspection shall be completed to ascertain that no damage has occurred as a result of construction activities. Once again, access shall be properly coordinated by the Contractor's independent engineer with each property owner at least 48 hours in advance. The property owner and tenants shall be provided written notice of the date(s) of inspection(s) and shall be provided the opportunity to be present during such inspection(s). If damage has occurred the Contractor shall make all corrections to the satisfaction of the Engineer at no cost to the property owner or the town.

Method of Measurement:

Payment under "Condition Survey" shall be for each individual property surveyed (both pre-existing and post construction), as identified above, including all interior and exterior inspections for each property, at the request of the Engineer.

Basis of Payment:

This work shall be paid for at the contract price per each "Condition Survey", complete, at the specified location(s), which price shall include field inspections (both pre-existing and post construction), photographs, video, sketches, final report, and all materials, equipment, tools, labor, and incidental expenses.

<u>Pay Item</u>	<u>Pay Unit</u>
Condition Survey	Ea.

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

(800)621-0444

Dandy Sack™

Dandy Products Inc.

P.O. Box 1980

Westerville, Ohio 43086

Phone: 800-591-2284

Fax: 740-881-2791

Email: dlc@dandyproducts.com

Website: www.dandyproducts.com

FLeXstorm Inlet Filters

Inlet & Pipe Protection

24137 W. 111th St - Unit A

Naperville, IL 60564

Telephone: (866) 287-8655

Fax: (630) 355-3477

The sediment control device will be manufactured to fit the opening of the catch basin or drop 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.

ITEM #0406002A – TEMPORARY PAVEMENT

Description:

The work under this item shall consist of the installation of temporary bituminous concrete pavement as indicated on the plans and for storm drainage trench repair, and as directed by the Engineer. The work for this item includes sawcutting, removal of existing pavement and curbing, excavation, formation of subgrade, backfilling, disposal of surplus material, processed aggregate base, tack coat, bituminous concrete pavement and bituminous concrete lip curbing as shown on the plans.

Materials:

Bituminous concrete shall conform to the provisions of Sections 4.06 and Article M.04 of the Standard Specifications.

Material for Tack Coat shall conform to the provisions of Sections 4.06 and Article M.04 of the Standard Specifications.

Processed Aggregate Base shall conform to the provisions of Section 3.04 and Article M.05.01 of the Standard Specifications.

Construction Methods:

Excavation and grading shall be performed in accordance with the provisions of Article 2.02.03 of the Standard Specifications.

Processed Aggregate Base shall be placed and compacted in accordance with Section 3.04.03 of the Standard Specifications.

Bituminous concrete courses shall be constructed in accordance with the provisions of Article 4.06.03 of the Standard Specifications.

Method of Measurement:

This work will be measured by the actual number of square yards of completed temporary bituminous concrete pavement, only to the limits shown on the plans and details, or as directed by the Engineer.

Basis of Payment:

This work will be paid for at the contract unit price per square yard for "Temporary Pavement", complete in place, which shall include sawcutting, removal of existing pavement and curbing, excavation, formation of subgrade, backfilling, disposal of surplus material, processed aggregate base, tack coat, bituminous concrete pavement and bituminous concrete lip curbing and all equipment, tools labor and materials incidental thereto.

<u>Description</u>	<u>Unit</u>
Temporary Pavement	SY

ITEM #0507171A -HYDRODYNAMIC SEPARATOR (SITE NO. 1)
ITEM #0507172A -HYDRODYNAMIC SEPARATOR (SITE NO. 2)

Description: Hydrodynamic separators are proprietary devices manufactured for stormwater treatment. The hydrodynamic separator shall be a precast concrete structure and include an internal chamber with features that induce a swirling, circular, or spiraling flow pattern in the stormwater flow that separate and trap sediment and pollutants in a chamber that can be accessed for later removal.

This item will consist of furnishing and construction of a hydrodynamic separator, a flow diversion structure, manholes and pipes in the location, grades, treatment capacity and to the dimensions and details shown on the contract drawings, and in accordance with these specifications or as directed by the Engineer. The work also includes the preparation of hydraulic design calculations for the hydrodynamic separator(s) and flow diversion structure(s) as specified herein.

The hydrodynamic separator shall be assembled and installed in strict compliance with the Manufacturer's instructions unless otherwise directed by these specifications or by the Engineer. Internal flow controls / diversion components, external appurtenances, concrete manhole riser sections, manhole frames and covers, reinforcing, threaded inserts, lifting and seating fixtures, non-shrink grout, and all other necessary materials and equipment to complete the work shall be included.

This item shall also include the cleaning of the hydrodynamic separator of all sediment and debris every 90 days, or as needed, from when they are put into service, until final acceptance of the project.

Approved Products and Manufacturer Information: Proprietary hydrodynamic separators currently approved by the Department are listed in Table 1 "**CONNDOT LIST OF APPROVED HYDRODYNAMIC SEPARATORS**". Company contact information is provided for convenience. *As the company information frequently changes, the Department is not responsible for its accuracy.*

The Engineer will reject any proposed hydrodynamic separator that is not listed in Table 1.

The listed products have been approved for use on Department projects based on only a general review of the product's construction, function and treatment capabilities. **Therefore, the approved list shall not be construed to mean that all products appearing on the list are suitable to any specific project site or drainage design.**

Performance: The stormwater treatment performance of the selected hydrodynamic separator shall be based on the water quality flow (WQF) as defined and calculated in accordance with the Department's current version of the Drainage Manual.

The hydrodynamic separator shall be designed to treat the entire WQF as indicated on the contract drawings or specifications, without bypass, either through the separator's internal components or at the flow diversion structure.

TABLE 1 – CONNDOT LIST OF APPROVED HYDRODYNAMIC SEPARATORS

HYDRODYNAMIC SEPARATOR PRODUCT NAME	COMPANY INFORMATION
Downstream Defender	Hydro International 94 Hutchins Drive Portland, Maine 04102 (207) 756-6200 http://www.hydrointernational.biz/us/index_us.php
FloGard Dual-Vortex Hydrodynamic Separator	Oldcastle Precast 151 Old Farms Road Avon, CT 06001-2253 800-579-8819 www.oldcastlestormwater.com
High Efficiency CDS	Contech Stormwater Solutions 200 Enterprise Drive Scarborough, Maine 04074 (800)-925-5240 http://www.contech-cpi.com/stormwater/13
Vortechs	
Vortsentry	
Hydroguard	Hydroworks, LLC 525Boulevard Kenilworth, NJ 07033 (888)-290-7900 / (908)-272-4411 http://www.hydroworks.org/
Stormceptor OSR	Rinker Materials – Stormceptor 69 Neck Road Westfield, MA 01085 (800)-909-7763 / (413) 246-7144 www.rinkerstormceptor.com
Stormceptor STC	
V2B1	Environment 21 8713 Read Road, P.O. Box 55 East Pembroke, New York 14056-0055 (800)-809-2801 / (585)-815-4700 www.env21.com

Hydrodynamic separator systems and models that have been pre-approved for use on Department projects and their corresponding maximum allowable WQF’s for stormwater treatment are shown in **Table 2, “PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS”**. The Engineer will reject any proposed hydrodynamic separator system/model that is not listed in Table 2.

For more severe storm events that produce flows up to and including the drainage design flow (DDF) and which result in flows greater than the WQF being directed to the hydrodynamic separator from the flow diversion structure, the hydrodynamic separator shall be capable of conveying the portion of the DDF directed to it without surcharging the upstream storm drainage system and re-suspending previously trapped sediment.

The WQF to be treated and the portion of the DDF directed to the hydrodynamic separator when the drainage system is operating at its design flow are shown on the Hydrodynamic Separator

Design Data Sheets (Form A - Design). A separate form for each hydrodynamic separator site on the project is attached to this specification.

Sediment Storage Capacity: Settleable solids shall accumulate in a location within the hydrodynamic separator structure that is accessible for cleaning and maintenance but not susceptible to resuspension. Direct access through openings in the precast concrete unit shall be provided to the sediment storage chamber and all other chambers to facilitate maintenance.

The standard sediment storage capacities for Department pre-approved hydrodynamic separator systems/models are shown in **Table 3, “STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS”**. The sediment storage capacities listed in Table 3 are values based on standard structure dimensions and anticipated maintenance requirements.

Some standard hydrodynamic separator models may be modified as determined by the Manufacturer to increase the sediment storage capacity. When a modification is proposed by increasing the depth of the standard structure, the sediment storage capacity of the proposed structure shall be determined in accordance with **Table 4, “SEDIMENT STORAGE CAPACITY CALCULATION”**.

The Contractor shall be responsible for verifying the standard sediment storage capacity of the hydrodynamic separator unit(s) and coordinating any proposed modifications to increase sediment storage capacity with the Manufacturer(s). All proposed modifications and revised sediment storage capacity determinations shall be clearly documented in the working drawing submission to the Department.

The minimum sediment storage capacities required for each hydrodynamic separator site on the project are shown on the Hydrodynamic Separator Design Data Sheets (Form A – Design) attached to this specification.

Hydraulic Design: The Contractor shall prepare or have prepared a hydraulic grade line (HGL) analysis for an evaluation of the selected hydrodynamic separator and the design of the flow diversion structure as described in this section. The HGL analysis shall be performed for both the WQF and the DDF. The analysis shall be consistent with the methodology described in Section 11.12 of the Department’s Drainage Manual.

Head loss coefficients, to be used in the HGL analysis, shall be determined in accordance with Section 11.12.6 for all structures except the hydrodynamic separator, which shall be obtained from the Manufacturer. Documentation shall be submitted demonstrating how the coefficient was derived either through calculation and/or testing data. A benching factor of 1.0 shall be applied to the flow diversion structure.

The HGL analysis (or portion of) that was performed for the design of the storm drainage systems and preparation of the construction plans, including the design of the flow diversion structure and evaluation of a “generic” hydrodynamic separator, is shown on the Hydrodynamic Separator Design Data Forms (Form A – Design) attached to this specification.

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
0.4	4-ft	DVS-36	2015-4G; 2015-4	HG 4	065	450	1000	VS30	2
0.5	4-ft	DVS-36	2015-4G; 2015-4	HG 4	065	900	1000	VS30	2
0.6	4-ft	DVS-36	2015-4G; 2015-4	HG 4	065	900	1000	VS40	2
0.7	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	900	1000	VS40	2
0.8	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	900	1000	VS40	2
0.9	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	1200	1000	VS40	3
1.0	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	1800	1000	VS40	3
1.1	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	1800	1000	VS40	4
1.2	6-ft	DVS-48	2015	HG 5	140	2400	1000	VS50	4
1.3	6-ft	DVS-60	2015	HG 5	140	2400	1000	VS50	4
1.4	6-ft	DVS-60	2015	HG 5	140	2400	2000	VS50	4
1.5	6-ft	DVS-60	2020	HG 5	140	2400	2000	VS50	6
1.6	6-ft	DVS-60	2020	HG 5	140	2400	2000	VS50	6
1.7	6-ft	DVS-60	2020	HG 5	250	2400	2000	VS50	6
1.8	6-ft	DVS-60	2020	HG 6	250	2400	2000	VS50	7
1.9	6-ft	DVS-60	2020	HG 6	250	3600	2000	VS60	7
2.0	6-ft	DVS-60	2020	HG 6	250	3600	2000	VS60	7
2.1	6-ft	DVS-60	2020	HG 6	250	3600	2000	VS60	9
2.2	6-ft	DVS-72	2025	HG 6	250	3600	2000	VS60	8
2.3	6-ft	DVS-72	3020, 3020-D	HG 6	250	3600	2000	VS60	8
2.4	6-ft	DVS-72	3035; 3035-D	HG 6	250	4800	2000	VS60	8
2.5	6-ft	DVS-72	3035; 3035-D	HG 6	250	4800	3000	VS60	10
2.6	6-ft	DVS-72	3035; 3035-D	HG 6	250	4800	3000	VS60	11
2.7	6-ft	DVS-72	3035; 3035-D	HG 7	250	4800	3000	VS60	11
2.8	6-ft	DVS-72	3035; 3035-D	HG 7	250	4800	3000	VS70	11
2.9	6-ft	DVS-72	3035; 3035-D	HG 7	250	4800	3000	VS70	12
3.0	6-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	12

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
3.1	8-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	12
3.2	8-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	12
3.3	8-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	14
3.4	8-ft	DVS-72	3035; 3035-D	HG 7	390	6000	3000	VS70	14
3.5	8-ft	DVS-72	3030; 3030-DV, 3030-D; 4030-D	HG 7	390	6000	3000	VS70	14
3.6	8-ft	DVS-72	4030	HG 7	390	6000	3000	VS70	14
3.7	8-ft	DVS-84	4030	HG 8	390	6000	3000	VS70	14
3.8	8-ft	DVS-84	4030	HG 8	390	6000	4000	VS70	13
3.9	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS70	15
4.0	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	15
4.1	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	15
4.2	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.3	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.4	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.5	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.6	8-ft	DVS-84	5640-D	HG 8	390	7200	4000	VS80	17
4.7	8-ft	DVS-84	5640-D	HG 8	390	7200	4000	VS80	17
4.8	8-ft	DVS-84	5640-D	HG 8	390	7200	4000	VS80	17
4.9	8-ft	DVS-84	5640-D	HG 8	390	11000s	4000	VS80	17
5.0	8-ft	DVS-84	5640-D	HG 9	390	11000s	4000	VS80	19
5.2	8-ft	DVS-84	4040-D	HG 9	390	11000s	4000	VS80	20
5.4	8-ft	DVS-96	4040-D	HG 9	390	11000s	4000	VS100	20
5.5	8-ft	DVS-96	4045-D	HG 9	390	11000s	5000	VS100	18
5.6	8-ft	DVS-96	4045-D	HG 9	560	11000s	5000	VS100	18
6.0	8-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	18
6.1	8-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	21

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
6.3	8-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	25
6.4	10-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	25
6.5	10-ft	DVS-96	4040	HG 10	560	11000s	5000	VS100	25
6.9	10-ft	DVS-96	4040	HG 10	560	11000s	5000	VS100	25
7.0	10-ft	DVS-96	4040	HG 10	560	11000s	5000	VS100	22
7.1	10-ft	DVS-96	5042-D	HG 10	560	11000s	5000	VS100	22
7.2	10-ft	DVS-96	5042-D	HG 10	560	13000s	5000	VS100	22
7.3	10-ft	DVS-96	4045	HG 10	560	13000s	5000	VS100	22
7.5	10-ft	DVS-96	5653-D	HG 10	560	13000s	7000	VS100	22
7.7	10-ft	DVS-120	5653-D	HG 10	560	13000s	7000	VS100	22
7.8	10-ft	DVS-120	5653-D	HG 10	560	13000s	7000	VS100	50
7.9	10-ft	DVS-120	5653-D	HG 10	780	13000s	7000	VS100	50
8.0	10-ft	DVS-120	5658-D	HG 10	780	13000s	7000	VS100	50
8.2	10-ft	DVS-120	5658-D	HG 10	780	16000s	7000	VS100	50
8.5	10-ft	DVS-120	5658-D	HG 12	780	16000s	7000	VS100	50
8.6	10-ft	DVS-120	5658-D	HG 12	780	16000s	7000	VS100	50
8.9	10-ft	DVS-120	5678-D	HG 12	780	16000s	7000	VS100	50
9.0	10-ft	DVS-120	5678-D	HG 12	780	16000s	7000	VS120	50
9.2	10-ft	DVS-120	5678-D	HG 12	780	16000s	7000	VS120	50
9.5	10-ft	DVS-120	5050-DV	HG 12	780	16000s	7000	VS120	50
9.6	10-ft	DVS-120	5050-DV	HG 12	780	16000s	7000	VS120	50
10.0	10-ft	DVS-120	5050-DV	HG 12	780	16000s	9000	VS120	50
10.1	10-ft	DVS-120	5050-DV	HG 12	780	16000s	9000	VS120	50
10.5	10-ft	DVS-120	5050-DV	HG 12	780		9000	VS120	50
10.9	10-ft	DVS-120	5050-DV	HG 12	780		9000	VS120	50
11.0	10-ft	DVS-120	7070-DV	HG 12	780		9000	VS120	50
11.2	10-ft	DVS-120	7070-DV	HG 12	1125		9000	VS120	50

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
11.5		DVS-120	7070-DV	HG 12	1125		9000	VS120	50
11.8		DVS-120	7070-DV	HG 12	1125		9000	VS120	50
11.9		DVS-120	7070-DV	HG 12	1125		9000	VS120	60
12.0		DVS-120	7070-DV	HG 12	1125		9000	VS120	60
12.1		DVS-120	7070-DV	HG 12	1125		9000	VS120	60
12.5		DVS-120	7070-DV	HG 12	1125		11000	VS120	60
13.0		DVS-120	7070-DV		1125		11000	VS120	60
13.5		DVS-120	7070-DV		1125		11000	VS120	60
13.6		DVS-120	7070-DV		1125		11000	VS120	60
14.0		DVS-144	7070-DV		1125		11000	VS120	60
14.5		DVS-144	7070-DV		1125		11000		60
14.9		DVS-144	7070-DV		1125		11000		60
15.0		DVS-144	7070-DV		1125		16000		60
15.5		DVS-144	7070-DV		1125		16000		60
15.7		DVS-144	7070-DV		1125		16000		60
16.0		DVS-144	7070-DV				16000		60
16.5		DVS-144	7070-DV				16000		60
17.0		DVS-144	7070-DV				16000		
17.5		DVS-144	7070-DV				16000		
18.0		DVS-144	7070-DV				16000		
18.5		DVS-144	7070-DV				16000		
19.0		DVS-144	7070-DV				16000		
19.7		DVS-144	7070-DV				16000		
20.0		DVS-144	10060-DV				16000		
21.5		DVS-144	10060-DV				16000		
22.3		DVS-144	10060-DV				1319		
25.0			10060-DV				1319		
25.2			10060-DV				1319		

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
27.6			10060-DV				1421		
29.3			10080-DV				1421		
30.0			10080-DV				1522		
31.2			10080-DV				1522		
33.6			100100-DV				1522		
35.0			100100-DV				1624		
38.2			100100-DV				1624		
40.0			100100-DV				1726		
43.2			100100-DV				1726		
49.3			100100-DV						

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS

Sediment Storage (cubic yards)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
0.3		DVS-36					1000		
0.5	4-ft								
0.6							2000		
0.7		DVS-48		HG 4					
0.8					065	450		VS30	2; 3
0.9			2015-4G; 2015-4						
1.0 (minimum)							3000		
1.1					140	900			
1.2				HG 5					
1.3		DVS-60							
1.4							4000	VS40	
1.5			2015; 2020; 2025						
1.6									4
1.7				HG 6					
1.8	6-ft					1200			
1.9							5000		
2.0									
2.1									
2.2		DVS-72						VS50	
2.3				HG 7					
2.4									6; 7
2.5							7000		
2.6			3020, 3020-D; 3030, 3030-DV, 3030-D; 3035, 3035-D						
2.9					250	2400			

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Sediment Storage (cubic yards)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
3.0				HG 8					
3.1							9000	VS60	
3.2									8; 9
3.3						1800			
3.4									
3.5		DVS-84							
3.6									
3.7	8-ft		5640-D						
3.8				HG 9					
3.9							11000		
4.0									
4.2									10; 11; 12
4.3			4030-D; 4040-D; 4045-D					VS70	
4.5									
4.6									
4.7									13
5.0				HG 10					
5.1									
5.3		DVS-96	5042-DV; 5050-DV						
5.5									
5.6			4030; 4040; 4045; 5653-D; 5658-D; 5678-D				16000	VS80	
5.7									
6.0						3600			
6.5									

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Sediment Storage (cubic yards)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
6.6							1319		
6.9									
7.0									
7.1									
7.2									
7.3									14; 15; 16; 17; 18
7.5				HG 12					
7.6							1421		
7.7									
8.0									
8.3									
8.4			7070-DV						
8.6						4800			
8.7	10-ft				390		1522	VS100	
9.0									
9.5									
9.6									
9.9							1624		
10.0									
10.3		DVS-120							
10.5									19; 20
11.0									
11.2							1726		
11.3						6000			
11.5									21; 22
11.8									

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Sediment Storage (cubic yards)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
12.0									
12.6								VS120	25
12.9					560				
13.0									
13.4						7200			
15.0									
17.5					780				
17.8		DVS-144	10060-DV;10080-DV; 100100-DV						
20.0									
22.3									50
25.0									
25.8					1125				
26.1						11000s			
26.2									
30.0									
34.1						13000s			
34.9									60
35.0									
38.7									
40.0									
40.7						16000s			

TABLE 4 - SEDIMENT STORAGE CAPACITY CALCULATION

Product	Sediment Storage Capacity (Volume) Calculation (cubic feet)
Downstream Defender	Inside Diameter (ft ²) of Structure x Distance (ft) from Bottom of Benching Skirt to Inside Floor of Structure
FloGard® Dual-Vortex	Inside Diameter (ft ²) of Structure x 1/2 Distance (ft) from Bottom of Vortex Tube to Inside Floor of Structure
High Efficiency CDS	Inside Diameter (ft ²) of Structure x Depth (ft) of Solids Storage Sump
Hydroguard	Inside Diameter (ft ²) of Structure x 1/2 Depth (ft) Below Outer Baffle Wall
Stormceptor STC	Inside Diameter (ft ²) of Structure x 1/2 Depth (ft) Below Drop Tee Inlet Pipe
Stormceptor OSR	Inside Diameter (ft ²) of Structure x 1/2 Depth (ft) Below Drop Tee Inlet Pipe
Vortechs	Inside Diameter (ft ²) of Grit Chamber x 1/2 Depth (ft) Below Opening in Swirl Wall
Vortsentry	Inside Diameter (ft ²) of Structure x Depth (ft) of Sediment Storage Sump
V2B1	Inside Diameter (ft ²) of Structure (D1) x 1/2 Depth (ft) Below Pipe Invert
<i>Note: 1 cubic foot = 0.037 cubic yard or 1 cubic yard = 27 cubic feet</i>	

Since the selected hydrodynamic separator and associated connecting pipes and structures may be different in type, configuration and performance than the one assumed in the design phase of the project, the hydraulic calculations performed for the drainage design must be replicated and revised to reflect any adjustments necessary to the drainage design for installation of the selected system, such as different flow-line elevations, head loss coefficient, pipe sizes, etc. The selected hydrodynamic separator shall be designed so as not to change the drainage system upstream of the flow diversion structure or to increase the HGL elevation upstream of the flow diversion structure. Any modifications necessary to the overall drainage design as a result of the Contractor selected hydrodynamic separator shall be the responsibility of the Contractor.

The new HGL analysis must demonstrate the following conditions:

1. The hydrodynamic separator can treat the WQF with no bypass. The HGL elevation at the flow diversion structure for the WQF shall be below the weir elevation and/or elevation of flow bypass that is listed in the design data form or shown in the plans, so that all of the WQF is directed to the hydrodynamic separator for treatment. The HGL elevation in the hydrodynamic separator at the WQF shall be below the elevation of internal bypass so that all of the WQF is treated by the system.
2. When the drainage system is operating at the DDF, the hydraulic computations must show that the HGL elevation at the flow diversion structure is lower than or equal to the HGL elevation shown on Form A for the DDF and the HGL elevation in the hydrodynamic separator must be a minimum of one foot below the top (ground) elevation of the structure. A HGL elevation in the flow diversion structure for the DDF which is higher than the corresponding HGL elevation shown on Form A may be approved by the Engineer only if hydraulic computations are submitted showing that the higher HGL elevation will provide a minimum of one foot of freeboard below the top (ground) elevation of the flow diversion structure and the upstream drainage structures, satisfying the design criteria stated in the Connecticut Department of Transportation Drainage Manual. To demonstrate compliance, the hydraulic analysis shall be extended to a point upstream in the drainage system that is not influenced by the proposed changes and where the results converge with the previous design analysis. In such a case, the Contractor shall request a copy of the design analysis from the Department. A freeboard less than one foot may be accepted by the Engineer on a case by case basis provided that a justification of the reason has been included with the HGL analysis.
3. When the drainage system is operating at the DDF, the resulting HGL elevation and flow split at the flow diversion structure has been designed such that the portion of the DDF directed to the hydrodynamic separator does not exceed the maximum flow shown on the Hydrodynamic Separator Design Data Sheets (Form A - Design). Documentation, however, must be provided that the flow in excess of the WQF can pass through the device without washout of the previously captured sediment or the device is equipped with an internal bypass to route the excess flow around the treatment chamber.

Upon conclusion of the HGL analysis, the Hydrodynamic Separator Design Data Sheets (Form B – Contractor Proposal) shall be completed by entering the HGL analysis data and other required information.

Hydrodynamic Separator Selection: To ensure compliance with the special provision, the selection process of a proprietary hydrodynamic separator for installation on a Department project is outlined by the following steps:

1. First, select the available product(s) from Table 2 (**PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS**) that meet or exceed the WQF treatment specified on the Hydrodynamic Separator Design Data Sheets (Form A - Design) attached to this specification. **The Engineer shall reject any proposed hydrodynamic separator system/model that is not listed in Table 2.**
2. Using Table 3 (**STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS**), check whether the initially selected product(s) in Step 1, meet or exceed the minimum sediment storage requirement specified on the Hydrodynamic Separator Design Data Sheets (Form A - Design). In some cases, the required sediment storage capacity will govern the model size required for the project. In lieu of selecting a larger model to accommodate the sediment storage requirement, the Contractor may submit working drawings as recommended by the Manufacturer, showing how a standard model has been modified to satisfy the sediment storage requirement. When a modification is proposed by increasing the depth of the standard structure, **Table 4 (SEDIMENT STORAGE CAPACITY CALCULATION)** shall be utilized to determine the sediment storage capacity of the proposed structure.
3. **Hydrodynamic separator system/models pre-approval by the Department shall not be construed to mean that all products appearing on Tables 2 and 3 are suitable to any specific project site or drainage design.** The Contractor shall verify the constructability of the selected hydrodynamic separator in relation to dimensional, structural, geotechnical and right-of-way constraints at each installation site. If revisions to the drainage design, including the system layout, are required to accommodate the selected separator, the Contractor shall provide working drawings showing the revised layout, including the position of the hydrodynamic separator and the number, positions and types of connecting structures, the design of the flow diversion structure, and any other components of the system within the pay limits. The working drawings shall be prepared in sufficient detail to perform a hydraulic analysis and confirm that the layout will fit the constraints of each site.
4. Upon determination that the WQF, sediment storage and constructability requirements have been met, the Contractor shall prepare or have prepared, a HGL analysis in accordance with the hydraulic requirements of this special provision, that includes the selected hydrodynamic separator and any revisions to the drainage design needed for the installation.

5. The Hydrodynamic Separator Design Data Sheets (Form B – Contractor Proposal) shall be completed and signed by a professional engineer licensed by the State of Connecticut.
6. *Acceptance of the computations by the Engineer must be obtained by the Contractor prior to the purchase or installation of any units.*

Materials: Materials utilized to fabricate, construct and install the precast concrete hydrodynamic separator including but not limited to precast concrete units, brick, concrete masonry units, manhole frames and covers shall meet the requirements specified in the Standard Specifications, Form 817, Article M.08.02, except that the 28 day compressive strength specified in Subarticle M.08.02-4, shall be a minimum of 4000 psi (27.6 MPa).

The Contractor shall provide a Materials Certificate in accordance with 1.06.07 for each unit delivered to the project. Upon request, the Contractor shall also provide Certified Test Reports for the fine and coarse aggregates and all cementitious materials, and the concrete mix design indicating the weight of each component, used in the construction of the precast units for review. The structures shall not be shipped until released by the Contractor's Quality Control Manager or designee.

The wall and slabs of the precast concrete units shall be designed to sustain HS20-44 (MS18) loading requirements.

Manholes and Catch Basins shall conform to Section 5.07 of Form 817.

Granular fill shall conform to the requirements of Article M.02.01 of Form 817.

Non-shrink grout shall conform to the requirements of Subarticle M.03 of Form 817.

Drainage pipe, sealant and gaskets shall conform to the requirements of Article M.08.01 of Form 817.

Mortar shall conform to the requirements of Article M.11.04 of Form 817.

Sealant used for the hydrodynamic separator unit(s) shall be resistant to oil and other hydrocarbons and conform to the requirements of ASTM C-443.

Working Drawings: Working drawings in accordance with Article 1.05.02 – 2 shall be required for the system selected by the Contractor. The working drawings shall include the HGL analysis and all other computations in strict accordance with the "Hydraulic Design" section of this special provision, including a completed Form B – Contractor Proposal.

If revisions to the layout of the system within the payment limits of this item are required to accommodate the selected separator, the working drawings shall also include plans that show the required revisions. These plans shall show the revised position of the hydrodynamic separator unit(s), and all revisions to connecting structures, pipes, elevations, and details, including the design within the flow diversion structure. The revised plans shall also include the pay limit showing all the components of the system that are included in this lump sum pay item.

Working drawings shall also show details for construction, reinforcing joints, internal and external components, any cast-in-place appurtenances, locations and elevations of pipe openings, access manhole locations and elevations, and type / method of sealing pipe entrances.

Working drawings for each hydrodynamic separator on the project shall have all appropriate vertical dimensions referenced with elevations that are consistent with the project plans. In addition to any other structural, material or installation requirements, the working drawings shall clearly indicate the following information:

1. The elevation and flow rate when internal flow bypass would occur within the device.
2. The location, dimensions and volume (capacity) of the sediment storage area within the device.

The working drawings shall be sealed by a professional engineer licensed in the state where the devices are manufactured and that said engineer shall certify the device meets the minimum requirements of the ConnDOT Standards.

The working drawing submission by the Contractor shall consist of the following documents:

1. Working drawings for each hydrodynamic separator proposed for installation on the project.
2. Hydraulic design calculations including the head loss documentation and completed Hydrodynamic Separator Design Data Sheets (Form B – Contractor Proposal) with professional engineer signature for each hydrodynamic separator.
3. Copies of the pertinent construction plan, profile, cross section and detail sheets that have been annotated with any proposed drainage revisions that are required for the installation of the proposed hydrodynamic separator(s). If no changes are required, the submittal shall note same.
4. An Operations and Maintenance Manual for each hydrodynamic separator describing operations, inspection, maintenance procedures and any applicable warranty information.

Acceptance of the working drawing submission by the Engineer must be obtained by the Contractor prior to the fabrication of each hydrodynamic separator and diversion structure.

Construction Methods: The Contractor shall inspect the hydrodynamic separator and any accessory equipment upon delivery for general appearance, dimensions, soundness or damage in a manner acceptable to the Engineer. If any defects or damage are identified by the inspection, the unit shall be rejected by the Contractor and a new undamaged hydrodynamic separator shall be supplied. Any required adjustments of the separator shall be completed in accordance with Manufacturer's recommendations. A Manufacturer's representative and the Engineer will inspect the hydrodynamic separator before installation.

The Contractor shall install the hydrodynamic separator structure in accordance with the Manufacturer's recommendations unless otherwise directed by this specification or by the Engineer. The hydrodynamic separator shall be installed plumb, level and aligned both vertically and horizontally with the inlet and outlet piping. The hydrodynamic separator shall be placed on a compacted granular fill base in accordance with the Manufacturer's specifications or a minimum thickness of 6" (150mm) whichever is larger. Anchoring systems shall be installed, where needed, to resist buoyancy forces. Care shall be taken not to damage the hydrodynamic separator during backfill and compaction.

Pipe openings in the hydrodynamic separator shall be sized to accept pipes of the specified size(s) and material(s) as shown on the contract drawings and shall be sealed by the Contractor in accordance with the requirements of this specification. The inlet and outlet pipe connections shall be watertight. The hydrodynamic separator shall be tested for leakage according to the Manufacturer's specifications and to the satisfaction of the Engineer. Any leaks must be found and corrected to the satisfaction of the Engineer prior to acceptance of the structure.

Access openings with manhole frames and covers shall be provided to all chambers of the hydrodynamic separator. The access openings and pipe openings shall be detailed on the working drawings to be submitted by the Contractor for review and acceptance by the Engineer.

All connecting structures and pipes included within the payment limits for this work shall be constructed in accordance with the applicable requirements of Article 5.07.03 and Article 6.51.03.

Method of Measurement: Design, construction, furnishing, installation and cleaning of the hydrodynamic separator, the flow diversion structure, manholes and pipes as shown on the contract drawings, including all internal and external appurtenances and materials used, will be paid for on a lump sum basis per site.

Basis of Payment: This work will be paid for at the contract lump sum for "HYDRODYNAMIC SEPARATOR", complete in place, which price shall include all work within the pay limits shown on the contract drawings for hydrodynamic separator. If revisions to the layout of the system within the payment limits for this item are required to accommodate the selected separator, the lump sum price shall also include all additional or revised connecting structures and pipes. The contract lump sum shall include, but not be limited to, the following:

1. Design, preparation, revisions of working drawings and hydraulic computations.
2. Concrete and reinforcing steel, sealant, cement, mortar, flexible rubber sleeves, internal and external components, brick and masonry, frames and covers used to construct access manholes.
3. Flow diversion structure, manholes and pipes as shown on the contract drawings, or as revised and shown on submitted working drawings accepted by the Engineer.
4. Structure excavation, back fill, and disposal of surplus material.
5. Compacted granular fill.

6. Trench excavation and bedding material.
7. Cleaning of the Hydrodynamic Separator, flow diversion structure, manholes and pipes as shown on the contract drawings (of all debris every 90 days, or as needed), during the duration of the project, shall also be included in the price of this item.
8. The Operations and Maintenance Manual for each hydrodynamic separator.

The price shall include but not be limited to all materials, testing, equipment, tools and labor incidental thereto.

Attachments: The following documents are attached to this specification:

1. Hydrodynamic Separator Design Data Sheets (Form A – Design), Sheets 1 & 2 of 2.
2. Hydrodynamic Separator Design Data Sheets (Form B – Contractor Proposal), Sheets 1 & 2 of 2 (blank), to be completed and submitted with the working drawings.

**CONNECTICUT DEPARTMENT OF TRANSPORTATION HYDRODYNAMIC SEPARATOR DESIGN DATA SHEETS
(FORM A - DESIGN)**

Project No	87-145	Route No.	Cross Street	Prepared By:	JDM	Date:	10/26/2017
Town	Naugatuck, CT	Location/Station	18+13 R	Checked By:	<i>globe</i>	Date:	11/7/17
HYDROLOGIC DATA				Company:			
Drainage Area (Acres)	5.8 acres						
Percent Impervious Area %	33.1%						
Time of Concentration (min.)	19 min						
Drainage Design Flow (cfs)	10.90 cfs						
Drainage Design Frequency (yr)	10-yr						
Water Quality Flow (cfs)	1.40 cfs						

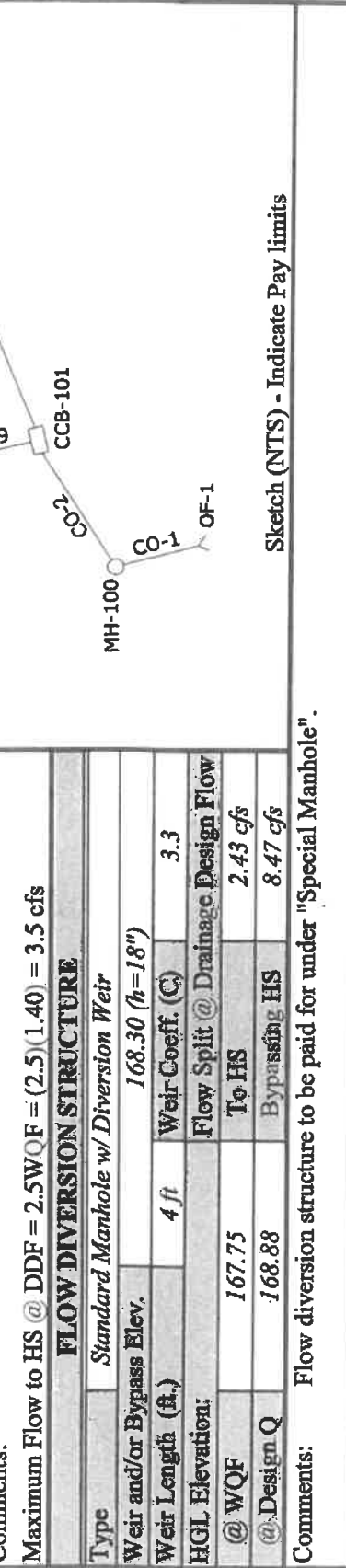
HYDRODYNAMIC SEPARATOR (HS)	
Coordinates:	Datum:
X: 918086.3657	North: NAD 1983
Y: 731720.5226	Vert: NAVD 1988
Head loss coefficient	1.75
Sediment Storage Capacity (cy):	HGL Elevation:
Required	@ WQF
	@ Design Q
	Maximum Flow to HS at Drainage Design Flow (cfs)
	1.0 CY
	167.61
	168.32
	3.5 cfs

Comments:

Maximum Flow to HS @ DDF = $2.5WQF = (2.5)(1.40) = 3.5$ cfs

FLOW DIVERSION STRUCTURE	
Type	Standard Manhole w/ Diversion Weir
Weir and/or Bypass Elev.	168.30 (h=18")
Weir Length (ft.)	4 ft
Weir Coeff. (C)	3.3
HGL Elevation:	Flow Split @ Drainage Design Flow
@ WQF	To HS
@ Design Q	Bypassing HS
	2.43 cfs
	8.47 cfs

Comments: Flow diversion structure to be paid for under "Special Manhole".



Sketch (NTS) - Indicate Pay limits

CONNECTICUT DEPARTMENT OF TRANSPORTATION HYDRODYNAMIC SEPARATOR DESIGN DATA SHEETS
(FORM A - DESIGN)

Project No: 87-145, Cross Street, Naugatuck, CT **Location/Station:** 18+13 R **Date:** 10/27/2017

HYDRAULIC GRADE LINE ANALYSIS

Pipe	Downstream Str.	Pipe Size (in)	Flow (cfs)	Ground Elev. OUT (ft)	Invert Elev. OUT (ft)	HGL OUT (ft)	Depth OUT (ft)	Vel. Head OUT (ft)	EGL OUT (ft)	Length (ft)	Friction Slope (ft/ft)	Friction Loss (ft)	EGL IN (ft)	Vel. Head IN (ft)	HGL IN (ft)	Depth IN (ft)	Invert Elev. IN (ft)	Ground Elev. IN (ft)	Upstream Str.	Headloss Coeff.	Str. headloss (ft)
(1)	(2)	(3)	(4)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(21)	(22)	(23)	(24)
WQF (CCB-102 TO OF-1 THROUGH HDS)																					
CO-5	MH-102	24	1.40	171.49	166.80	167.75	0.95	0.01	167.76	77.59	0.0140	1.08	168.85	0.14	168.71	0.41	168.30	173.13	CCB-102	0.00	0.00
CO-14	HDS-100	10	1.40	172.05	166.70	167.61	0.91	0.10	167.71	13.89	0.0035	0.05	167.76	0.10	167.66	0.86	166.80	171.49	MH-102	0.90	0.09
CO-15	MH-103	10	1.40	171.87	166.60	167.28	0.68	0.13	167.42	11.19	0.0042	0.05	167.46	0.19	167.27	0.57	166.70	172.05	HDS-100	1.75	0.34
CO-16	MH-101	10	1.40	171.32	166.50	167.01	0.51	0.25	167.26	13.80	0.0071	0.10	167.36	0.23	167.13	0.53	166.60	171.87	MH-103	0.67	0.15
CO-3	CCB-101	24	1.40	169.51	164.75	165.18	0.43	0.12	165.30	141.67	0.0060	0.85	166.15	0.14	166.01	0.41	165.60	171.32	MH-101	0.30	0.04
CO-2	MH-100	24	1.40	169.74	164.60	165.01	0.41	0.14	165.15	43.72	0.0034	0.15	165.30	0.13	165.17	0.42	164.75	169.51	CCB-101	0.09	0.01
CO-1	OF-1	24	1.40	165.25	163.25	163.56	0.31	0.33	163.89	27.33	0.0102	0.28	164.16	0.14	164.02	0.41	163.61	169.74	MH-100	0.28	0.04
10-YR DESIGN FLOW (CCB-102 TO OF-1 THROUGH HDS)																					
CO-5	MH-102	24	10.93	171.49	166.80	168.88	2.08	0.19	169.07	77.59	0.0117	0.91	169.98	0.49	169.49	1.19	168.30	173.13	CCB-102	0.23	0.11
CO-14	HDS-100	10	2.43	172.05	166.70	168.32	1.62	0.31	168.63	13.89	0.0104	0.15	168.77	0.31	168.47	1.66	166.80	171.49	MH-102	1.34	0.41
CO-15	MH-103	10	2.43	171.87	166.60	167.67	1.07	0.31	167.97	11.19	0.0104	0.12	168.09	0.31	167.78	1.08	166.70	172.05	HDS-100	1.75	0.54
CO-16	MH-101	10	2.43	171.32	166.50	167.19	0.69	0.39	167.58	13.80	0.0092	0.13	167.71	0.32	167.39	0.79	166.60	171.87	MH-103	0.86	0.27
CO-3	CCB-101	24	10.89	169.51	164.75	166.24	1.49	0.29	166.53	141.67	0.0052	0.74	167.28	0.49	166.78	1.18	165.60	171.32	MH-101	0.11	0.05
CO-9	CCB-101	12	1.78	169.51	166.25	166.75	0.50	0.32	167.07	28.73	0.0079	0.23	167.30	0.23	167.07	0.57	166.50	169.51	CCB-100	0.00	0.00
CO-2	MH-100	24	12.46	169.74	164.60	165.87	1.27	0.55	166.41	43.72	0.0039	0.17	166.59	0.43	166.15	1.40	164.75	169.51	CCB-101	0.19	0.08
CO-1	OF-1	24	12.41	165.25	163.25	164.26	1.01	0.94	165.20	27.33	0.0081	0.22	165.42	0.54	164.88	1.27	163.61	169.74	MH-100	0.56	0.30
10-YR DESIGN FLOW (CCB-102 TO OF-1 THROUGH BYPASS)																					
CO-4	MH-101	24	8.47	171.32	166.60	167.43	0.83	0.74	168.17	11.29	0.0074	0.08	168.25	0.41	167.84	1.04	166.80	171.49	MH-102	0.07	0.03
CO-3	CCB-101	24	10.89	169.51	164.75	166.24	1.49	0.29	166.53	141.67	0.0052	0.74	167.28	0.49	166.78	1.18	165.60	171.32	MH-101	0.11	0.05
CO-9	CCB-101	12	1.78	169.51	166.25	166.75	0.50	0.32	167.07	28.73	0.0079	0.23	167.30	0.23	167.07	0.57	166.50	169.51	CCB-100	0.00	0.00
CO-2	MH-100	24	12.46	169.74	164.60	165.87	1.27	0.55	166.41	43.72	0.0039	0.17	166.59	0.43	166.15	1.40	164.75	169.51	CCB-101	0.19	0.08
CO-1	OF-1	24	12.41	165.25	163.25	164.26	1.01	0.94	165.20	27.33	0.0081	0.22	165.42	0.54	164.88	1.27	163.61	169.74	MH-100	0.56	0.30

G. M. Cook
10/27/17

CONNECTICUT DEPARTMENT OF TRANSPORTATION HYDRODYNAMIC SEPARATOR DESIGN DATA SHEETS
(FORM A - DESIGN)

Project No:		87-145, Cross Street, Naugatuck, CT		Location/Station:		18+13 R		Date:		10/27/2017											
HYDRAULIC GRADE LINE ANALYSIS																					
(1)	(2)	(3)	(4)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(21)	(22)	(23)	(24)
Pipe	Downstream Str.	Pipe Size (in)	Flow (cfs)	Ground Elev. OUT (ft)	Invert Elev. OUT (ft)	HGL OUT (ft)	Depth OUT (ft)	Vel. Head OUT (ft)	EGL OUT (ft)	Length (ft)	Friction Slope (ft/ft)	Friction Loss (ft)	EGL IN (ft)	Vel. Head IN (ft)	HGL IN (ft)	Depth IN (ft)	Invert Elev. IN (ft)	Ground Elev. IN (ft)	Upstream Str.	Headloss Coeff.	Str. headloss (ft.)
10-YR DESIGN FLOW (CCB-102 TO OF-1 NO HDS)																					
CO-5	MH-102	24	10.93	171.49	166.80	168.02	1.22	0.46	168.48	77.59	0.0192	1.49	169.98	0.49	169.49	1.19	168.30	173.13	CCB-102	0.23	0.11
CO-4	MH-101	24	10.90	171.32	166.60	167.56	0.96	0.84	168.39	11.29	0.0074	0.08	168.48	0.49	167.98	1.18	166.80	171.49	MH-102	0.07	0.04
CO-3	CCB-101	24	10.89	169.51	164.75	166.24	1.49	0.29	166.53	141.67	0.0052	0.74	167.28	0.49	166.78	1.18	165.60	171.32	MH-101	0.11	0.05
CO-9	CCB-101	12	1.78	169.51	166.25	166.75	0.50	0.32	167.07	28.73	0.0079	0.23	167.30	0.23	167.07	0.57	166.50	169.51	CCB-100	0.00	0.00
CO-2	MH-100	24	12.46	169.74	164.60	165.87	1.27	0.55	166.41	43.72	0.0039	0.17	166.59	0.43	166.15	1.40	164.75	169.51	CCB-101	0.19	0.08
CO-1	OF-1	24	12.41	163.25	163.25	164.26	1.01	0.94	165.20	27.33	0.0081	0.22	165.42	0.54	164.88	1.27	163.61	169.74	MH-100	0.56	0.30

g/lead
11/7/17

**CONNECTICUT DEPARTMENT OF TRANSPORTATION HYDRODYNAMIC SEPARATOR DESIGN DATA SHEETS
(FORM A - DESIGN)**

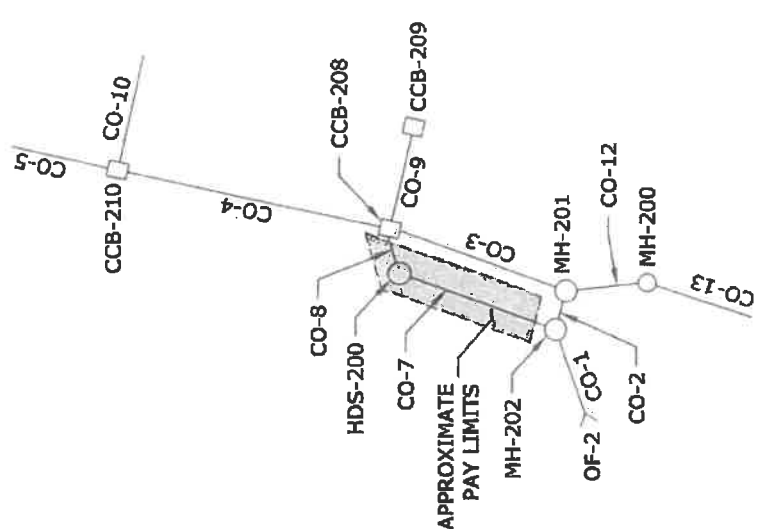
Project No	87-145	Route No.	Cross Street	Prepared By:	JDM	Date:	10/26/2017
Town	Naugatuck, CT	Location/Station	36+95 L	Checked By:	<i>P. Walsh</i>	Date:	11/7/17
HYDROLOGIC DATA				Company:	Milone and MacBroom, Inc.		

Drainage Area (Acres)	2.1 acres
Percent Impervious Area %	57.6%
Time of Concentration (min.)	11 min
Drainage Design Flow (cfs)	6.22 cfs
Drainage Design Frequency (yr)	10-yr
Water Quality Flow (cfs)	1.09 cfs

HYDRODYNAMIC SEPARATOR (HS)	
Coordinates:	
X:	919338.6657
Y:	733037.6886
Head loss coefficient	1.75
Sediment Storage Capacity (cy):	
Required	1.0 CY
Maximum Flow to HS at Drainage Design Flow (cfs)	
@ WQF	214.30
@ Design Q	214.81
2.73 cfs	

Comments:	
Maximum Flow to HS @ DDF = 2.5WQF = (2.5)(1.09) = 2.73 cfs	
FLOW DIVERSION STRUCTURE	
Type	Type 'C' CB w/ Diversion Weir
Weir and/or Bypass Elev.	214.77 (h=14")
Weir Length (ft.)	4 ft
HGL Elevation:	Weir Coeff. (C)
@ WQF	214.37
@ Design Q	215.22
	Flow Split @ Drainage Design Flow
	To HS
	Bypassing HS
	2.28 cfs
	3.93 cfs

Comments: Flow diversion structure to be paid for under "Special Type 'C' CB".



Sketch (NTS) - Indicate Pay limits

CONNECTICUT DEPARTMENT OF TRANSPORTATION HYDRODYNAMIC SEPARATOR DESIGN DATA SHEETS
(FORM A - DESIGN)

Project No: 87-145, Cross Street, Naugatuck, CT			Location/Station: 36+95 L		Date: 10/27/2017																	
Pipe	Downstream Str.	Pipe Size (in)	Flow (cfs)	Ground Elev. OUT (ft)	Invert Elev. OUT (ft)	HGL OUT (ft)	Depth OUT (ft)	Vel. Head OUT (ft)	EGL OUT (ft)	Length (ft)	Friction Slope (ft/ft)	Friction Loss (ft)	EGL IN (ft)	Vel. Head IN (ft)	HGL IN (ft)	Depth IN (ft)	Invert Elev. IN (ft)	Ground Elev. IN (ft)	Upstream Str.	Headloss Coeff.	Str. headloss (ft.)	
	WQF (CCB-210 TO OF-2 THROUGH HDS)				(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(21)	(22)	(23)	(24)
CO-4	CCB-208	15	1.10	217.72	213.60	214.37	0.77	0.03	214.40	74.98	0.0109	0.81	215.21	0.15	215.06	0.41	214.65	219.13	CCB-210	—	—	
CO-8	HDS-200	10	1.10	216.44	213.50	214.30	0.80	0.06	214.36	12.35	0.0019	0.02	214.39	0.08	214.31	0.71	213.60	217.72	CCB-208	0.75	0.06	
CO-7	MH-202	10	1.10	215.85	212.70	213.04	0.34	0.43	213.47	45.03	0.0152	0.69	214.16	0.19	213.97	0.47	213.50	216.44	HDS-200	1.75	0.33	
CO-1	OF-2	42	1.10	213.57	205.43	205.64	0.21	0.35	205.99	26.52	0.0160	0.42	206.42	0.11	206.31	0.31	206.00	215.85	MH-202	0.14	0.01	
	10-YR DESIGN FLOW (CCB-210 TO OF-2 THROUGH HDS)																					
CO-4	CCB-208	15	5.55	217.72	213.60	215.22	1.62	0.32	215.54	74.98	0.0072	0.54	216.08	0.47	215.60	0.95	214.65	219.13	CCB-210	0.13	0.06	
CO-8	HDS-200	10	2.28	216.44	213.50	214.44	0.94	0.27	214.71	12.35	0.0092	0.11	214.82	0.27	214.55	0.95	213.60	217.72	CCB-208	—	—	
CO-7	MH-202	10	2.28	215.85	212.70	213.22	0.52	0.62	213.84	45.03	0.0154	0.69	214.54	0.36	214.17	0.67	213.50	216.44	HDS-200	0.73	0.26	
CO-1	OF-2	42	7.65	213.57	205.43	206.01	0.38	0.85	206.86	26.52	0.0101	0.27	207.13	0.29	206.83	0.83	206.00	215.85	MH-202	0.25	0.07	
	10-YR DESIGN FLOW (CCB-210 TO OF-2 THROUGH BYPASS)																					
CO-4	CCB-208	15	5.55	217.72	213.60	215.22	1.62	0.32	215.54	74.98	0.0072	0.54	216.08	0.47	215.60	0.95	214.65	219.13	CCB-210	0.13	0.06	
CO-3	MH-201	15	3.93	217.50	212.60	213.16	0.56	0.85	214.01	50.58	0.0145	0.27	214.75	0.35	214.40	0.80	213.60	217.72	CCB-208	—	—	
CO-2	MH-202	42	5.37	215.85	206.00	206.91	0.91	0.11	207.02	10.83	0.0150	0.27	207.19	0.24	206.95	0.70	206.25	217.50	MH-201	0.27	0.07	
CO-1	OF-2	42	7.65	213.57	205.43	206.01	0.38	0.85	206.86	26.52	0.0101	0.27	207.13	0.29	206.83	0.83	206.00	215.85	MH-202	0.25	0.07	
	10-YR DESIGN FLOW (CCB-209 TO CCB-208)																					
CO-9	CCB-208	12	0.63	217.72	213.60	215.22	1.62	0.01	215.23	28.39	0.0003	0.01	215.24	0.02	215.21	0.61	214.60	217.98	CCB-209	—	—	

L. Neale
11/7/17

CONNECTICUT DEPARTMENT OF TRANSPORTATION HYDRODYNAMIC SEPARATOR DESIGN DATA SHEETS (FORM A - DESIGN)

Project No:		87-145, Cross Street, Naugatuck, CT		Location/Station:		36+95 L		Date:		10/27/2017											
HYDRAULIC GRADE LINE ANALYSIS																					
Pipe	Downstream Str.	Pipe Size (in)	Flow (cfs)	Ground Elev. OUT (ft)	Invert Elev. OUT (ft)	HGL OUT (ft)	Depth OUT (ft)	Vel. Head OUT (ft)	EGL OUT (ft)	Length (ft)	Friction Slope (ft/ft)	Friction Loss (ft)	EGL IN (ft)	Vel. Head IN (ft)	HGL IN (ft)	Depth IN (ft)	Invert Elev. IN (ft)	Ground Elev. IN (ft)	Upstream Str.	Headloss Coeff.	Str. headloss (ft.)
CO-4	10-YR DESIGN FLOW (CCB-210 TO OF-2 NO HDS)	15	5.55	217.72	213.60	214.74	1.14	0.35	215.08	74.96	0.0132	0.99	216.08	0.47	215.60	0.95	214.65	219.13	CCB-210	0.13	0.06
CO-3	MH-201	15	6.22	217.50	212.60	213.34	0.74	1.04	214.38	50.58	0.0149	0.75	215.14	0.54	214.61	1.01	213.60	217.72	CCB-208	0.06	0.03
CO-2	MH-202	42	7.66	215.85	206.00	206.89	0.89	0.25	207.14	10.83	0.0221	0.24	207.38	0.29	207.08	0.83	206.25	217.50	MH-201	0.28	0.08
CO-1	OF-2	42	7.65	213.57	205.43	206.01	0.58	0.85	206.86	26.52	0.0101	0.27	207.13	0.29	206.83	0.83	206.00	215.85	MH-202	0.19	0.06
CO-9	10-YR DESIGN FLOW (CCB-209 TO CCB-208 NO HDS)	12	0.63	217.72	213.60	214.64	1.04	0.01	214.65	28.39	0.0142	0.40	215.05	0.12	214.93	0.33	214.60	217.98	CCB-209	--	--

✓
G. Machy
11/17/17

**CONNECTICUT DEPARTMENT OF TRANSPORTATION HYDRODYNAMIC SEPARATOR DESIGN DATA SHEETS
(FORM B - CONTRACTOR PROPOSAL)**

Project No		Route No.		PE Signature:	
Town		Location/Station		Name:	Date:
HYDROLOGIC DATA (Copy from FORM A - DESIGN)			License No:	Company:	State:
Drainage Area (Acres)					
% Impervious Area					
Time of Concentration (min.)					
Drainage Design Flow (cfs)					
Drainage Design Frequency (yr)					
Water Quality Flow (cfs)					
HYDRODYNAMIC SEPARATOR (HS)					
Manufacturer					
Model Name					
Model No.					
Coordinates:		Datum:			
X:		Horiz.			
Y:		Vert.			
Sediment Storage Capacity (cy):		HGL Elevation:			
Required		@ WQF			
Installed		@ Design Q			
Head loss coefficient					
FLOW DIVERSION STRUCTURE					
Type					
Weir and/or Bypass Elev.		Weir Coeff. (C)			
Weir Length (ft.)		Flow Split @ Drainage Design Flow (cfs):			
HGL Elevation:		To HS			
@ WQF		Bypassing HS			
@ Design Q					
Comments:	Sketch (NTS)				

**CONNECTICUT DEPARTMENT OF TRANSPORTATION HYDRODYNAMIC SEPARATOR DESIGN DATA SHEETS
(FORM B - CONTRACTOR PROPOSAL)**

Project No:		Date:	
Location/Station:	HYDRAULIC GRADE LINE ANALYSIS		
	Str. headloss (ft.)		
	Headloss Coeff.		
	Upstream Str.		
	Ground Elev. IN (ft)		
	Invert Elev. IN (ft)		
	Depth IN (ft)		
	HGL IN (ft)		
	Vel. Head IN (ft)		
	EGL IN (ft)		
	Friction Loss (ft)		
	Friction Slope (ft/ft)		
	Length (ft)		
	EGL OUT (ft)		
	Vel. Head OUT (ft)		
	Depth OUT (ft)		
	HGL OUT (ft)		
	Invert Elev. OUT (ft)		
	Ground Elev. OUT (ft)		
	Flow (cfs)		
	Pipe Size (in)		
	Downstream Str.		
	Pipe		

ITEM #0507908A – AREA DRAIN

All of the provisions of Section 6.51 of the Standard Specifications shall apply, except as amended and/or supplemented herein:

Article 6.51.01 – Description: Add the following:

The work under this item shall consist of furnishing and installing area drain systems of the size, type and length called for on the Contract Drawings or as ordered, at the locations and the lines and grades designated on the Contract Drawings, or as directed by the Engineer, and in conformity with these Specifications. Such work shall include but not be limited to, excavation, bedding material, backfill, new pipe and fittings, area drain grates, connections to existing or proposed drainage structures and endwalls, and all equipment, materials, labor, and tools incidental thereto.

Article 6.51.02 – Materials: Add the following:

Area drain grates shall be of the size and type as called out for on the Contract Drawings.

Corrugated polyethylene pipe shall conform to Section M.08.01 of the Standard Specifications.

Granular Fill shall conform to Section M.02.01 of the Standard Specifications.

Article 6.51.03 – Construction Methods: Add the following:

Unless otherwise directed by the Engineer, all new pipes shall be installed in accordance with the details as shown on the Contract Drawings, in conformance with Section 6.51 of the Standard Specifications, and in conformance with these Specifications.

Methods of excavation and backfilling shall be in conformance with Section 2.05 of the Standard Specifications.

The Contractor shall provide all necessary pumps, dams, drains, ditches, flumes, well points, and other means for excluding and removing water from trenches, tunnels, and other parts of the work, and for preventing the slopes from sliding or caving.

The placement of the pipe shall start at the downstream end and progress upstream until otherwise approved by the Engineer. All pipes shall be carefully laid true to line and grades shown on the Contract Drawings. Pipes and pipe arches shall be carefully jointed and firmly clamped together by approved connections, which shall be properly connected before any backfill is placed.

Article 6.51.04 – Method of Measurement: Replace with the following:

This work will be measured for payment by the actual number of linear feet of area drain completed and installed to the limits shown on the Contract Drawings or as directed by the Owner. No separate measurement will be made for the stand pipe connections from the grates to the mainline pipe, but the cost of which shall be included in the cost of the area drains.

Article 6.51.05 – Basis of Payment: Replace with the following:

Payment for this work will be made at the contract unit price per linear foot for "Area Drain", which price shall include excavation, backfill, granular fill, pipe, stand pipes, fittings, connections, area drain, grates, pipe bedding and all other materials, equipment, tools, labor and work incidental thereto.

<u>Description</u>	<u>Unit</u>
Area Drain	LF

ITEM #0601445A - EMBANKMENT WALL (SITE NO. 1)

ITEM #0601446A - EMBANKMENT WALL (SITE NO. 2)

Description: This item will consist of designing, 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 proprietary embankment retaining wall from the Department's current approved list shown below. The Engineer will reject any proposed retaining wall that is not listed below.

The following is a list of the proprietary embankment retaining walls for this project:

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

3. KeySystem I Retaining Wall
Keystone Retaining Wall Systems
13453 County Road 1
Fairhope, AL 36532
(251) 990-5761

2. MESA Retaining Wall System
TENSAR Earth Technology, Inc.
227 Ritter Road
Sewickley, PA 15143
(412) 749-9190

4. Pyramid Modular Blockwall
The Reinforced Earth Company
133 Park Street
North Reading, MA 01864
(978) 664-2830

5. Redi-Rock Retaining Wall-
Cobblestone Face Mold
Redi-Rock Walls-CT Division
68A South Canal Street
Plainville, CT 06062
(860) 793-6805

No other proprietary retaining walls will be allowed for this project.

This listing does not warrant that the individual walls can be designed to meet either the dimensional, structural, or geotechnical constraints at each site.

Design:

1 - Design Computations: It is the Contractor's responsibility for the design, detailing and additional construction specifications required to construct the wall. The actual designer of the retaining wall shall be a qualified Professional Engineer licensed in the State of Connecticut.

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

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

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

a. Detailed Plans:

- Plan sheets shall be approximately 24" x 36"
- Stamped by a licensed Professional Engineer (Connecticut).
- Full plan view of the wall drawn to scale. The plan view must reflect the horizontal alignment and offset from the horizontal control line to the face of the wall. Beginning and ending stations, all utilities, signs, lights, etc. that affect the construction along with all property lines and easement lines adjacent to the wall shall be shown.
- Full elevation view of the wall drawn to scale. Elevation views should indicate the elevation at the top and bottom of walls, horizontal and vertical break points, and the location of finished grade.
- Typical cross sections drawn to scale including all appurtenances. Detailed cross section should be provided at significant reinforcement transitions such as wall ends.

- Details of all wall components and their connections such as the length, size and type of soil reinforcement and where any changes occur; facing details; connections; etc.
 - Certified test reports indicating the connection strength versus normal load relationship for the block-soil reinforcement connection to be used.
 - Drainage details for embankment backfill including attachment to outlets shown on contract drawings.
 - Details of any roadway drainage pipe projecting through the wall, or any attachments to the wall. Details of the treatment of drainage swales or ditches shown on the contract drawings.
 - Design parameters used along with AASHTO references.
 - Material designations for all materials to be used.
 - Detailed construction methods including a quality control plan. Construction quality control plans should include monitoring and testing frequencies (e.g, for setting batter and maintaining horizontal and vertical control). Construction restraints should also be listed in the details. Specific requirements for construction around obstructions should be included.
 - Details of installation of protective fencing where required.
 - Details of Architectural Treatment where required.
 - Details of Temporary Earth Retaining System(s) where required.
 - Details of wall treatment where the wall abuts other structures.
 - Treatment at underground utilities where required.
- b. Design Computations:
- Stamped by a licensed Professional Engineer (Connecticut).
 - Computations shall clearly refer to the applicable AASHTO provisions as stated in the Notes on the Contract Drawings.
 - Documentation of computer programs including all design parameters.

c. Construction Specifications:

- Construction methods specific to the proprietary retaining wall chosen. These specifications should include construction limitations including vertical clearance, right-of-way limits, etc. Submittal requirements for materials such as certification, quality, and acceptance/rejection criteria should be included. Details on connection of modular units and connection of reinforcements such that assurance of uniform stress transfer should be included.
- Any requirements not stated herein.

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

a. Six sets of each submission shall be supplied to the State

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

4 - Final Submissions: Once a proprietary retaining wall design has been reviewed and accepted by the Department, the Contractor shall submit the final plans. The final submission shall include one set of full size (approximately 24" x 36") mylar sheets and five sets of full size blue line copies.

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

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

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

5 - General Design Requirements:

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

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

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

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

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

f. The top of the wall shall be at or above the top of the wall elevations shown on the plans. The top of the wall may be level or sloped to meet the top of the wall line noted.

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

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

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

i. If there are specific surcharges acting on the wall, they shall also be accounted for. The minimum equivalent fluid pressure used to design the wall shall be 33 lbs./ft² per linear foot of wall.

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

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

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

1 – Facing Block: The facing block can be precast or drycast concrete. The color of the block shall be coordinated and approved by the Town of Naugatuck. The block shall meet the following requirements:

a. Drycast Concrete:

- i. The minimum compressive strength of the block shall be 4000 psi measured at 28 days.
- ii. The maximum water absorption shall be less than five percent.

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

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

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

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

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

4 - 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.

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

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

Construction Methods: All construction methods for items not listed below shall be in accordance with the detailed requirements prescribed for the construction of the several contract items entering into the completed structure as specified in the Standard Specifications for Roads, Bridges, 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 1/2 inch when measured along a 8-foot straightedge. The overall tolerance of the wall from top to bottom shall not exceed 1/2 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 dry cast block shall be sealed prior to sealing the actual wall to ensure that the sealer will not discolor the block. If the sealer does discolor the block, the Contractor shall change to another approved supplier of sealer.

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

Basis of Payment: This work will be paid for at the contract lump sum for "EMBANKMENT WALL (SITE NO.)", 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. Design, detailing, and specifications for the wall.
2. Excavation for the wall
3. Design and Construction of temporary earth retaining systems for the support of the slope during construction.
4. Construction of the Embankment Wall, including the unreinforced concrete leveling pad.
5. The furnishing, placing and compacting of pervious structure backfill within the maximum payment lines.
6. The furnishing and placing of backfill drainage systems for the wall.
7. 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 #0751080A - DRAINAGE PIPE LATERAL

Description:

The work of this item shall consist of the construction of house connections for drainage pipe laterals within the street boundaries or easement boundaries in accordance with details as shown on the plans and as specified herein. Construction shall be at locations shown on the plans or determined in the field by the Engineer.

Materials:

Pipe materials for house connection laterals shall be corrugated polyethylene pipe (smooth interior) ADS N-12 or equal, polyvinyl chloride pipe SDR-35 or equal. Size of pipe shall be six inches or equal to existing unless otherwise indicated on the plans or directed by the Engineer. Provide bends and fittings as required.

Construction Methods:

Construct house connection laterals at locations shown on the plans or as determined in the field by the Engineer. Construct laterals in accordance with details shown on the plans and in accordance with specifications for installing pipe under Article 6.51.03 - Construction Methods of Culverts.

Laterals shall be laid to grade and to points as shown on the plans or as ordered by the Engineer. Laterals shall not be laid to a slope flatter than 0.5 percent.

Any lateral connection to the drainage main pipe shall be made with a hole core bored into the pipe. The hole shall be smooth inside the pipe after core is complete. The connection shall be a watertight joint.

Method of Measurement:

This work will not be measured for payment if the house drainage pipe lateral is broken by contractor in the course of his work. However, if a new lateral is to be placed or reset in accordance with the plans, this work will be measured for payment by the actual number of linear feet of pipe, completed, accepted and measured in place along the invert.

Trench excavation will **not** be measured for payment but shall be included as part of general work.

Bedding and backfill material will **not** be measured for payment but shall be included as part of general work.

Basis of Payment:

This work will be paid for at the contract unit price per linear foot for this item, which price shall include all materials, equipment, tools and labor incidental thereto.

Pay Item
Drainage Pipe Lateral

Pay Unit
L.F.

ITEM #0906202A – THREE RAIL WOOD FENCE

Description:

Work under this item shall consist of furnishing and installing pressure treated wood posts rail and fence at the locations given on the plans and in accordance with the dimensions and details shown on the plans, or as ordered by the Engineer.

Submittals:

The Contractor shall submit shop drawings and product data prior to placing order and receipt of materials for this item.

Materials:

- a. All lumber shall conform to Voluntary Product Standard PS-70 and be certified according to applicable standard grading and dressing rules and shall bear the official grade and/or trademark of the association under whose rules it is produced.
- b. Wood: See details for post, rail and picket nominal dimensions. All wood shall be #2 Southern Yellow Pine (Southern Pine Inspection Bureau Grading), or equal. All wood to be new, solid, sound, and surface dry with a maximum moisture content of 19%. All wood shall be clearly marked with the official grading information.
- c. Treatment: All wood shall be .40 pressure treated with Koppers Wolman CCA Salt Treatment to AWPI Standard LP-22 or equal.

Construction Methods:

The posts shall be set in holes dug in thoroughly compacted soil and the bottom of the hole shall be thoroughly rammed so that the posts will have a stable foundation. Holes shall be hand dug when posts are within five (5) feet a utility line. Poles shall be plumb and such that rails, once installed, will be parallel to the ground below.

Should rock or boulders be encountered in making the excavation, this material shall be removed so as to make a hole of sufficient size to set the posts to the normal depth as called for on the plan.

The posts shall be spaced as shown on the plans, set plumb and normally with the front face at a uniform distance from the edge of the traveled way.

The holes shall be backfilled with an approved material which shall be thoroughly compacted.

The rail shall be mounted on the post as shown on the plans utilizing paddle joints. The rail members shall be accurately cut so as to provide even bearing over entire surface of joints. No shimming of any kind will be allowed in making joints nor will open joints be accepted. All exposed edges of posts shall be chamfered.

Method of Measurement:

This work shall be measured for payment by the number of linear feet of rail measured along the top of the rail from end to end.

Basis of Payment:

Payment for these items will be at the contract unit price bid per linear foot for "THREE RAIL WOOD FENCE", complete in place, which price shall include all pressure treatment, materials, equipment, tools, and labor incidental to the installation of the completed and accepted rail/fence, including hand dug holes, excavation, and backfill.

<u>Pay Item</u>	<u>Pay Unit</u>
Three Rail Wood Fence	LF

ITEM #0913001A- 4' CHAIN LINK FENCE

Description: Add the following:

This work shall also include the removal of the existing chain link fence and concrete foundation as shown on the plans or as directed by the Engineer.

Basis of Payment: Add the follow:

There shall be no separate payment for the removal of the existing chain link fence and concrete foundation, as shown on the plans.

<u>Pay Item</u>	<u>Pay Unit</u>
4' Chain Link Fence	l.f.

ITEM #0914001A - METAL HANDRAIL

Description:

This item shall consist of furnishing and installing a 1 1/2-in, Welded and Seamless Steel pipe hand-railing on the proposed modular block stairs, as shown on the plans, or as directed by the engineer.

Materials:

All pipe for railing and posts shall be standard weight 1 1/2-in, Welded and Seamless Steel pipe meeting the requirements of ASTM A53, Type E or S, Grade A, Schedule 40 Black Finish.

Caps shall be malleable iron meeting the requirements of the specifications for malleable iron castings, ASTM A47, Grade No. 32510. Ductile iron castings shall be as specified in the specifications for Ductile Iron Castings, ASTM A536, Grade 60-40-18 unless otherwise specified. In addition to the specified test coupons, test specimens from parts integral with the castings, such as risers, shall be tested for castings having a weight of more than 1000 lb. to determine that the required quality is obtained in the castings in the finished condition. Paint shall meet the requirements of Section M.07 and the Contract.

Construction Methods:

The rail elements shall be erected to produce a smooth, continuous rail as shown on the plans.

Pipe posts shall be set in modular block stairs by pre-drilling a 2" diameter hole through blocks. The post shall be firmly embedded in pre-drilled hole to the depth shown on the plans. The Contractor shall fill the hole with 4000 PSI concrete and seal annular space between the pipe and the block with a bituminous compound satisfactory to the Engineer to prevent water from entering.

The top rail shall consist of a single, continuous pipe and shall be welded to posts.

The lower rail shall be welded to the posts.

All joints shall be finished smooth. No rough or sharp projections will be permitted. The entire railing and exposed portion of the sleeve into which the railing is set shall be thoroughly cleaned before painting and shall be painted with a field coat of zinc rich primer, ready-mixed paint and two field coats of paint to be selected by the Engineer and meeting the pertinent requirements of Section 6.03.

Method of Measurement:

This work will be measured for payment by the number of linear feet of railing measured along the top of the rail from end to end of the rail.

Basis of Payment:

This work will be paid for at the Contract unit price per linear foot for “Metal Handrail,” complete in place, which price shall include all materials, including sleeves and fastening devices in which the posts are set, and all equipment, tools and labor incidental thereto.

Pay Item

Metal Handrail

Pay Unit

l.f.

0914001a_orn_fence 2129-28-mr1716-spec

ITEM #0914017A – ORNAMENTAL METAL FENCE (4' HIGH)

Description: This item will consist of furnishing and installing ornamental metal fence at the location, grades, and to the dimensions and details shown on the plans, and in accordance with these specifications.

Design Loads:

Fence posts, rails, and connections shall be capable of withstanding a design live load on the fence taken as 50 lbs/lf, both transversely and vertically acting simultaneously, and for a concentrated load of 200 lbs. at any point and in any direction at the top of the element. These loads shall be applied at right angles to the fence.

Fence system shall be designed to withstand wind speed of 100 mph.

Materials: Shop drawings and data sheets shall be submitted in accordance with 1.05.02.3 listing all materials and products proposed for use. All materials must be in conformance with the Buy America Act (49 U.S.C. 5323(j)) requirements.

- A. Primary fence components; pickets, rails and posts shall be hot-dip galvanized.
 - 1. Steel material for fence framework (i.e. 3/4" tubular pickets, rails and posts) shall have a minimum yield strength of 45,000 psi (310 MPa). After fabrication, all fence framework, shall be hot-dipped galvanized to meet the requirements of ASTM A 123.
 - 2. Bolts, nuts, and other hardware shall be hot-dip galvanized in accordance with ASTM A 153.
 - 3. Touch-up galvanized coating shall conform to the requirements of ASTM A 780 using material conforming to Federal Specification TT-P-641, Type I. The use of Aerosol spray cans shall not be permitted.
 - 4. After the fencing components have been completely fabricated and all weldments ground smooth, the components shall be hot-dip galvanized in accordance with ASTM A 123. The dry kettle process shall be used. Water quenching of galvanized steel shall be prohibited.
 - 5. Material for galvanizing shall be suitably fabricated for galvanizing in accordance with the most efficient provisions and requirements of ASTM A 385, as approved by the Engineer.
- B. Acceptable manufacturers are:
 - 1. Master-Halco, Inc., 25 Mill Road #1, Ronkonkoma, New York 11779.

2. Atlas Outdoor, Inc., 30 Northeast Industrial Road, Branford Connecticut 06405.
 3. Or approved equal.
- C. Pickets shall be hollow steel bars conforming to ASTM A 36/A 36M or ASTM A 108, Grade 1022.
- D. Rails shall be made of not less than cold rolled steel conforming to ASTM A 108, Grade 1022. The cross-sectional shape of rails shall conform to the manufacturer's standard design with outside cross-section dimensions of 1.375" x 1.5" and a minimum thickness of 11 Ga. Picket holes in the U-channel rail shall be spaced 4.687" on center. Picket to channel connection shall be ¼" diameter industrial drive rivet.
- E. Fence posts shall be 3" square and a minimum thickness of 12 Ga.
- F. Industrial drive rivets of sufficient length shall attach pickets to rails in a secure fashion to minimize picket movement. Rivet shall have a minimum of 1100 lbs. holding power and a shear strength of 1500 lbs.
- G. Rail End Brackets: Brackets shall be die cast zinc (ZAMAK #3 alloy) per ASTM B86-83Z 33521. Ball and socket design capable of 30° swivel (up/down-left/right). Bracket to fully encapsulate rail end with snap fit top cap for complete security. Bracket shall be secured to the rail by a #4 Drive Rivet. Unless otherwise approved by the Engineer, all joints with posts shall be welded all around so as to prevent bare spots, or locations free of zinc.
1. On the same side of the post, one side of each bracket shall be provided with a slotted hole for expansion. On the other side of the post the hole shall be square, just large enough to allow for the bolt installation.
- H. All flat bars and shapes shall conform to ASTM A36.
- I. Bolts for field assembling fence shall be round head square neck type conforming to ANSI/ASME B18.5, nuts shall be heavy hex type conforming to ANSI/ASME B18.2.2, unless otherwise approved.
- J. Grout shall be provided for anchoring of all fence posts, unless otherwise directed by the Engineer.
1. Grout shall be non-shrink, made from factory-premixed material containing no corrosive irons, aluminums, or gypsums, with the following properties:
 - a. Non-shrink from time of mixing ASTM C827
 - No expansion after set ASTM C827
 - Initial set time ASTM C191
 - Compressive Strength ASTM C109

- b. An effective bearing area (EBA) of 95 to 100 percent.
 - c. Grout that contains water reducers, accelerators or fluidifiers shall have no drying shrinkage greater than the equivalent sand cement and water mix as tested under ASTM C596.
2. The grout shall not shrink below its placement volume and shall not expand after set. Grout shall have a 1-day compressive strength of not less than 3000 psi and a minimum compressive strength of 6500 psi in 28 days.
 3. Grout shall have an initial setting time of not less than 45 minutes.
 4. Acceptable Manufacturers are:
 - a. "Five Star Grout" by U.S. Grout Corp., Old Greenwich, Connecticut.
 - b. SikaGrout 212 by Sika Corp., Lyndhurst, NJ 07071
 - c. K-Ment Anchoring Cement by the Euclid Chemical Company, 19218 Redwood Road, Cleveland, OH 44110.
- K. Finish Painting: All hot-dip galvanized steel fence components shall receive one of the following shop applied coating systems:

KEELER AND LONG

Primer Coat	Kolor-Poxy #3200
Finish Coat	Kolorane Y-Acrythane Series Enamel

CARBOLINE

Primer Coat	Carboline 888 Primer
Finish Coat	Carbothane 134HB Enamel

VALSPAR

Primer Coat	Val Chem 13-F-62 Primer
Finish Coat	V40 Series Urethane Enamel

The finish color of all work shall be black.

Storage of the paint system materials shall be in a dry, well-ventilated area, not in direct contact with the ground, where the temperature is maintained between 50°F and 100°F. Damaged materials and/or materials exceeding the manufacturer's recommended shelf life shall not be used.

Construction Methods:

The fence shall be installed in accordance with the details shown on the plans. The posts shall be firmly and accurately set plumb in position prior to and during the placing of concrete or

backfill. The posts shall be placed plumb with the top and bottom rails set parallel to the top of the wall. Post installation and attachment at top of embankment wall shall be in accordance with wall design engineer's requirements and detail(s).

Provide concrete footing where required, if locations exist where posts are not installed at top of wall. Footings shall be formed using 12-inch diameter Sonotube forms of not less than 3'-6" feet in depth. Beneath the footings shall be placed coarse aggregate or broken stone to a depth of 12-inches.

All hot-dip galvanizing and painting shall be performed in climate controlled shop ambient conditions.

All shop fabrication, unless otherwise approved by the Engineer, shall be of welded construction. The surface preparation, procedures, electrodes, finishing and inspection shall be in accordance with AWS D1.1/D1.1M:2002.

Finishing of All Fabricated Products:

Surface Preparation of Galvanized Surfaces: Surface preparation shall consist of cleaning galvanized steel surfaces in accordance with the methods listed herein. The cleaned surfaces shall be approved by the Engineer or his appointed inspector prior to any painting. Exposed bare steel surfaces on galvanized material shall be touched up in accordance with ASTM A 780 prior to applying paint system.

All foreign matter such as oil, grease, and dirt shall be cleaned from the surface using a biodegradable cleaner (i.e., Carboline #3 Cleaner or Dev-Prep 88) in accordance with the Steel Structures Painting Council Surface Preparation No. 1 (SSPC-SP1) "Solvent Cleaning." All surfaces shall then be brush blasted in accordance with SSPC-SP7 "Brush-Off Blast Cleaning" using a fine abrasive at nozzle pressures not to exceed 60 psi. The abrasive blast media shall be non-ferrous and softer than zinc. A uniform anchor profile of 2.5 to 3.8 mils shall be achieved. Brush blasting must be performed to 100% of the surface area being coated.

All surfaces brush blasted must be primed the same day.

Application: Handling, mixing, and all other facets of application and curing of paint shall be in accordance with the manufacturer's written instructions unless otherwise instructed in these specifications.

Paint, substrate, and air temperature at the time of application shall be between 60 and 100°F unless otherwise specified by the manufacturer.

Paint shall not be applied unless the temperature of the surfaces being coated is, and will remain, at least 40°F above the dew point until the coating is dry "to touch."

The relative humidity shall be less than 85% during application.

The paint shall be thoroughly mixed prior to and during application. Mechanical agitations during application may be necessary to keep pigment in suspension. Paint shall not be transferred (other than to simplify mixing) until all pigment has been incorporated. Air shall not be used directly for agitation.

Paint materials may not be used beyond the recommended pot life.

Thinners shall not be added to paint unless it is absolutely necessary for application. The amount of thinner used shall not exceed the manufacturer's recommendations for quantity and type. If used, the thinner shall only be added in accordance with the manufacturer's instructions, under the Engineers presence.

Spraying is the preferred method of application. Brushing, rolling and/or mitt application may be used where appropriate.

The paint system on galvanized surfaces shall have the following thickness:

Primer Coat: 75 to 125 microns Dry Film Thickness
Finish Coat: 38 to 63 microns Dry Film Thickness

Paint thickness will be determined in accordance with SSPC PA-2 "Measurement of Dry Paint Thickness with Magnetic Gages." The number of readings will be a minimum of that stated in SSPC PA-2.

Finishing of Fasteners: Fasteners and anchor bolts shall be hot-dipped galvanized and treated as required to receive field touch-up painting after erection, unless otherwise directed. Field touch-up painting shall include both prime and finish coats.

All defective work shall be corrected by the Contractor at no cost to the Town.

Installation:

Preparation and Installation of Fence Posts:

Concrete surface shall be free of all loose material and steel shall be clean and free of corrosion.

Surfaces shall be free of oil, grease, loose paint, corrosive deposits, dust, laitance and other contaminants and sleeves and holes shall be clean of dust and debris.

Perform all grouting in accordance with the recommendations of ACI and the grout manufacturer's published specifications for site preparation, product mixing, and placing. For grouting in weather below 50°F, contact manufacturer for cold weather instructions.

Arrange with the manufacturer of the grout for the services of a qualified field representative to instruct the work crews in the mixing of components, preparation of surfaces, technique of installation, and inspection procedures. The representative shall remain at the job site after work commences until the representative is satisfied that the grout is being installed correctly.

Erecting Fence Panels

After the posts have been properly set and grouted, and the grout fully cured, the fence panels may be installed.

All fence panels shall be delivered prepared for installation by field bolting only. Field welding is disallowed, except by the written permission of the Engineer.

After all treaded fasteners have been installed the exposed threads beyond the nut shall be nicked to prevent easy removal. Fasteners shall receive the same finish treatments as the fence. With field touch-up painting provided as necessary.

Method of Measurement:

This work will be measured for payment by the number of linear feet of completed and accepted ornamental metal fencing, as indicated and specified, measured from outside to outside of terminal posts.

Basis of Payment:

This work will be paid for at the Contract unit price per linear foot for “Ornamental Metal Fence (4’ High),” complete in place, which price shall include all materials, equipment, tools and labor incidental thereto.

Pay Item

Ornamental Metal Fence (4’ High)

Pay Unit

LF

0914017a_orn_fence 4248-06-6-mr1716-spec

**ITEM #0949148A – CORNUS RUTGERS STELLAR PINK, STELLAR PINK
DOGWOOD, 10'-15' HT. B.B.**

ITEM #0949581A – ZELKOVA SERRATA VILLAGE GREEN 3 1/2" - 4 1/2" CAL. B.B.

**ITEM #0949838A – ACER RUBRUM "RED SUNSET", RED SUNSET RED MAPLE 2
1/2"-3" CAL. B.B.**

ITEM #0949XX1A – PRUNUS X OKAME, OKAME CHERRY, 3" CAL. B.B.

**ITEM #0949XX2A – ILEX GLABRA 'SHAMROCK', SHAMROCK HOLLY, #5 (FULL
& DENSE)**

All of the provisions of Section 9.49 of the Standard Specifications shall apply, modified as follows:

9.49.01 – Description: Replace or add the following:

1. Planting Season: Planting under this contract will be allowed outside of the spring planting period from March 1 – May 15 and the fall planting period of October 15 – till ground freezes. Engineer must be contacted one week prior to start of planting. Additional measures such as increased watering may be required per current weather conditions.

9.49.02 – Materials: Replace or add the following:

Submittals:

Certified Test Report:

Submit 5 copies of certified test reports for mulch in accordance with the contract general requirements.

Mulch: Mulch shall be shredded cedar bark and a natural forest product of 98% bark containing less than 2% wood or other debris. It shall be of a uniform grade with no additives or any other treatment. Size of bark shall be from 5/8" – 1-1/4". The pH factor should range from 5.8 - 6.2.

Herbaceous plants: Plugs shall be obtained from New England Wetland Plants Inc. (413) 548-8000, 820 West Street Amherst, MA 01002, or approved equal.

All herbaceous plugs will be living plant material. No tubers or rhizomes will be accepted as substitutes for herbaceous plugs.

9.49.03 – Construction Methods: Replace or add the following:

4. Excavation: Excavation for planting beds and pits shall conform to the approved staked locations, outlines, manufacturer's specifications, and details. The excavation shall be neatly formed by means of spades or other approved tools. All sod, weeds, roots and other objectionable material excavated from the plant beds or pit sites which are unsuitable for backfill shall be removed from the site immediately and disposed of by the Contractor in a manner satisfactory to the Engineer.

5. Excavation dimensional criteria: Size of pits, in earth excavation, shall be as detailed.

7. Preparation of Backfill: For all trees and shrubs: As specified in the Standard Specifications, section 9.49.7

8. Setting Plants: For all herbaceous plugs:

At the direction of the supervising wetland soil scientist the plugs are to be planted in specie clusters and shall not be planted in a uniform grid pattern.

Herbaceous plugs shall be installed by carefully spreading roots as naturally as possible and placing plug/roots into the bottom of the pit/hole. Backfill with topsoil and thoroughly tamp around base of herbaceous plug.

Each plug shall be secured to the planting substrate using wooden skewers. No metal nails and/or sod staples and/or plastic staples are to be used to secure herbaceous plugs.

9. Fertilizing: No fertilizing shall be provided unless directed otherwise by the engineer.

10. Watering: All plants shall be watered within 48 hours after planting if conditions warrant, and as many times thereafter as ordered by the Engineer. At each watering, the soil around each plant shall be thoroughly saturated. All plants shall be watered at least twice a week equally distributed throughout the week, from April 1st to October 1st, inclusive, or as directed by the Engineer. Rain events that saturate the soil as required above can be included as a watering event upon approval by the engineer.

11. Guying and Staking: Staking of trees shall to be per details unless contractor is specifically directed by the Engineer not to stake the tree.

12. Wrapping: all wrapping shall be removed from the specimens.

13. Pruning: As directed by the Engineer, plants shall be pruned at the project site before or immediately after planting in accordance with the American National Standards Institute ANSI A300. No leader shall be cut unless directed by the Engineer. Broken, or badly bruised branches, sucker growth, etc., shall be removed with clean cuts per the American National Standards Institute ANSI A300.

15. Mulching: Following the plant material installations shredded bark mulch shall be hand placed and spread to a depth of 4 inches (100 millimeters) and raked to an even surface over all saucer areas for individual trees and over the entire area of shrub beds and elsewhere as directed except that no mulch shall come in direct contact with the trunk of the tree. There will be no separate payment for mulch.

The mulch shall be inspected and approved by the Engineer before the material is delivered to the project. Any material delivered to the project which does not meet specifications will be rejected and shall be replaced with suitable material by the Contractor.

17. Establishment Period: All plant material installed shall be warranted for 1 full year to assure viability and success of growth through one full winter. The Contractor will be responsible for maintenance of the plant material during the establishment period until final inspection.

Any planted tree that is dead or, in the opinion of the Engineer, is in an unhealthy or unsightly condition, and/or has lost its natural shape due to dead branches, excessive pruning, inadequate or improper maintenance, or other causes including vandalism, during the establishment period shall be replaced. The tree planting soil mix in the tree pit shall be changed when any replacement tree is planted.

9.49.04 – Method of Measurement: Replace or add the following:

2. Mulching: This work shall not be measured for payment and shall be included in the plant item.

9.49.05 – Basis of Payment: Replace or add the following:

The quantity for which payment will be made will be the number of each size and type of plants counted in place, planted, mulched, and accepted.

This work will be paid for at the contract unit price bid per the number of each size and type of plants counted in place, planted, mulched and accepted, which price shall include plant material, shredded bark mulch, maintenance, equipment, tools and labor incidental thereto.

<u>Pay item</u>	<u>Pay Unit</u>
Cornus Rutgers Stellar Pink, Stellar Pink Dogwood, 10'-15' Ht. B.B.	Ea
Zelkova Serrata Village Green 3 1/2"-4 1/2" Cal. B.B.	Ea
Acer Rubrum "Red sunset", Red Sunset Red Maple 2 1/2"-3" Cal. B.B.	Ea.
Prunus x Okame, Okame Cherry, 3" Cal. B.B.	Ea.
Ilex glabra 'Shamrock', Shamrock Holly, #5 (Full & Dense)	Ea.

ITEM #0950019A – TURF ESTABLISHMENT - LAWN

All of the provisions of Section 9.50 of the Standard Specifications shall apply, except as amended and/or supplemented herein:

Materials:

Revise as follows:

The materials for this work shall conform to the requirements of Section M.13 *except that the Seed Mixtures in M.13.04 shall be replaced with the following Seed Mixture:*

<u>Percent by Weight</u>	<u>Common Name</u>	<u>Scientific Name</u>
25	<i>Abbey Kentucky Bluegrass</i>	<i>Poa pratensis</i>
15	<i>Envicta Kentucky Bluegrass</i>	<i>Poa pratensis</i>
15	<i>Ambrose Chewing Fescue</i>	<i>Festuca rubra</i>
20	<i>Manhattan Ryegrass</i>	<i>Lolium perenne</i>
25	<i>Pennlawn Red Fescue</i>	<i>Festuca rubra</i>

Construction Methods:

Shall conform to Section 9.50.03 of the Standard Specifications. Rate of application shall be 225 lbs per acre.

Basis of Payment:

Shall conform to Section 9.50.04 of the Standard Specifications.

<u>Pay Item</u>	<u>Pay Unit</u>
Turf Establishment – Lawn	S.Y.

ITEM #0969060A - CONSTRUCTION FIELD OFFICE, SMALL

Description: Under the item included in the bid document, adequate weatherproof office quarters with related materials, equipment and other services, shall be provided by the Contractor for the duration of the work, and if necessary, for a close-out period determined by the Engineer. The office, materials, equipment, and services are for the exclusive use of Town forces and others who may be engaged to augment Town 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.

Materials/Supplies/Equipment: Materials shall be in like new condition for the purpose intended and shall be approved by the Engineer.

Office Requirements: The Contractor shall furnish the office quarters and equipment as described below.

Description \ Office Size	Small	Med.	Large	Extra Large
Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.	400	400	1000	2000
Minimum number of exterior entrances.	2	2	2	2
Minimum number of parking spaces.	7	7	10	15

Office Layout: The office shall have a minimum square footage as indicated in the table above, and shall be partitioned as shown on the building floor plan as provided by the Engineer.

Tie-downs and Skirting: Modular offices shall be tied-down and fully skirted to ground level.

Lavatory Facilities: For field offices sizes Small and Medium the Contractor shall furnish a toilet facility at a location convenient to the field office for use by Department personnel and such assistants as they may engage; and for field offices sizes Large and Extra Large the Contractor shall furnish two (2) separate lavatories with toilet (men and women), in separately enclosed rooms that are properly ventilated and comply with applicable sanitary codes. Each lavatory shall have hot and cold running water and flush-type toilets. For all facilities the Contractor shall supply lavatory and sanitary supplies as required.

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the Department and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An

ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.

Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

Additional Equipment, Facilities and Services: The Contractor shall provide at the field Office at least the following to the satisfaction of the Engineer:

Parking Facility: The Contractor shall provide a parking area, adjacent to the field office, of sufficient size to accommodate the number of vehicles indicated in the table above. If a paved parking area is not readily available, the Contractor shall construct a parking area and driveway consisting of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel to serve the electrical requirements of the field office, including: lighting, general outlets, computer outlets, calculators etc., and meet the following minimum specifications:

- A. 120/240 volt, 1 phase, 3 wire
- B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
- C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
- D. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each computer workstation location.
- E. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed, for use by the Telephone Company.
- F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
- G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120 volt, straight blade.
- H. After work is complete and prior to energizing, the State's CTDOT electrical inspector, must be contacted at 860-594-2240. (Do Not Call Local Town Officials)
- I. Prior to field office removal, the CTDOT Office of Information Systems (CTDOT OIS) must be notified to deactivate the communications equipment.

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: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Small, Medium and Large field office this shall consist of the installation of two (2) telephone lines: one (1) line for phone/voice service and one (1) line dedicated for the facsimile machine. For an Extra-Large field office this shall consist of four (4) telephone lines: three (3) lines for phone/voice service and one (1) line dedicated for facsimile machine. The Contractor shall pay all charges.

Data Communications Facility Wiring: Contractor shall install a Category 5e 468B patch panel in a central wiring location and Cat 5e cable from the patch panel to each PC station, terminating in a (category 5e 468B) wall or surface mount data jack. The central wiring location shall also house either the data circuit with appropriate power requirements or a category 5 cable run to the location of the installed data circuit. The central wiring location will be determined by the T staff in coordination with the designated field office personnel as soon as the facility is in place.

For a Small, Medium and Large field office the Contractor shall run a CAT 5e LAN cable a minimum length of 25 feet for each computer to LAN switch area leaving an additional 10 feet of cable length on each side with terminated RJ45 connectors. For an Extra-Large field office the Contractor shall run CAT 5e LAN cables from workstations, install patch panel in data circuit demark area and terminate runs with RJ45 jacks at each computer location. Terminate runs to patch panel in LAN switch area. Each run / jack shall be clearly labeled with an identifying Jack Number.

The installation of a data communication circuit between the field office and the CTDOT OIS in Newington will be coordinated between the CTDOT District staff and the local phone company. The CTDOT District staff will coordinate the installation of the data communication service with CTDOT OIS once the field office phone number is issued. The Contractor shall provide the field office telephone number(s) to the CTDOT Project Engineer within 10 calendar days after the signing of the Contract as required by Article 1.08.02. This is required to facilitate data line and computer installations.

The following furnishings and equipment shall be provided in the applicable field office type:

Furnishing Description	Office Size			
	Small	Med.	Large	Extra Large
	Quantity			
Office desk (2.5 ft x 5 ft) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	1	3	5	8
Standard secretarial type desk and matching desk chair that has pneumatic seat height adjustment and dual wheel casters on the base.	-	-	-	1
Personal computer tables (4 ft x 2.5 ft).	2	3	5	8
Drafting type tables (3 ft x 6 ft) and supported by wall brackets and legs; and matching drafters stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1	1	1	2
Conference table, 3 ft x 12 ft.	-	-	-	1
Table – 3 ft x 6 ft.	-	-	-	1
Office Chairs.	2	4	8	20
Mail slot bin – legal size.	-	-	1	1
Non-fire resistant cabinet.	-	-	2	4
Fire resistant cabinet (legal size/4 drawer), locking.	1	1	2	3
Storage racks to hold 3 ft x 5 ft display charts.	-	-	1	2
Vertical plan racks for 2 sets of 2 ft x 3 ft plans for each rack.	1	1	2	2
Double door supply cabinet with 4 shelves and a lock – 6 ft x 4 ft.	-	-	1	2
Case of cardboard banker boxes (Min 10 ea)	1	1	2	3
Open bookcase – 3 shelves – 3 ft long.	-	-	2	2
White Dry-Erase Board, 36” x 48”min. with markers and eraser.	1	1	1	1
Interior partitions – 6 ft x 6 ft, soundproof type, portable and freestanding.	-	-	6	6
Coat rack with 20 coat capacity.	-	-	-	1
Wastebaskets - 30 gal., including plastic waste bags.	1	1	1	2
Wastebaskets - 5 gal., including plastic waste bags.	1	3	6	10
Electric wall clock.	-	-	-	2
Telephone.	1	1	1	-
Full size stapler 20 (sheet capacity, with staples)	1	2	5	8
Desktop tape dispensers (with Tape)	1	2	5	8

Business telephone system for three lines with ten handsets, intercom capability, and one speaker phone for conference table.	-	-	-	1
Mini refrigerator - 3.2 c.f. min.	1	1	1	1
Hot and cold water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.	1	1	1	1
Microwave, 1.2 c.f. , 1000W min.	1	1	1	1
Fire extinguishers - provide and install type and *number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*	*	*	*
Electric pencil sharpeners.	1	2	2	2
Electronic office type printing calculators capable of addition, subtraction, multiplication and division with memory and a supply of printing paper.	1	1	2	4
Small Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Hardware and Software</u> .	1	1		
Large Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Hardware and Software</u> .			1	1
Computer System as specified below under <u>Computer Hardware and Software</u> .	2	3	5	8
Digital Camera as specified below under <u>Computer Hardware and Software</u> .	1	1	3	3
Video Projector as specified below under <u>Computer Hardware and Software</u> .	-	-	-	1
Smart Board as specified below under <u>Computer Hardware and Software</u> .	-	-	-	1
Infrared Thermometer, including annual third party certified calibration, case, and cleaning wipes.	1	1	1	2
Rain Gauge.	1	1	1	1
Concrete Curing Box as specified below under Concrete Testing Equipment.	1	1	1	1
Concrete Air Meter and accessories as specified below under Concrete Testing Equipment as specified below. Contractor shall provide third party calibration on a quarterly basis.	1	1	1	1
Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment.	1	1	1	1
First Aid Kit	1	1	1	1

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: Computer System(s), Digital Camera(s), Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors and Smart Board(s) as well as associated hardware and software, must meet the requirements of this specification as well as the latest minimum specifications posted, as of the project advertising date, at Departments web site <http://www.ct.gov/dot/cwp/view.asp?a=1410&q=563904>

The Contractor shall provide the Engineer, Computer Systems, Software and Related Equipment, with support and documentation.

The Contractor shall provide a licensed copy of the required software on original media and/or download information, as well as license keys. The Contractor shall also supply instructions, manuals, maintenance for future version upgrades, and customer support services offered by each software producer, for the duration of the Contract. **The peripheral required software in excess of the operating system normally installed by the computer vendor should not be preinstalled. The installation will be performed by CTDOT OIS.**

The Contractor is responsible for service and repairs to all 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.

The Contractor shall provide all supplies, paper, maintenance, and repairs (including labor and parts) for the computers, laptops, printers, copiers, and fax machines and other facilities required by this specification for the duration of the Contract.

Within 10 calendar days after the signing of the Contract but before ordering/purchasing the Computer System(s), Software, Digital Camera(s), Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors and Smart Board(s) as well as associated hardware and software, the Contractor must submit a copy of their proposed order(s) with catalog cuts and specifications to the Administering CTDOT District for review and approval. The Computer System(s), Software, Multifunction Laser Printer/Copier/Scanner/Fax, and Smart Board(s) will be initially reviewed by the CTDOT District personnel and forwarded to the CTDOT OIS for final approval. The digital cameras will be reviewed and approved by the CTDOT District. The Contractor shall not purchase the equipment or software until the Administering CTDOT District informs them that the proposed equipment and software is approved. The Contractor will be solely responsible for the costs of any equipment or software purchased without approval.

Prior to delivery of the computer hardware and software the Contractor should create or procure any backup media necessary to restore the operating system and any preloaded software provided (Example: the Windows software, driver disks and others necessary to reinstall the operating system.). At the conclusion of the project the Department must wipe

the hard drive for security purposes. The Department will not be responsible for returning the computer to the out of the box state. It will be the responsibility of the Contractor.

After the approval of the hardware and software, the Contractor must speak to one of the representatives at the CTDOT OIS by calling 860-594-3500, Option #1, a minimum of 2 working days in advance of the proposed delivery.

The approved computer system(s) including all hardware and software shall be delivered at the same time (all software and hardware necessary for the complete installation of the latest versions of the software listed). If all items are not delivered at the same time or the CTDOT OIS has not been contacted 2 working days in advance the delivery cannot be accepted. Digital Cameras should be delivered to the District.

All software, hardware and licenses provided shall be clearly labeled, specifying the (1) Project No., (2) Contractor Name, (3) Project Engineer's Name and (4) Project Engineer's Phone No., and shall be delivered to the CTDOT OIS , 2710 Berlin Turnpike, Newington, CT, where it will be configured and prepared for field installation. Installation will then be coordinated with CTDOT District and Project personnel and the computer system specified will be stationed in the Department's Project field office.

Once the Contract has been completed, the hardware and software will remain the property of the Contractor. Prior to the return of any computer(s) to the Contractor, field personnel will coordinate with the CTDOT OIS personnel for the hard-drive wiping and removal of Department owned equipment, software, data, and associated equipment.

First Aid Kit: The Contractor shall supply a first aid kit adequate for the number of personnel expected based on the size of the field office specified and shall keep the first aid kit stocked for the duration that the field office is in service.

Concrete Testing Equipment: If the Contract includes items that require compressive strength cylinders for concrete, in accordance with the Schedule of Minimum Testing Requirements for Sampling Materials for Test, the Contractor shall provide the following. All testing equipment will remain the property of the Contractor at the completion of the project.

- A) Concrete Cylinder Curing Box – meeting the requirements of Section 6.12 of the Standard Specifications.
- B) Air Meter – The air meter provided shall be in good working order and meet the requirements of AASHTO T 152.
- C) Slump Cone Mold – Slump cone, base plate, and tamping rod shall be provided in like-new condition and meet the requirements of AASHTO T119, Standard Test Method for Slump of Hydraulic-Cement Concrete.

Insurance Policy: The Contractor shall provide a separate insurance policy, with no deductible, in the minimum amount of five thousand dollars (\$5,000) in order to insure all State-owned data equipment and supplies used in the office against all losses. The Contractor shall be named insured on that policy, and the Department shall be an additional named insured on the policy. These losses shall include, but not be limited to: theft, fire, and physical damage. The Department will be responsible for all maintenance costs of Department owned computer hardware. In the event of loss, the Contractor shall provide replacement equipment in accordance with current Department equipment specifications, within seven days of notice of the loss. If the Contractor is unable to provide the required replacement equipment within seven days, the Department may provide replacement equipment and deduct the cost of the equipment from monies due or which may become due the Contractor under the Contract or under any other contract. The Contractor's financial liability under this paragraph shall be limited to the amount of the insurance coverage required by this paragraph. If the cost of equipment replacement required by this paragraph should exceed the required amount of the insurance coverage, the Department will reimburse the Contractor for replacement costs exceeding the amount of the required coverage.

Maintenance: During the occupancy by the Department, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of weekly professional cleaning to include, but not limited to, washing & waxing floors, cleaning restrooms, removal of trash, etc. Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

Method of Measurement: The furnishing and maintenance of the construction field office will be measured for payment by the number of calendar months that the office is in place and in operation, rounded up to the nearest month.

There will not be any price adjustment due to any change in the minimum computer hardware and software requirements.

Basis of Payment: The furnishing and maintenance of the Construction Field Office will be paid for at the Contract unit price per month for "Construction Field Office, (Type)," which price shall include all material, equipment, labor, service contracts, licenses, software, repair or replacement of hardware and software, related supplies, utility services, parking area, external illumination, trash removal, snow and ice removal, and work incidental thereto, as well as any other costs to provide requirements of this specified this specification.

<u>Pay Item</u>	<u>Pay Unit</u>
Construction Field Office, Small	Month

ITEM NO. 0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – Description is supplemented by the following:

The Contractor shall maintain and protect traffic as described by the following and as limited in the Special Provision "Prosecution and Progress":

Route 8

The Contractor shall maintain and protect the minimum number of through lanes and shoulders as dictated in the Special Provision for Section 1.08 - Prosecution and Progress "Limitations of Operations - Minimum Number of Lanes to Remain Open" Chart, on a paved travel path not less than 12 feet in width per lane.

Ramps and Turning Roadways

The Contractor shall maintain and protect existing traffic operations.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall be allowed to maintain and protect a minimum of one lane of traffic, on a paved travel path not less than 12 feet in width.

Route 63

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

Where turn lanes exist, the Contractor shall provide an additional 10 feet of paved travel path to be used for turning vehicles only. This additional 10 feet of travel path shall be a minimum length of 150 feet. It shall be implemented so that sufficient storage, taper length, and turning radius are provided.

All Other Roadways

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction, each lane on a paved travel path not less than 10 feet in width.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall maintain and protect at least an alternating one-way traffic operation, on a paved travel path not less than 10 feet in width. The length of the alternating one-way traffic operation shall not exceed 300 feet and there shall be no more than one alternating one-way traffic operation within the project limits without prior approval of the Engineer.

The Contractor will be allowed to close the southbound direction of Cross Street and close Cotton Hollow Road to through traffic and detour traffic as shown on the Detour and Maintenance and Protection of Traffic Plans in the contract plans.

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.

Requirements for Winter

The Contractor shall schedule a meeting with representatives from the Department including the offices of Maintenance and Traffic, and the Borough to determine what interim traffic control measures the Contractor shall accomplish for the winter to provide safety to the motorists and permit adequate snow removal procedures. This meeting shall be held prior to October 31 of each year and will include, but not be limited to, discussion of the status and schedule of the following items: lane and shoulder widths, pavement restoration, traffic signal work, pavement markings, and signing.

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, pot hole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

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

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

PLACEMENT OF SIGNS

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

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

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

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

Adjustments to the traffic control plans shall be made only at the direction of the Engineer to improve the visibility of the signs and devices and to better control traffic operations. Adjustments to the traffic control plans shall be based on safety of work forces and motorists, abutting property requirements, driveways, side roads, and the vertical and horizontal curvature of the roadway.

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

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

TABLE I – MINIMUM TAPER LENGTHS

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

SECTION 1. WORK ZONE SAFETY MEETINGS

- 1.a) Prior to the commencement of work, a work zone safety meeting will be conducted with representatives of 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

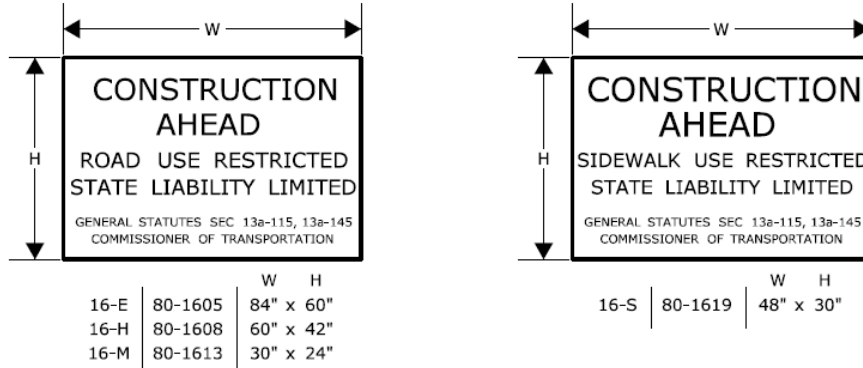
7	RIGHT LANE CLOSED	REDUCE SPEED	15	2 LANES SHIFT AHEAD	USE CAUTION
8	2 RIGHT LANES CLOSED	REDUCE SPEED	16	3 LANES SHIFT AHEAD	USE CAUTION

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.

SECTION 8. USE OF STATE POLICE OFFICERS

- 8.a) State Police may be utilized only on limited access highways and secondary roadways under their primary jurisdiction. One Officer may be used per critical sign pattern. Shoulder closures and right lane closures can generally be implemented without the presence of a State Police Officer. Likewise in areas with moderate traffic and wide, unobstructed medians, left lane closures can be implemented without State Police presence. Under some situations it may be desirable to have State Police presence, when one is available. Examples of this include: nighttime lane closures; left lane closures with minimal width for setting up advance signs and staging; lane and shoulder closures on turning roadways/ramps or mainline where sight distance is minimal; and closures where extensive turning movements or traffic congestion regularly occur, however they are not required.
- 8.b) Once the pattern is in place, the State Police Officer should be positioned in a non-hazardous location in advance of the pattern. If traffic backs up beyond the beginning of the pattern, then the State Police Officer shall be repositioned prior to the backup to give warning to the oncoming motorists. The State Police Officer and TMA should not be in proximity to each other.
- 8.c) Other functions of the State Police Officer(s) may include:
 - Assisting entering/exiting construction vehicles within the work area.
 - Enforcement of speed and other motor vehicle laws within the work area, if specifically requested by the project.
- 8.d) State Police Officers assigned to a work site are to only take direction from the Engineer.

SERIES 16 SIGNS



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

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

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

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

SIGN 16-E SHALL BE USED ON ALL EXPRESSWAYS.

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

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

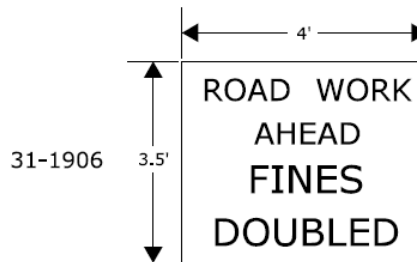
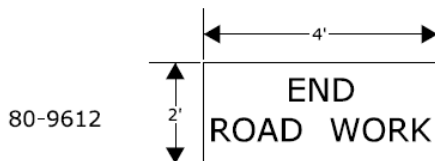
REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

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

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

"END ROAD WORK" SIGN

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



SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN
REQUIRED SIGNS

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

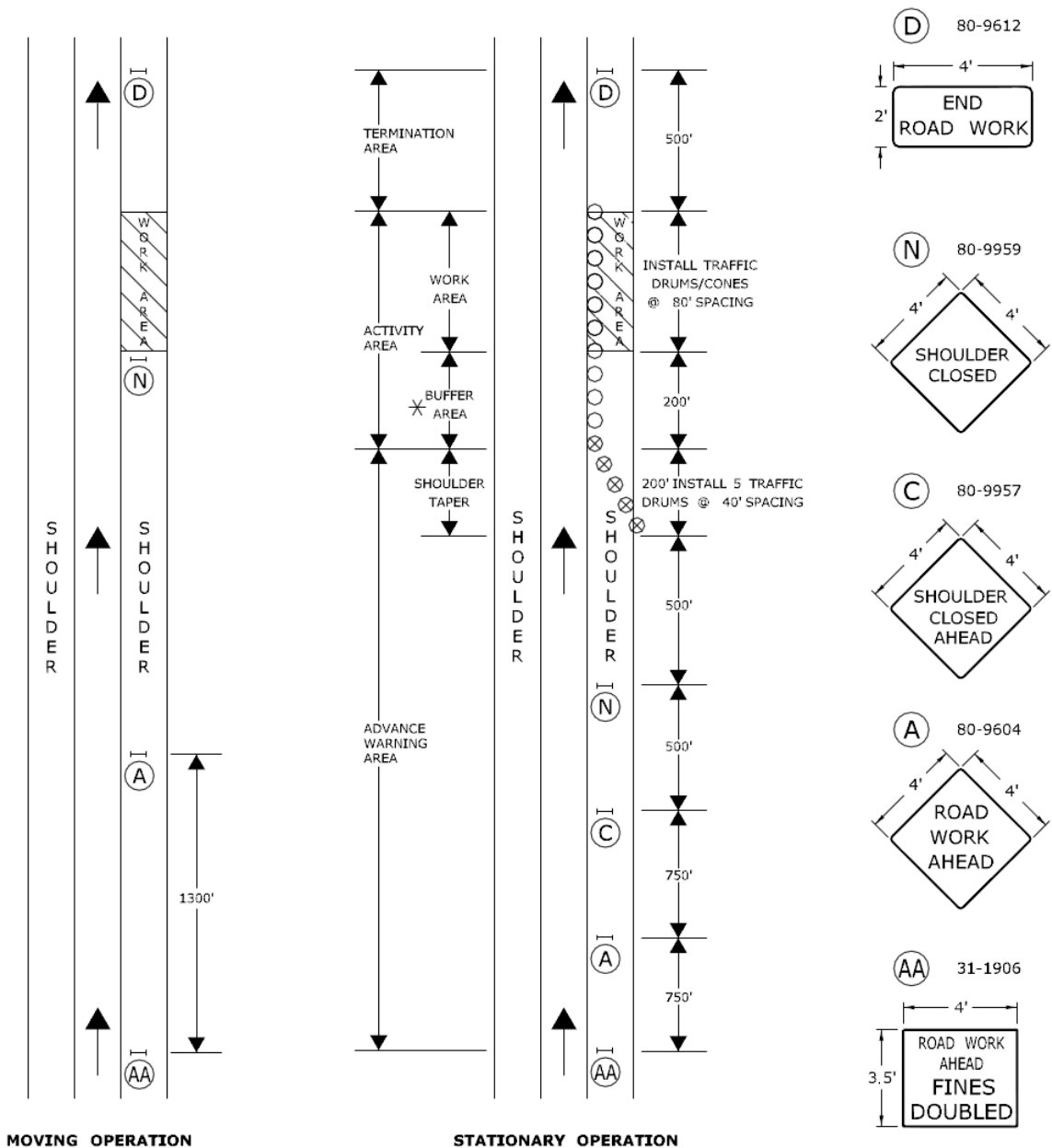
APPROVED

Charles S. Harlow
PRINCIPAL ENGINEER

Charles S. Harlow
2012.06.05 15:50:35-0400

WORK IN SHOULDER AREA - TURNING ROADWAYS / RAMPS

SIGN FACE
70 SQ. FT (MIN.)



- TRAFFIC CONE **OR** TRAFFIC DRUM
- * OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ◀ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



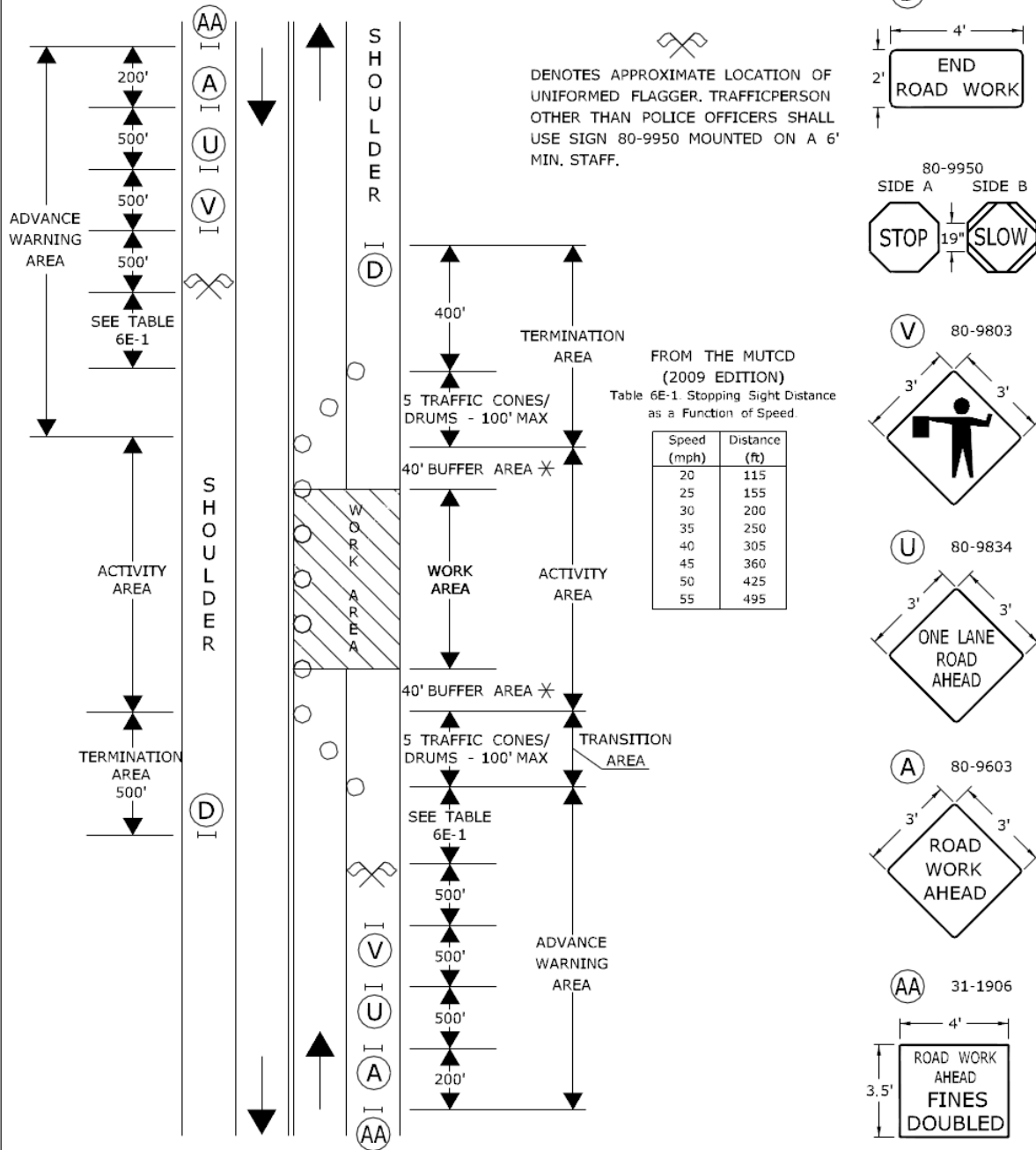
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 9
SEE NOTES 1, 2, 4, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:53:0400'

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* 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

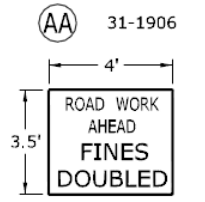
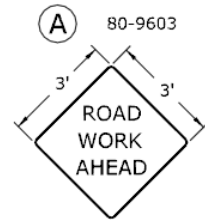
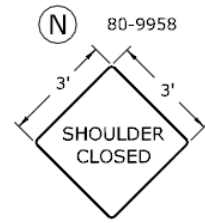
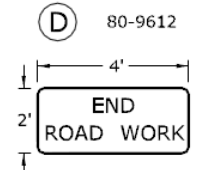
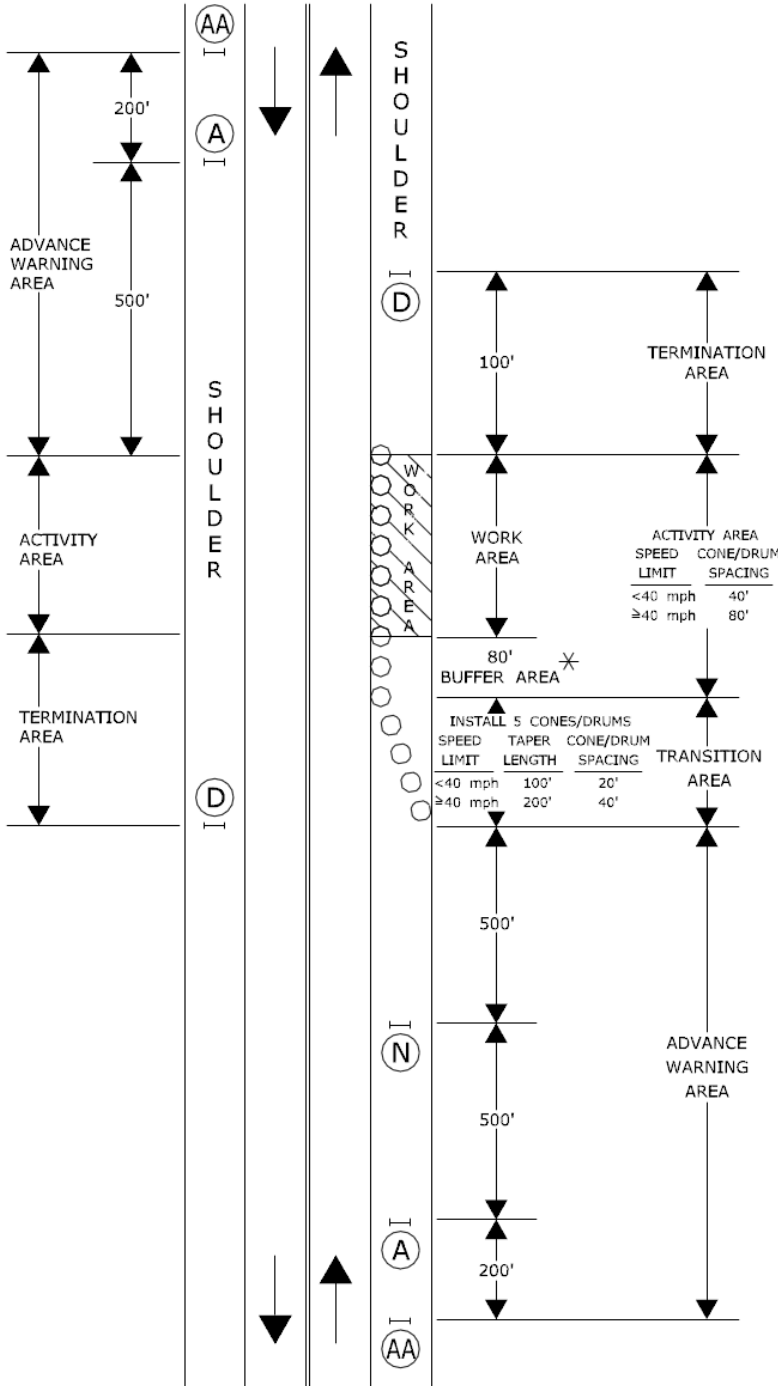
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13 - SHEET 2 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER Charles S. Harlow
2012.06.05 15:55:45-04'00'

WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE
71 SQ. FT (MIN.)



SPEED LIMIT	CONE/DRUM SPACING
<40 mph	40'
≥40 mph	80'

SPEED LIMIT	TAPER LENGTH	CONE/DRUM SPACING
<40 mph	100'	20'
≥40 mph	200'	40'

- TRAFFIC CONE **OR** TRAFFIC DRUM
- * OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW



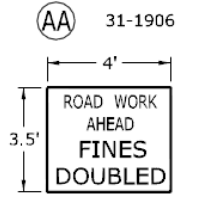
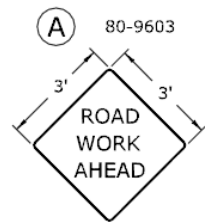
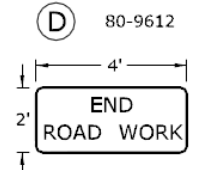
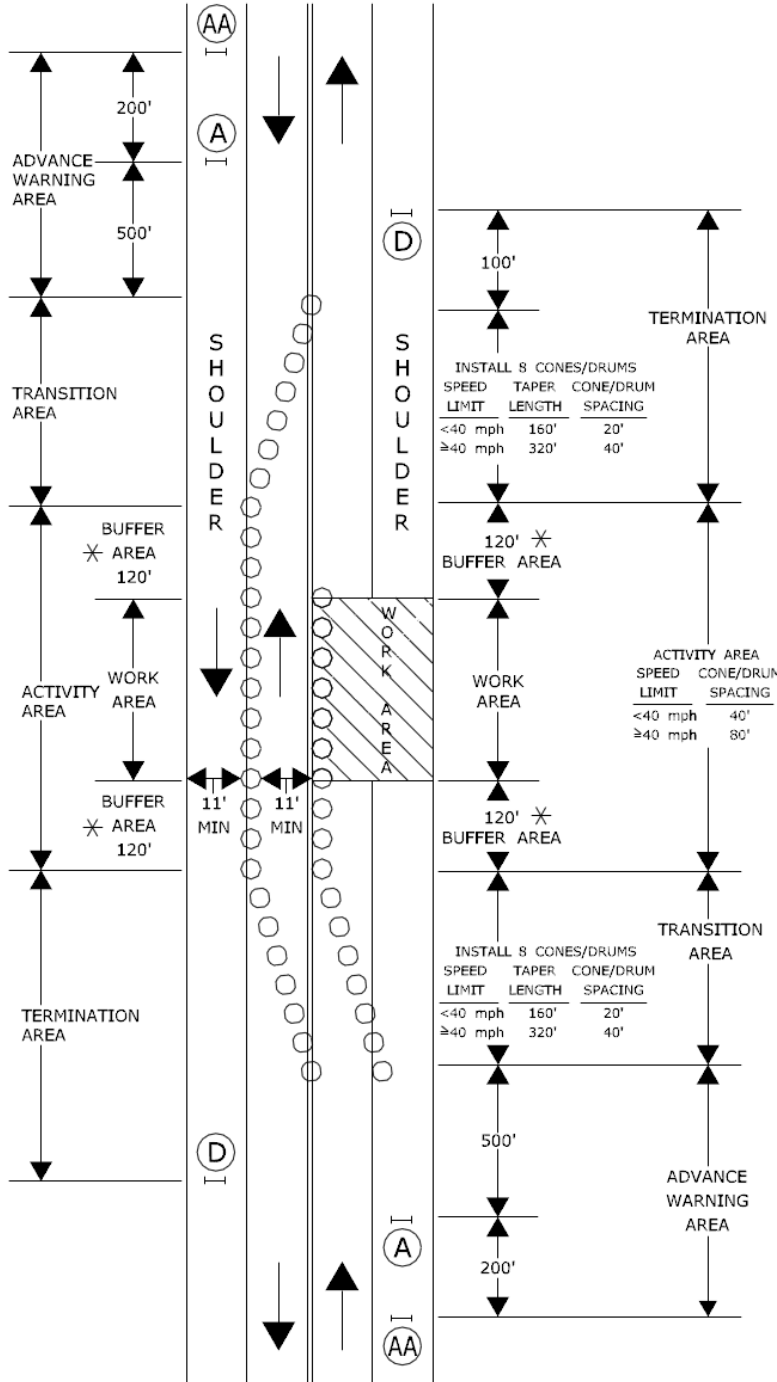
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 14
SEE NOTES 1, 2, 4, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
Charles S. Harlow
2012.08.05 15:56:09-04'00"

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

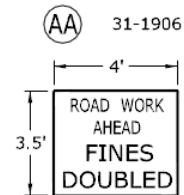
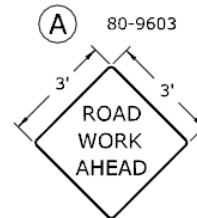
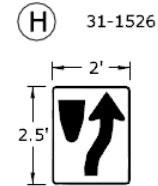
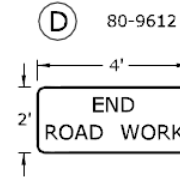
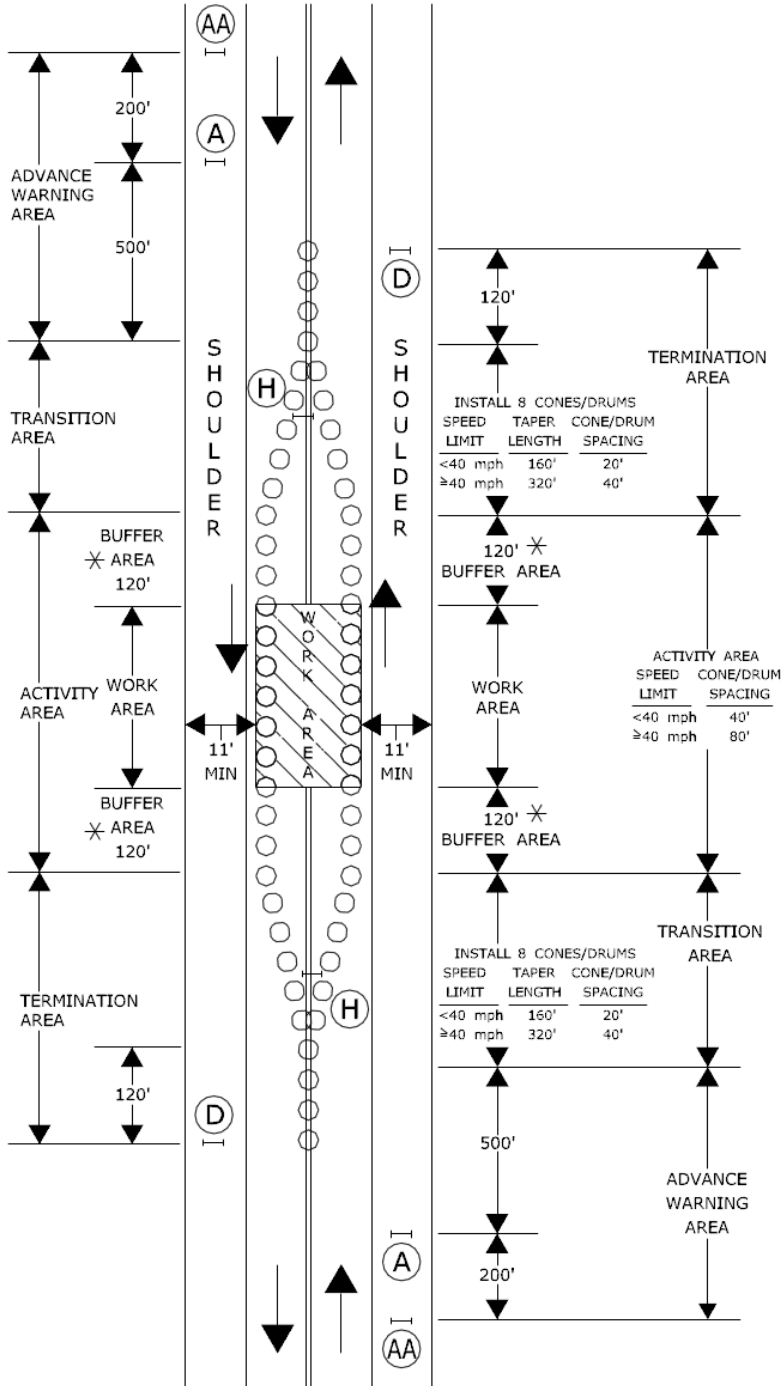
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 15
SEE NOTES 1, 2, 4, 6, 7, 8

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.)



INSTALL 8 CONES/DRUMS

SPEED LIMIT	TAPER LENGTH	CONE/DRUM SPACING
<40 mph	160'	20'
≥40 mph	320'	40'

120' *
BUFFER AREA

ACTIVITY AREA

SPEED LIMIT	CONE/DRUM SPACING
<40 mph	40'
≥40 mph	80'

120' *
BUFFER AREA

INSTALL 8 CONES/DRUMS

SPEED LIMIT	TAPER LENGTH	CONE/DRUM SPACING
<40 mph	160'	20'
≥40 mph	320'	40'

- 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

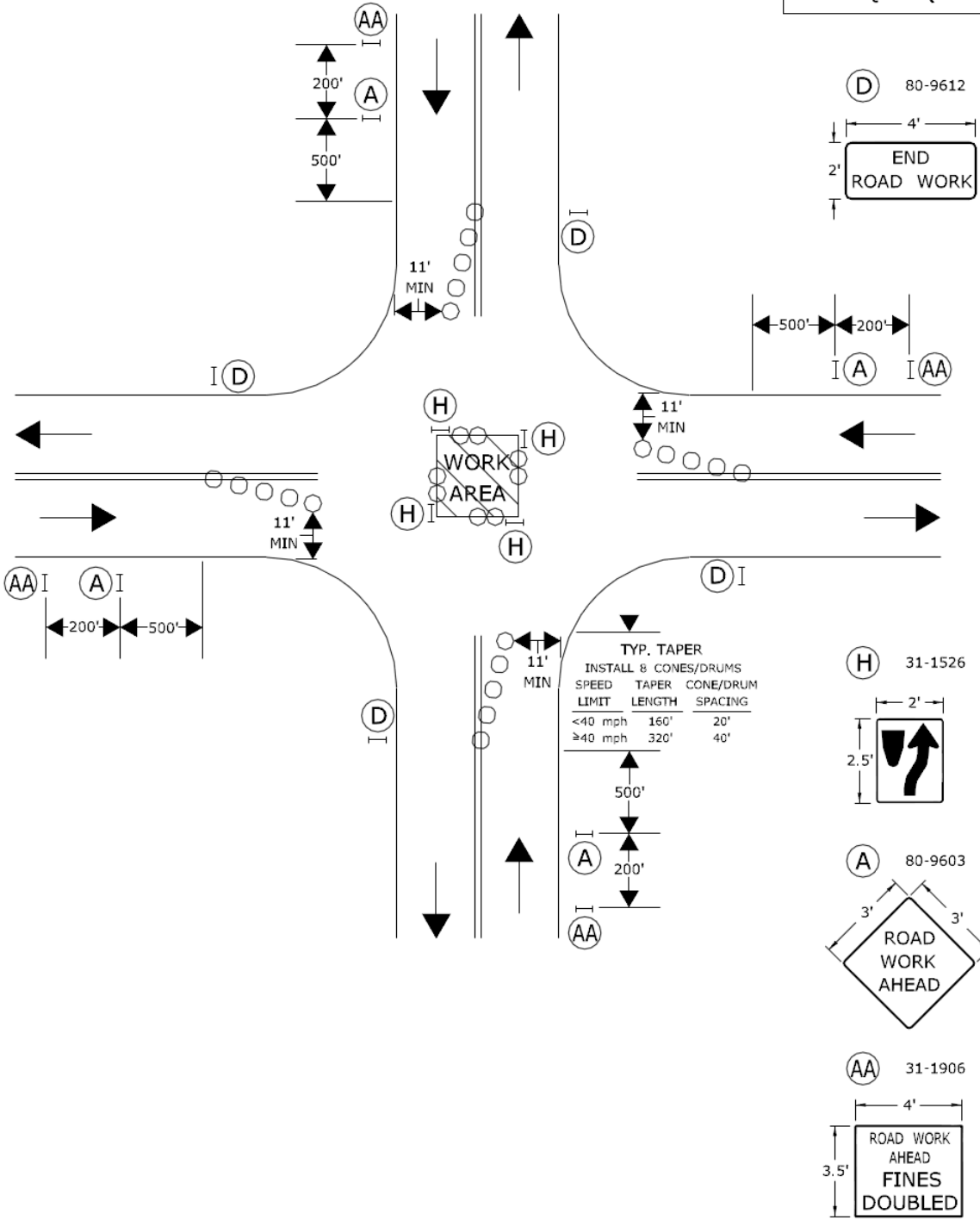
APPROVED

Charles S. Harlow
PRINCIPAL ENGINEER

Charles S. Harlow
2012.08.05 15:56:51-04'00"

WORK IN MIDDLE OF ROADWAY AT INTERSECTION

SIGN FACE
144 SQ. FT. (MIN.)



TYP. TAPER
INSTALL 8 CONES/DRUMS

SPEED LIMIT	TAPER LENGTH	CONE/DRUM SPACING
<40 mph	160'	20'
≥40 mph	320'	40'

- TRAFFIC CONE **OR** TRAFFIC DRUM
- * OPTIONAL ⊗ TRAFFIC DRUM — PORTABLE SIGN SUPPORT
- ← HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

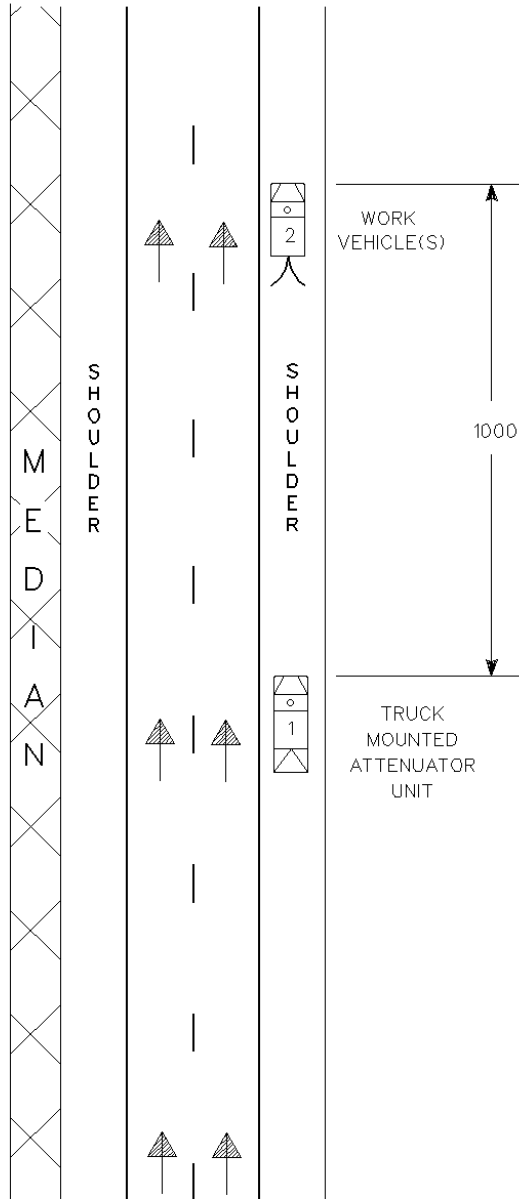


CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 17
SEE NOTES 1, 2, 4, 6, 7, 8

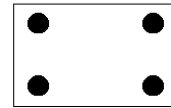
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED *Charles S. Harlow*
PRINCIPAL ENGINEER
2012.08.05 15:57:16-04'00"

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

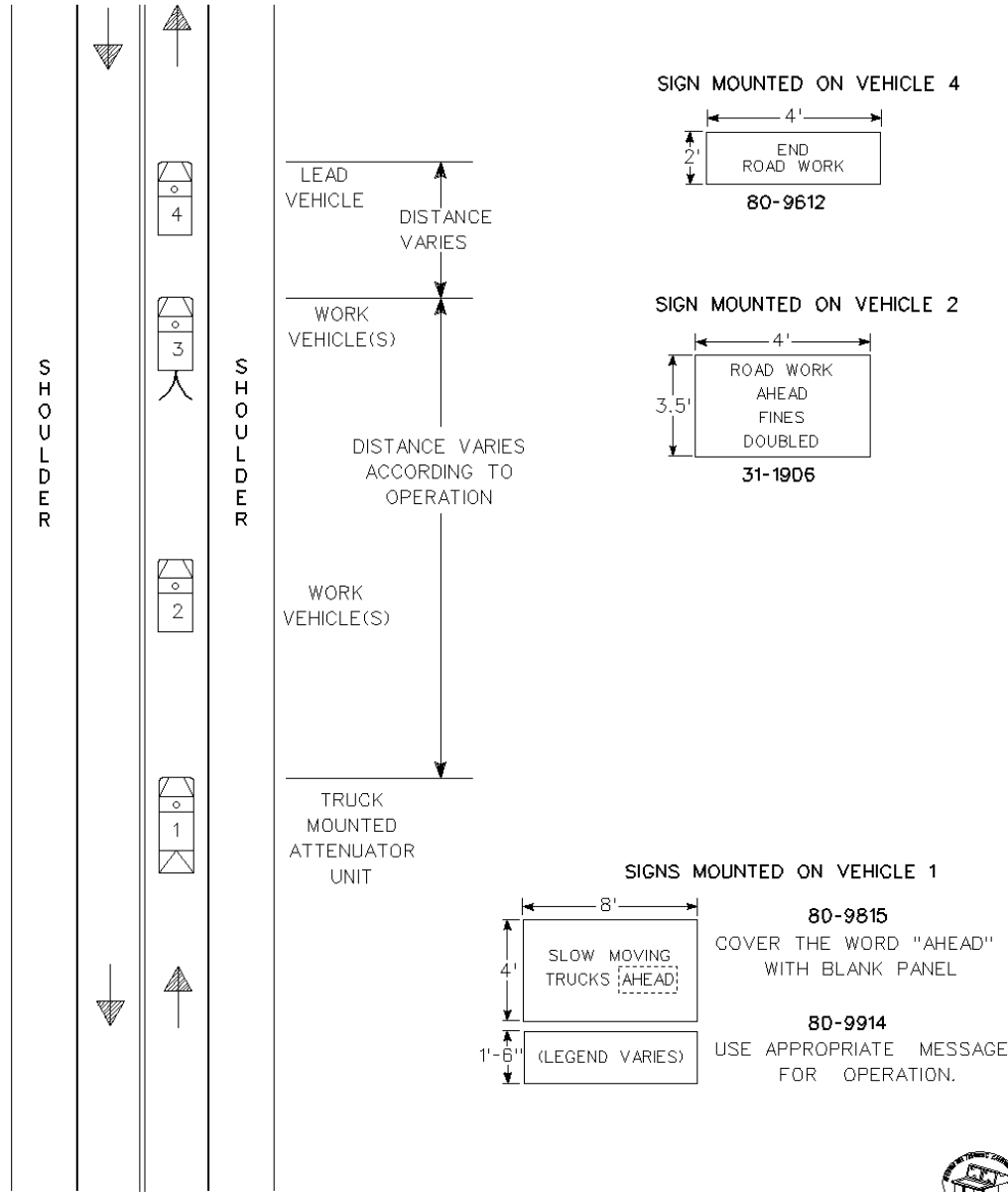


CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING &
HIGHWAY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

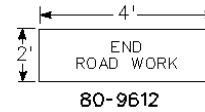
CONSTRUCTION
TRAFFIC CONTROL PLAN
PLAN 19
SCALE NONE

APPROVED J. McCall DATE 1-30-02
PRINCIPAL ENGINEER

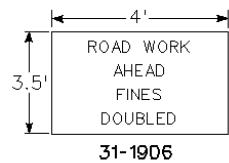
MOVING OPERATION TWO LANE HIGHWAY



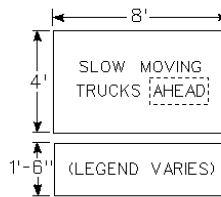
SIGN MOUNTED ON VEHICLE 4



SIGN MOUNTED ON VEHICLE 2



SIGNS MOUNTED ON VEHICLE 1



80-9815
COVER THE WORD "AHEAD"
WITH BLANK PANEL

80-9914
USE APPROPRIATE MESSAGE
FOR OPERATION.

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 temporary relocation of signs and supports, and the furnishing, installation and removal of any temporary supports shall be paid for under the item "Maintenance and Protection of Traffic."

The cost of furnishing, installing, and removing the material for the 4H:1V traversable slope shall be paid for under the item "Maintenance and Protection of Traffic."

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 commercial and residential 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.

ITEM #0981101A - OPPOSING TRAFFIC LANE DIVIDER

Article 9.81.01 - Description:

This item shall include furnishing, installing, resetting, and removing Opposing Traffic Lane Dividers. Opposing Traffic Lane Dividers will be used to separate opposing traffic on a two-lane two-way roadway. The legend on the divider shall be two opposing arrows.

The Opposing Traffic Lane Divider shall meet the requirements of Federal Highway Administration's Strategic Highway Research Program (SHRP). The Opposing Traffic Lane Divider shall be 12 inch wide by 18 inch high sign panels mounted back to back on a flexible support post. The post shall be mounted to a base.

A series of these devices shall be placed on the center line of a temporary two-way operation. The support shall be designed to recover automatically to a vertical position if struck by a vehicle.

The opposing Traffic Lane Divider is covered in Section 6F.76 of the Manual on Uniform Traffic Control Devices (2009 Edition).

Article 9.81.02 - Materials:

- 1) Panel - The vertical panel shall be constructed of a flexible material resistant to ultraviolet light, ozone and hydrocarbons. The surface shall be smooth and suitable for adherence of appropriate retroreflective sheeting. The retroreflective sheeting shall be Type IV retroreflective sheeting in accordance with Section M.18.09.
- 2) Support Post - The support post shall be made of a material resistant to ultraviolet light, ozone, and hydrocarbons. The post shall have sufficient stiffness to remain rigid in windy conditions. The support shall be designed to recover automatically to a vertical position or manually restored (when fastened to the roadbed), if struck by a vehicle.
- 3) Base - The base shall consist of a metal ballast plate fastened to a rubber base. For long-term use, the metal ballast plate can be fastened directly to the roadbed. When fastened to the roadbed, the post will need to be manually reset when hit. The base shall meet the requirements of the Federal Highway Administration's Strategic Highway Research Program (SHRP).

Article 9.81.03 - Construction Methods:

The Opposing Traffic Lane Dividers shall be spaced every 30 feet apart or as directed by the Engineer. The Contractor shall insure that the devices are kept clean and bright. Any devices that are missing, damaged, or defaced so that they are not effective, as determined by the Engineer and in accordance with the American Traffic Safety Services Association (ATSSA) guidelines contained in "Quality Standards for Work Zone Traffic Control Devices", shall be replaced by the Contractor at no cost to the State. When no longer required, they shall remain the property of the Contractor.

Article 9.81.04 - Method of Measurement:

This work will be measured for payment by the number of opposing traffic lane dividers furnished, installed and accepted on the project. Replacement devices shall not be measured for payment. Devices relocated to a different location in accordance with the Engineer shall not be measured.

Article 9.81.05 - Basis of Payment:

This work will be paid for at the contract unit price each for "Opposing Traffic Lane Divider" which price shall include all materials, equipment, tools, labor and work incidental to furnishing, installing, maintaining and removing the units.

ITEM# 1008908A - CLEAN EXISTING CONDUIT

Description:

Clean existing conduit as required, as shown on the plans or as directed by the Engineer to remove dirt and debris to facilitate the installation of new cable.

Construction Methods:

Where cable is to be installed in existing conduit the conduit may have to be cleared prior to the installation. Cleaning will only be necessary if the new cable cannot be easily installed in the existing conduit. By field inspection, and with the concurrence of the Engineer, determine the sections of conduit that require cleaning.

Remove all existing cable from conduit. Install temporary cable elsewhere, as necessary, to maintain normal signalization complete with vehicle & pedestrian detection, EVPS, and coordination. Clean the conduit by one of the following methods:

- 1) Rodding.
- 2) A high pressure jet spray, or air pressure.
- 3) By pulling a mandrel or ball through the conduit.

Submit in writing the anticipated method of cleaning the conduit to the Engineer for approval prior to cleaning any conduit.

If the conduit is found damaged to any extent that the cleaning process will not clear the obstruction, it will be the judgment of the Engineer whether to replace the entire conduit run or excavate and replace only the damaged section.

If the existing conduit is found to be missing hardware such as bonding bushings and bond wire, the missing material shall be provided and installed under this item prior to installation of the cable.

Method of Measurement:

This work shall be measured from termination point to termination point. This work shall be measured for payment on actual number of linear feet (meters).

Basis of Payment:

The work under the Item "Clean Existing Conduit" shall be paid for at the contract unit price per linear foot (meters), which price shall include all material, tools, equipment, labor, and work incidental thereto. Work pertaining to temporary operation shall be paid for under Item 1108xxxxA - Temporary Signalization (Site X). Replacement of any damaged conduit shall be paid for under the applicable conduit item.

Pay Item
Clean Existing Conduit

Pay Unit
LF

ITEM #1010060A – CLEAN EXISTING CONCRETE HANDHOLE

DESCRIPTION:

Clean all debris from an existing concrete handhole where shown on the plans or as directed.

MATERIAL:

Insulated Bonding Bushings:
 Specification Grade
 Threaded
 Malleable Iron or Steel
 Galvanized
 UL listed
Bonding Wire:
 M.15.13
Grout:
 M.03.05

CONSTRUCTION METHODS:

Remove to a level even with the bottom of the handhole all sand, silt and other debris. Remove any material that is accessible from the ends of conduit. Additional conduit cleaning will be paid for under Item 1008908A-Clean Existing Conduit. Place approximately 4" (100) of ¾" (19) crushed stone in bottom of handhole using care not to allow crushed stone to enter conduits. Grout around conduits to prevent future entrance of dirt and silt. Properly dispose all removed debris. Inspect bonding bushings. Tighten loose bushings. Secure loose bond connections. Install new bonding bushings on spare conduits and bond to other conduits.

METHOD OF MEASUREMENT:

This work will be measured for payment by the number of concrete handholes cleaned, complete and accepted.

BASES OF PAYMENT:

This work will be paid for at the contract unit price each for "Clean Existing Concrete Handhole", which price shall include the removal and disposal of debris from handhole and associated conduit, crushed stone, grout, bonding bushings, bonding wire, and all equipment and work incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Clean Existing Concrete Handhole	Each (Ea)

ITEM # 1108163A - MODIFY EXISTING CONTROLLER

Description:

This item shall consist of modifying the existing traffic controller assembly to provide the revised operation as shown on the plans or as directed by the Engineer. The modification shall include, but not be limited to, revisions to the timing and sequence, cabinet wiring, coordination, pre-emption, field wiring and cabinet wiring diagrams.

Materials:

The material for this work shall conform to the requirements of the current edition of the Connecticut Department of Transportation Functional Specifications for Traffic Control Equipment. The material shall be compatible with the existing equipment. Any material in question shall be approved prior to installation by the Engineer or the Department of Transportation Signal Lab, 280 West Street, Rocky Hill. Contact Mr. Don Assard at (860) 258-0346 or Mr. Mark Zampini at (860) 258-0349 for approval.

Construction Methods:

All revisions to the cabinet wiring shall be neat and orderly. All additional wiring shall be from terminal to terminal. Splices will not be allowed. All changes, additions and deletions shall be documented, dated and drawn on the reproducible original or a reproducible copy of the original cabinet wiring diagram. Four paper copies shall be furnished to the Engineer upon completion of the revision.

Method of Measurement:

This item will be measured for payment as an "Each" item.

Basis of Payment:

This item will be paid for at the contract price each, for "Modify Existing Controller" which price shall include all necessary load switches, relays, components, hardware, tools, equipment, engineering and labor required to modify the existing controller as shown on the plan. This price shall also include four updated cabinet wiring diagrams.

<u>Pay Item</u>	<u>Pay Unit</u>
Modify Existing Controller	Ea.

ITEM NO. 1111201A – TEMPORARY DETECTION (SITE NO. 1)

Description:

Provide a Temporary Detection (TD) system at signalized intersections throughout the duration of construction, as noted on the contract plans or directed by the Engineer. TD is intended to provide an efficient traffic-responsive operation which will reduce unused time for motorists travelling through the intersection. A TD system shall consist of all material, such as pedestrian pushbutton, accessible pedestrian signal, conduit, handholes, cable, messenger, sawcut, loop amplifier, microwave detector, Video Image Detection System (VIDS), Self-Powered Vehicle Detector (SPVD), and any additional components needed to achieve an actuated traffic signal operation.

Materials:

Material used for TD is either owned by the Contractor and in good working condition, or existing material that will be removed upon completion of the contract. Approval by the Engineer is needed prior to using existing material that will be incorporated into the permanent installation. New material that will become part of the permanent installation is not included or paid for under TD.

Construction Methods:

The work for this item includes furnishing, installation, relocating, realigning, and maintaining the necessary detection systems as to provide vehicle and pedestrian detection during each phase of construction. If not shown on the plan, program the TD modes (pulse or presence) as the existing detectors or as directed by the Engineer. If the TD method (loops, SPVD, microwave, VIDS, pushbutton, or other) it may be the Contractor's choice. The method chosen for TD must be indicated on the TD Plan submission.

The traffic signal plan-of-record, if not in the controller cabinet will be provided upon request. Ensure the controller phase mode (recall, lock, non-lock) and phase timing are correct for the TD. Adjust these settings as needed or as directed by the Engineer.

At least 30 days prior to implementation of each phase of construction submit a TD proposal to the Engineer for approval. Submit the TD proposal at the same time as the Temporary Signalization plan. Indicate the following information for each intersection approach:

- Phase Mode
- Temporary Detection Method
- Area of Detection
- Detector Mode

Submit the proposed temporary phase timing settings and the TD installation schedule with the TD proposal. See the example below.

Example Proposed Temporary Detection and Timing

Site 1

Warren, Rt. 45 at Rt. 341, Location #149-201

Approach	Phase	Phase Mode	TD Method	Area of Detection	Det Mode
<i>Rt. 45 NB</i>	<i>2</i>	<i>Min Recall</i>	<i>VIDS</i>	<i>150' from Stop Bar</i>	<i>Pulse</i>
<i>Rt. 45 SB</i>	<i>2</i>	<i>Min Recall</i>	<i>SPVD</i>	<i>150' from Stop Bar</i>	<i>Pulse</i>
<i>Rt. 341</i>	<i>4</i>	<i>Lock</i>	<i>Microwave</i>	<i>30' from Stop Bar</i>	<i>Pulse</i>
<i>Rt. 341</i>	<i>4</i>	<i>Lock</i>	<i>Pushbutton</i>	<i>At SE & SW corners</i>	<i>n/a</i>

Temporary Phase Timing Settings:

Phase	Min	Ped	Ped Clr	Ext	Max 1	Max2	Yel	Red
<i>2</i>	<i>20</i>	<i>0</i>	<i>0</i>	<i>6</i>	<i>45</i>	<i>60</i>	<i>4</i>	<i>1</i>
<i>4</i>	<i>14</i>	<i>7</i>	<i>9</i>	<i>3</i>	<i>27</i>	<i>35</i>	<i>3</i>	<i>1</i>

Scheduled TD: *July 4, 2011* Site 2

Scotland, Rt. 14 at Rt. 97, Location #123-201

Approach	Phase	Phase Mode	TD Method	Area of Detection	Det Mode
<i>Rt. 15 WB Left Turn</i>	<i>1</i>	<i>Non-Lock</i>	<i>VIDS</i>	<i>5' in front to 10' Behind Stop Bar</i>	<i>Presence</i>
<i>Rt. 14 EB</i>	<i>2</i>	<i>Min Recall</i>	<i>Existing Loop</i>	<i>150' from Stop Bar</i>	<i>Pulse</i>
<i>Ped Phase</i>	<i>3</i>	<i>Non-Lock</i>	<i>Pushbutton</i>	<i>At all corners</i>	<i>n/a</i>
<i>Rt. 14 WB</i>	<i>6</i>	<i>Min Recall</i>	<i>VIDS</i>	<i>150' from Stop Bar</i>	<i>Pulse</i>
<i>Rt. 97</i>	<i>4</i>	<i>Lock</i>	<i>Loop, Pre- formed</i>	<i>20' from Stop Bar</i>	<i>Pulse</i>

Temporary Phase Timing Settings:

Phase	Min	Ped	Ped Clr	Ext	Max 1	Max2	Yel	Red
<i>1</i>	<i>5</i>	<i>0</i>	<i>0</i>	<i>2</i>	<i>12</i>	<i>18</i>	<i>3</i>	<i>0</i>
<i>2 & 6</i>	<i>24</i>	<i>0</i>	<i>4</i>	<i>4</i>	<i>26</i>	<i>36</i>	<i>4</i>	<i>1</i>
<i>3</i>	<i>16</i>	<i>7</i>	<i>9</i>	<i>0</i>	<i>16</i>	<i>16</i>	<i>4</i>	<i>1</i>
<i>4</i>	<i>14</i>	<i>7</i>	<i>9</i>	<i>3</i>	<i>27</i>	<i>35</i>	<i>3</i>	<i>1</i>

Scheduled TD: *July 4, 2011*

When at any time during construction the existing vehicle or pushbutton detection becomes damaged, removed, or disconnected, install TD to actuate the affected approaches. Install and

make TD operational prior to removing existing detection. TD must be operational throughout all construction phases.

Provide a list of telephone numbers of personnel who will be responsible for the TD to the Engineer. If the TD malfunctions or is damaged, notify the Engineer and place the associated phase on max recall. Respond to TD malfunctions by having a qualified representative at the site within three (3) hours. Restore detection to the condition prior to the malfunction within twenty-four (24) hours.

If the Engineer determines that the nature of a malfunction requires immediate attention and the Contractor does not respond within three (3) hours following the initial contact, then an alternative maintenance service will be called to restore TD. Expenses incurred by the State for alternative service will be deducted from monies due to the Contractor with a minimum deduction of \$500.00 for each service call. The alternate maintenance service may be the traffic signal owner or another qualified Contractor.

TD shall be terminated when the detection is no longer required. This may be either when the temporary signal is taken out of service or when the permanent detectors are in place and fully operational.

Any material and equipment supplied by the Contractor specifically for TD shall remain the Contractor's property. Existing material not designated as scrap or salvage shall become the property of the Contractor. Return and deliver to the owner all existing equipment used as TD that is removed and designated as salvage.

Method of Measurement:

Temporary Detection will be paid only once per site as a percentage of the contract Lump Sum price. Fifty percent (50%) will be paid when Temporary Detection is initially set up, approved, and becomes fully operational, and fifty percent (50%) will be paid when Temporary Detection terminates and all temporary equipment is removed to the satisfaction of the Engineer.

Basis of Payment:

This work will be paid at the contract Lump Sum price for "Temporary Detection (Site No.)". The price includes furnishing, installing, relocating, realigning, maintaining, and removing, the necessary detection systems and all incidental material, labor, tools, and equipment. This price also includes any detector mode setting changes, timing or program modifications to the controller that are associated with TD. All Contractor supplied material that will remain the Contractor's property will be included in the contract Lump Sum price for "Temporary Detection (Site No.1)." Any items installed for TD that will become part of the permanent installation will not be paid for under this item but are paid for under the bid item for that work.

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Detection (Site No.1)	L. S.

ITEM #1113201A – REMOVAL OF FIRE ALARM CABLE

Description:

The work under this section shall consist of removal of the existing Borough of Naugatuck fire alarm cables from pole SNET #4105 to pole SNET #2674 (STA. 36+41 to STA. 45+63) on Cross Street.

Construction Methods:

Prior to the removal of the fire alarm cables from the utility poles, the Contractor shall contact Ellen Murray of the Borough of Naugatuck Fire Department (203) 720-7085 (Email: emurray@naugatuck-ct.gov) to coordinate its removal. The cable(s) shall be marked and limits of removal shall be confirmed by the Borough of Naugatuck Fire Department prior to removal.

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 item shall be at the contract lump sum price for “Removal of Fire Alarm Cable” complete and in place, which price shall include all material, equipment, tools, and labor incidental thereto.

Pay Item

Pay Unit

Removal of Fire Alarm Cable

LS

ITEM#1118012A - REMOVAL AND/OR RELOCATION OF TRAFFIC SIGNAL EQUIPMENT

Section 11.18: Replace the entire section with the following:

11.18.01 – Description:

Remove all abandon traffic signal equipment. Restore the affected area. Where indicated on the plans remove and reinstall existing traffic signal equipment to the location(s) shown.

11.18.02 – Materials:

The related sections of the following specifications apply to all incidental and additional material required for the proper relocation of existing equipment and the restoration of any area affected by this work.

- Division III, “Materials Section” of the Standard Specifications.
- Current Supplemental Specifications to the Standard Specifications.
- Applicable Special Provisions to the Standard Specifications.
- Current Department of Transportation, Functional Specifications for Traffic Control Equipment.

Article 11.18.03 - Construction Methods:

Schedule/coordinate the removal and/or relocation of existing traffic signal equipment with the installation of new equipment to maintain uninterrupted traffic signal control. This includes but is not limited to vehicle signals and detectors, pedestrian signals and pushbuttons, co-ordination, and pre-emption.

Abandoned Equipment

The contract traffic signal plan usually does not show existing equipment that will be abandoned. Consult the existing traffic signal plan for the location of abandoned material especially messenger strand, conduit risers, and handholes that are a distance from the intersection. A copy of the existing plan is usually in the existing controller cabinet. If not, a plan is available from the Division of Traffic Engineering upon request.

Unless shown on the plans it is not necessary to remove abandoned conduit in-trench and conduit under-roadway

When a traffic signal support strand, rigid metal conduit, down guy, or other traffic signal equipment is attached to a utility pole, secure from the pole custodian permission to work on the pole. All applicable Public Utility Regulatory Authority (PURA) regulations and utility company requirements govern. Keep utility company apprised of the schedule and the nature of the work.

Remove all abandoned hardware, conduit risers, and down guys, Remove anchor rods, to 6” (150mm) below grade.

When underground material is removed, backfill the excavation with clean fill material. Compact the fill to eliminate settling. Remove entirely the following material: pedestal foundation; controller foundation; handhole; pressure sensitive vehicle detector complete with concrete base. Unless otherwise shown on the plan, remove steel pole and mast arm foundation to a depth of 2 feet (600mm) below grade. Restore the excavated area to a grade and condition compatible with the surrounding area.

- If in an unpaved area apply topsoil and establish turf in accordance with Section 9.44 and Section 9.50 of the Standard Specifications.
- If in pavement or sidewalk, restore the excavated area in compliance with the applicable Sections of Division II, “Construction Details” of the Standard Specifications.

Relocated Equipment

In the presence of the Engineer, verify the condition of all material that will be relocated and reused at the site. Carefully remove all material, fittings, and attachments in a manner to safeguard parts from damage or loss. Replace at no additional cost, all material which becomes damaged or lost during removal, storage, or reinstallation.

Article 11.18.04 – Method of Measurement:

This work will be measured as a Lump Sum.

Article 11.18.05 – Basis of Payment:

This work will be paid for at the contract lump sum price for “Removal and/or Relocation of Traffic Signal Equipment” which price shall include relocating signal equipment and associated hardware, all equipment, material, tools and labor incidental thereto. This price shall also include removing, loading, transporting, and unloading of signal equipment/materials designated for salvage and all equipment, material, tools and labor incidental thereto. This price shall also include removing and disposing of traffic signal equipment not to be salvaged and all equipment, material, tools and labor incidental thereto.

Payment is at the contract lump sum price for “Removal and/or Relocation of Traffic Signal Equipment” inclusive of all labor, vehicle usage, storage, and incidental material necessary for the complete removal of abandoned equipment/material and/or relocation of existing traffic signal equipment/material. Payment will also include the necessary labor, equipment, and material for the complete restoration of all affected areas.

A credit will be calculated and deducted from monies due the Contractor equal to the listed value of salvage material not returned or that has been damaged and deemed unsalvageable due to the Contractor’s operations.

<u>Pay Item</u>	<u>Pay Unit</u>
Removal and/or Relocation of Traffic Signal Equipment	L.S.

ITEM NO. 1118051A – TEMPORARY SIGNALIZATION (SITE NO. 1)

Description:

Provide Temporary Signalization (TS) at the intersections shown on the plans or as directed by the Engineer.

1. Existing Signalized Intersection: Keep each traffic signal completely operational at all times during construction through the use of existing signal equipment, temporary signal equipment, new signal equipment, or any combination thereof once TS has started as noted in the section labeled Duration.

2. Unsignalized Intersection: Provide TS during construction activities and convert the temporary condition to a permanent traffic signal upon project completion. Furnish, install, maintain, and relocate equipment to provide a complete temporary traffic signal, including but not limited to the necessary support structures, electrical energy, vehicle and pedestrian indications, vehicle and pedestrian detection, pavement markings, and signing.

Materials:

- Pertinent articles of the Standard Specifications
- Supplemental Specifications and Special Provisions contained in this contract

Construction Methods:

Preliminary Inspection

In the presence of the Engineer and a representative from the DOT Electrical Maintenance Office (Town representative for a Town owned signal), inspect and document the existing traffic signal's physical and operational condition prior to Temporary Signalization. Include but do not limit the inspection to the following:

- Controller Assembly (CA)
 - Controller Unit (CU)
 - Detection Equipment
 - Pre-emption Equipment
 - Coordination Equipment
- Vehicle and Pedestrian Signals
- Vehicle and Pedestrian Detectors
- Emergency Vehicle Pre-emption System (EVPS) *
- Interconnect Cable and Splice Enclosures
- Support Structures
- Handholes, Conduit and Cable

It may be necessary to repair or replace equipment that is missing, damaged, or malfunctioning. Develop a checklist of items for replacement or repair after the inspection. If authorized by the Engineer, this work will be considered "Extra Work" under Article 1.09.04.

* At a State owned signal the EVPS equipment is usually owned by the municipality. It is recommended to apprise the municipality of the inspection schedule and results.

TS Plan

At least 30 days prior to implementation of each stage, submit a 1:40 (1:500 metric) scale TS plan for each location to the Engineer for review and comment. Include but do not limit the plan to the following:

- Survey Ties
- Dimensions of Lanes, Shoulders, and Islands
- Slope Limits
- Clearing and Grubbing Limits
- Signal Phasing and Timing
- Location of Signal Appurtenances such as Supports, Signal Heads, Pedestrian Push buttons, Pedestrian Signals
- Location of Signing and Pavement Markings (stop bars, lane lines, etc.)
- Location, method, and mode of Temporary Detection

Review of the TS plan does not relieve the Contractor of ensuring the TS meets the requirements of the MUTCD. A copy of the existing traffic signal plan for State-owned traffic signals is available from the Division of Traffic Engineering upon request. Request existing traffic signal plans for Town-owned traffic signals from the Town. Do not implement the TS plan until all review comments have been addressed.

Earthwork

Perform the necessary clearing and grubbing and the grading of slopes required for the installation, maintenance, and removal of the TS equipment. After TS terminates restore the affected area to the prior condition and to the satisfaction of the Engineer.

Maintenance and Protection of Traffic

Furnish, install, maintain, relocate, and remove signal-related signing (lane-use, signal ahead, NTOR, etc.) and pavement markings as needed. Install, relocate, and/or remove equipment in a manner to cause no hazard to pedestrians, traffic or property. Maintain traffic as specified in the Special Provisions "Prosecution and Progress" and "Maintenance and Protection of Traffic."

Electrical Service and Telephone Service at Existing Signalized Intersections

If the electrical service or the telephone service source must be changed or relocated make all arrangements with the utility company and assume all charges. The party previously responsible for the monthly payment of service shall continue to be responsible during TS.

Electrical Service at Unsignalized Intersections

Assume all charges and make all arrangements with the power company, including service requests, scheduling, and monthly bills in accordance with Section 10.00.12 and Section 10.00.13 of the Standard Specifications. A metered service is recommended where TS equipment will be removed when no longer needed.

Temporary Signalization

Furnish, install, maintain, relocate, and remove existing, temporary, and proposed traffic signal equipment and all necessary hardware; modify or furnish a new CA; reprogram the CU

phasing and timing; as many times as necessary for each stage/phase of construction to maintain and protect traffic and pedestrian movements as shown on the plans or as directed by the Engineer.

Inspection

When requested by the Engineer, the TS will be subject to a field review by a representative of the Division of Traffic Engineering and/or the Town, which may generate additional comments requiring revisions to the temporary signal.

Detection

Provide vehicle detection on the existing, temporary, and/or new roadway alignment for all intersection approaches that have existing detection, that have detection in the final condition as shown on the signal plan, or as directed by the Engineer. Keep existing pedestrian pushbuttons accessible and operational at all times during TS. Temporary Detection is described and is paid for under Item # 1111201A - Temporary Detection (Site No. 1)

Emergency Vehicle Pre-emption System (EVPS)

Furnish, install, maintain, relocate, and remove the equipment necessary to keep the existing EVPS operational as shown on the plan. Do not disconnect or alter the EVPS without the knowledge and concurrence of the Engineer and the EVPS owner. Schedule all EVPS relocations so that the system is out of service only when the Contractor is actively working. Ensure EVPS is returned to service and is completely operational at the end of the work day. Keep the EVPS owner apprised of all changes to the EVPS.

Coordination

Furnish, install, maintain, relocate, and remove the equipment necessary to keep the intersection coordinated to adjacent signals as shown on the plan. Do not disconnect the interconnect without the approval of the Engineer.

- Closed Loop System: If it is necessary to disconnect the communication cable, notify the Engineer and the Bridgeport Operation Center (BOC) or the Newington Operation Center (NOC) prior to disconnect and also after it is reconnected.
- Time Base System: Program and synchronize all Time Clock/Time Base Coordination (TC/TBC) units as necessary.

Maintenance

Once TS is in effect, assume maintenance responsibilities of the entire installation in accordance with Section 1.07.12 of the Standard Specifications. Notify the Engineer for the project records the date that Temporary Signalization begins. Notify the following parties that maintenance responsibility has been transferred to the Contractor:

Signal Owner
CT DOT Electrical Maintenance Office or
Town Representative

Local Police Department

Provide the Engineer a list of telephone numbers of personnel who will be on-call during TS. Respond to traffic signal malfunctions by having a representative at the site within three hours from the initial contact. Within twenty-four (24) hours have the traffic signal operating according to plan.

If the Engineer determines that the nature of a malfunction requires immediate attention and/or the Contractor does not respond within three (3) hours, then an alternate maintenance service will be called to repair the signal. Expenses incurred by the alternate maintenance service for each call will be deducted from monies due to the Contractor with a minimum deduction of \$1,000. The alternate maintenance service may be the owner of the signal or another qualified electrical contractor.

Duration

Temporary Signalization shall commence when any existing signal equipment is disturbed, relocated, or altered based on the inspection checklist in any way for the TS.

For intersections with a State furnished controller, TS terminates when the inspection of the permanent signal is complete and operational and is accepted by the Engineer. For intersections with a Contractor furnished controller, Temporary Signalization terminates at the beginning of the 30 day test period for the permanent signal.

Ownership

Existing equipment, designated as salvage, remains the property of the owner. Salvable equipment will be removed and delivered to the owner upon completion of use. Temporary equipment supplied by the Contractor remains the Contractor's property unless noted otherwise.

Method of Measurement:

Temporary Signalization shall be paid only once per site on a percentage of the contract Lump Sum price. Fifty percent (50%) shall be paid when TS is operational as shown on the plan or to the satisfaction of the Engineer. Fifty percent (50%) shall be paid when TS terminates.

Basis of Payment:

This work shall be paid at the contract Lump Sum price for "Temporary Signalization (Site No.1)" for each site. This price includes the preliminary inspection, TS plan for each stage/phase, furnishing, installing, maintaining, relocating and revising traffic signal equipment, controller assembly modifications, controller unit program changes such as phasing and timing, removing existing, temporary, and proposed traffic signal equipment, arrangements with utility companies, towns or cities including the fees necessary for electric and telephone service, clearing and grubbing, grading, area restoration and all necessary hardware, materials, labor, and work incidental thereto.

All material and work for signing and pavement markings is paid for under the appropriate Contract items.

All material and work necessary for vehicle and pedestrian detection for TS is paid for under item 1111201A - Temporary Detection (Site No. 1).

All Contractor supplied items that will remain the Contractor's property shall be included in the contract Lump Sum price for "Temporary Signalization."

Any items installed as part of the permanent installation are not paid for under this item but are paid for under the bid item for that work.

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Signalization (Site No.1)	L.S.

ITEM NO. 1206023A - REMOVAL AND RELOCATION OF EXISTING SIGNS

Section 12.06 is supplemented as follows:

Article 12.06.01 – Description is supplemented with the following:

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

Article 12.06.03 – Construction Methods is supplemented with the following:

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

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

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

Article 12.06.04 – Method of Measurement is supplemented with the following:

Payment under Removal and Relocation of Existing Signs shall be at the contract lump sum price which shall include all extruded aluminum and sheet aluminum signs, sign posts, and sign supports designated for relocation, all new sign posts and associated hardware for signs designated for relocation, all extruded aluminum signs, sheet aluminum signs, sign posts and sign supports designated for scrap, and foundations and other materials designated for removal and disposal, and all work and equipment required.

Article 12.06.05 – Basis of Payment is supplemented with the following:

This work will be paid for at the contract lump sum price for “Removal and Relocation of Existing Signs” which price shall include relocating designated extruded aluminum and sheet aluminum signs, sign posts, and sign supports, providing new posts and associated hardware for relocated signs, removing and disposing of foundations and other materials, and all equipment, material, tools and labor incidental thereto. This price shall also include removing, loading, transporting, and unloading of extruded aluminum signs, sheet aluminum signs, sign posts, and sign supports designated for scrap and all equipment, material, tools and labor incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Removal and Relocation of Existing Signs	L.S.

ITEM #1208931A—SIGN FACE - SHEET ALUMINUM (TYPE IX RETROREFLECTIVE SHEETING)

ITEM #1208932A—SIGN FACE - SHEET ALUMINUM (TYPE IV RETROREFLECTIVE SHEETING)

Section 12.08 is supplemented and amended as follows:

12.08.01—Description:

Add the following:

This item shall also include field testing of metal sign base posts as directed by the Engineer.

12.08.03—Construction Methods:

Delete the last sentence and add the following:

Metal sign base posts shall be whole and uncut. Sign base post embedment and reveal lengths shall be as shown on the plans. The Contractor shall drive the metal sign base posts by hand tools, by mechanical means or by auguring holes. If an obstruction is encountered while driving or placing the metal sign base post, the Contractor shall notify the Engineer who will determine whether the obstruction shall be removed, the sign base post or posts relocated, or the base post installation in ledge detail shall apply. Backfill shall be thoroughly tamped after the posts have been set level and plumb.

Field Testing of Metal Sign Posts: When the sign installations are complete, the Contractor shall notify the Engineer the Project is ready for field testing. Based on the number of posts in the Project, the Engineer will select random sign base posts which shall be removed by the Contractor for inspection and measurement by the Engineer. After such inspection is completed at each base post location, the Contractor shall restore or replace such portions of the work to the condition required by the Contract. Refer to the table in 12.08.05 for the number of posts to be field tested.

12.08.04—Method of Measurement:

Add the following:

The work required to expose and measure sign base post length and embedment depth using field testing methods, and restoration of such work, will not be measured for payment and shall be included in the general cost of the work.

12.08.05—Basis of Payment:

Replace the entire Article with the following:

This work will be paid for at the Contract unit price per square foot for “Sign Face - Sheet Aluminum” of the type specified complete in place, adjusted by multiplying by the applicable Pay Factor listed in the table below. The price for this work shall include the completed sign, metal sign post(s), span-mounted sign brackets and mast arm-mounted brackets, mounting

hardware, including reinforcing plates, field testing, restoration and replacement of defective base post(s), and all materials, equipment, and work incidental thereto.

Pay Factor Scale: Work shall be considered defective whenever the base post length or base post embedment depth is less than the specified length by more than 2 inches. If the number of defects results in rejection, the Contractor shall remove and replace all metal sign base posts on the Project, at no cost to the Department.

Number of Posts to be Tested and Pay Factors (Based on Number of Defects)

Number of Posts in Project =>	51-100	101-250	251-1000	>1000
Sample Size=>	5 Posts	10 Posts	40 Posts	60 Posts
0 Defects	1.0	1.0	1.025	1.025
1 Defect	0.9	0.95	0.975	0.983
2 Defects	Rejection	0.9	0.95	0.967
3 Defects	Rejection	Rejection	0.925	0.95
4 Defects	Rejection	Rejection	0.9	0.933
5 Defects	Rejection	Rejection	Rejection	0.917
6 Defects	Rejection	Rejection	Rejection	0.9
7 or more Defects	Rejection	Rejection	Rejection	Rejection

Note: Projects with 50 or fewer posts will not include field testing.

ITEM #1403501A – RESET MANHOLE (SANITARY SEWER)

Description:

The work under this item shall consist of resetting sanitary sewer manholes to final grade, as shown on the plans or as directed by the Engineer. It shall also include the legal, off-site disposal of existing sanitary appurtenances and all surplus material. All work and materials shall be in accordance with the Borough of Naugatuck standards and the Standard Specifications, and to the satisfaction of the Engineer and the Borough of Naugatuck.

Materials:

Mortar, masonry units, grade rings, new frames and covers, resurfacing materials, any additional fill required and all other appurtenances shall comply with the Borough of Naugatuck standards and the Standard Specifications.

Construction Methods:

For resetting of manholes, the Contractor shall carefully excavate around the manhole, remove the frame, cover, and any risers or sections as necessary, adjust the grade with masonry units, grade rings, precast concrete sections, and mortar as necessary, reinstall frame and cover to final grade and refill the excavation. If the existing frame and grate are not acceptable because of their poor condition, as determined by the Engineer, the Contractor will install a new frame and cover.

Care shall be taken to prevent material from falling inside the manhole. Any debris or material which falls inside the manhole shall be removed by the Contractor. The excavated area around the manhole shall be filled with gravel or processed aggregate to conform to the plans and specifications, graded, compacted and prepared for paving.

Any damage done to sanitary sewer facilities by the Contractor shall be repaired or replaced by the Contractor at no extra cost to the project or the Borough of Naugatuck.

All work performed shall be in accordance with Borough of Naugatuck standards and the Standard Specifications, and to the satisfaction of the Engineer and the Borough of Naugatuck.

Method of Measurement and Basis of Payment:

This work will be measured for payment and paid for by the actual number of each sanitary manhole reset, “Reset Manhole (Sanitary Sewer)”, completed and accepted by the Engineer.

The price bid for “Reset Manhole (Sanitary Sewer)” shall include sawcutting, pavement removal, any additional fill required, grading, compaction, mortar, masonry units, grade rings, new frames and covers, and all materials, equipment, tools and labor incidental thereto.

Any material deemed unsuitable for refilling by the Engineer and any excess material shall be removed and disposed of by the contractor at no additional cost.

Pay Items
Reset Manhole (Sanitary Sewer)

Pay Unit
Ea.

ITEM # 170001A – SERVICE CONNECTIONS (ESTIMATED COST)

Description: This work shall consist of disconnection, alteration and reconnection of those existing utility services owned by property owners at locations necessary to complete this project and as ordered by the Engineer. This work shall include the coordination with the affected utility companies and customers. Any damage caused by the Contractor or Subcontractors, as determined by the Engineer, shall be corrected by the Contractor in accordance with this specification.

Materials: All materials shall be provided by the Contractor and shall meet the current standards of the affected service.

Construction Methods: The Contractor shall perform all work in coordination with the Utility Company and affected property owner and as directed by the Engineer. Certain work may require use of a licensed and/or certified tradesman when such work is required by local and/or state codes.

Any utility customer's service interruption shall be done in a way that minimizes adverse impacts to the customer and affected utility.

Any work and materials supplied by the utility companies shall be on a billable basis to the Contractor.

Method of Measurement: The work and materials shall be measured for payment as provided for under Article 1.04.05 Extra Work.

The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for this work will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figure will be disregarded and the original price will be used to determine the total amount for the contract.

Corrective work required to repair damage caused by the Contractor or its Subcontractors shall not be measured for payment.

Basis of Payment: This work will be paid as Extra Work.

Pay Item
Service Connections (Estimated Cost)

Pay Unit
Estimated Cost

GENERAL CONTRACT PROVISIONS

Schedule 1

SPECIAL PROVISIONS
DISADVANTAGED BUSINESS ENTERPRISES
FOR FEDERAL FUNDED PROJECTS

(For Municipal Advertised and Awarded Projects Only)

Revised – February 26, 2009

NOTE: Certain of the requirements and procedures stated in this special provision are applicable prior to the execution of the Contract document.

I. ABBREVIATIONS AND DEFINITIONS AS USED IN THIS SPECIAL PROVISION

- A. “CDOT” means the Connecticut Department of Transportation.
- B. “DOT” means the U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (“FHWA”), the Federal Transit Administration (“FTA”), and the Federal Aviation Administration (“FAA”).
- C. “Broker” means a party acting as an agent for others in negotiating contracts, agreements, purchases, sales, etc., in return for a fee or commission.
- D. “Contract,” “agreement” or “subcontract” means a legally binding relationship obligating a seller to furnish supplies or services (including, but not limited to, construction and professional services) and the buyer to pay for them. For the purposes of this provision a lease for equipment or products is also considered to be a Contract.
- E. “Contractor,” means a consultant, second party or any other entity doing business with CDOT or, as the context may require, with another Contractor.
- F. “Disadvantaged Business Enterprise” (“DBE”) means a small business concern:
 - 1. That is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock of which is owned by one or more such individuals; and
 - 2. Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.
- G. “DOT-assisted Contract” means any Contract between a recipient and a Contractor (at any tier) funded in whole or in part with DOT financial assistance, including letters of credit or loan guarantees.
- H. “Good Faith Efforts” means efforts to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement. Refer to Appendix A of 49 Code of Federal Regulation (“CFR”) Part 26 - “Guidance Concerning Good Faith Efforts,” a copy of which is attached to this provision, for guidance as to what constitutes good faith efforts.

- I. “Small Business Concern” means, with respect to firms seeking to participate as DBEs in DOT-assisted Contracts, a small business concern as defined pursuant to Section 3 of the Small Business Act and Small Business Administration (“SBA”) regulations implementing it (13 CFR Part 121) that also does not exceed the cap on average annual gross receipts specified in 49 CFR Part 26, Section 26.65(b).
- J. “Socially and Economically Disadvantaged Individuals” means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is -
 1. Any individual who CDOT finds on a case-by-case basis to be a socially and economically disadvantaged individual.
 2. Any individuals in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:
 - i. “Black Americans,” which includes persons having origins in any of the Black racial groups of Africa;
 - ii. “Hispanic Americans,” which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
 - iii. “Native Americans,” which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;
 - iv. “Asian-Pacific Americans,” which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kirbati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong;
 - v. “Subcontinent Asian Americans,” which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;
 - vi. Women;
 - vii. Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

II. GENERAL REQUIREMENTS

- A. The Contractor, sub-recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted Contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy, as the DOT deems appropriate.
- B. The Contractor shall cooperate with the Municipality, CDOT and DOT in implementing the requirements concerning DBE utilization on this Contract in accordance with Title 49 of the Code of Federal Regulations, Part 26 entitled “Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs” (“49 CFR Part 26”), as revised. The Contractor shall also cooperate with the Municipality, CDOT and DOT in reviewing the Contractor’s activities relating to this Special Provision. This Special Provision is

in addition to all other equal opportunity employment requirements of this Contract

- C. The Contractor shall designate a liaison officer who will administer the Contractor's DBE program. Upon execution of this Contract, the name of the liaison officer shall be furnished in writing to the Municipality.
- D. For the purpose of this Special Provision, DBEs to be used to satisfy the DBE goal must be certified by CDOT's Division of Contract Compliance for the type(s) of work they will perform.
- E. If the Contractor allows work designated for DBE participation required under the terms of this Contract and required under III-B to be performed by other than the named DBE organization without concurrence from the Municipality, the Municipality will not pay the Contractor for the value of the work performed by organizations other than the designated DBE.
- F. At the completion of all Contract work, the Contractor shall submit a final report to the Municipality, indicating the work done by, and the dollars paid to DBEs. If the Contractor does not achieve the specified Contract goals for DBE participation, the Contractor shall also submit written documentation to the Municipality, detailing its good faith efforts to satisfy the goal that were made during the performance of the Contract. Documentation is to include but not be limited to the following:
 - 1. A detailed statement of the efforts made to select additional subcontracting opportunities to be performed by DBEs in order to increase the likelihood of achieving the stated goal.
 - 2. A detailed statement, including documentation of the efforts made to contact and solicit bids/proposals with CDOT certified DBEs, including the names, addresses, dates and telephone numbers of each DBE contacted, and a description of the information provided to each DBE regarding the scope of services and anticipated time schedule of work items proposed to be subcontracted and nature of response from firms contacted.
 - 3. Provide a detailed statement for each DBE that submitted a subcontract proposal, which the Contractor considered not to be acceptable stating the reasons for this conclusion.
 - 4. Provide documents to support contacts made with CDOT requesting assistance in satisfying the Contract specified goal.
 - 5. Provide documentation of all other efforts undertaken by the Contractor to meet the defined goal.
- G. Failure of the Contractor at the completion of all Contract work to have at least the specified percentage of this Contract performed by DBEs as required in III-B will result in the reduction in Contract payments to the Contractor by an amount determined by multiplying the total Contract value by the specified percentage required in III-B and subtracting from that result, the dollar payments for the work actually performed by DBEs. However, in instances where the Contractor can adequately document or substantiate its good faith efforts made to meet the specified percentage to the satisfaction of the Municipality, no reduction in payments will be imposed.
- H. All records must be retained for a period of three (3) years following acceptance by the Municipality of the Contract and shall be available at reasonable times and places for inspection by authorized representatives of the Municipality, CDOT and Federal agencies. If any litigation, claim, or audit is started before the expiration of the three (3) year period, the records shall be retained until all litigation, claims, or audits findings involving the records are resolved.
- I. Nothing contained herein, is intended to relieve any Contractor or subcontractor or material supplier or manufacturer from compliance with all applicable Federal and State legislation or provisions concerning equal employment opportunity, affirmative action, nondiscrimination and related subjects during the term of this Contract

III. SPECIFIC REQUIREMENTS:

In order to increase the participation of DBEs, the Municipality requires the following

- A. The Contractor shall assure that certified DBEs will have an opportunity to compete for subcontract work on this Contract, particularly by arranging solicitations and time for the preparation of proposals for services to be provided so as to facilitate the participation of DBEs regardless if a Contract goal is specified or not.
- B. The DBE contact goal percentage for the Project is 10% Construction and N/A Construction Inspection. The goal shall be based upon the total contract value. Compliance with this provision may be fulfilled when a DBE or any combination of DBEs perform work under Contract in accordance with 49 CFR Part 26, Subpart C, Section 26.55, as revised. Only work actually performed by and/or services provided by DBEs which are certified for such work and/or services can be counted toward the DBE goal. Supplies and equipment a DBE purchases or leases from the prime Contractor or Its affiliate can not be counted toward the goal.

If the Contractor does not document commitments, by subcontracting and/or procurement of material and/or services that at least equal the goal, it must document the good faith efforts that outline the steps it took to meet the goal in accordance with VII.

- C. Within 7 days after the bid opening, the low bidder shall indicate in writing to the Municipality, on the forms provided, the DBE(s) it will use to achieve the goal indicated in III-B. The submission shall include the name and address of each DBE that will participate in this Contract, a description of the work each will perform, the dollar amount of participation, and the percentage this is of the bid amount. This information shall be signed by the named DBE and the low bidder. The named DBE shall be from a list of certified DBEs available from CDOT. In addition, the named DBE(s) shall be certified to perform the type of work they will be contracted to do.
- D. The prime Contractor shall submit to the Municipality all requests for subcontractor approvals on the standard forms provided by the Municipality.

If the request for approval is for a DBE subcontractor for the purpose of meeting the Contract DBE goal, a copy of the legal Contract between the prime and the DBE subcontractor must be submitted along with the request for subcontractor approval. Any subsequent amendments or modifications of the Contract between the prime and the DBE subcontractor must also be submitted to the Municipality with an explanation of the change(s). The Contract must show items of work to be performed, unit prices and, if a partial item, the work involved by all parties.

In addition, the following documents are to be attached:

1. An explanation indicating who will purchase material.
 2. A statement explaining any method or arrangement for renting equipment. If rental is from a prime, a copy of the rental Agreement must be submitted.
 3. A statement addressing any special arrangements for manpower.
- E. The Contractor is required, should there be a change in a DBE they submitted in III-C, to submit documentation to the Municipality which will substantiate and justify the change, (i.e., documentation to provide a basis for the change for review and approval by the Municipality) prior to the implementation of the change. The Contractor must demonstrate that the originally named DBE

is unable to perform in conformity to the scope of service or is unwilling to perform, or is in default of its Contract, or is overextended on other jobs. **The Contractor's ability to negotiate a more advantageous agreement with another subcontractor is not a valid basis for change.** Documentation shall include a letter of release from the originally named DBE indicating the reason(s) for the release.

- F. Contractors subcontracting with DBEs to perform work or services as required by this Special Provision shall not terminate such firms without advising the Municipality in writing, and providing adequate documentation to substantiate the reasons for termination if the DBE has not started or completed the work or the services for which it has been contracted to perform.
- G. When a DBE is unable or unwilling to perform or is terminated for just cause the Contractor shall make good faith efforts to find other DBE opportunities to increase DBE participation to the extent necessary to at least satisfy the goal required by III-B.
- H. In instances where an alternate DBE is proposed, a revised submission to the Municipality together with the documentation required in III-C, III-D, and III-E, must be made for its review and approval.
- I. Each quarter after execution of the Contract, the Contractor shall submit a report to the Municipality indicating the work done by, and the dollars paid to the DBE for the current quarter and to date.
- J. Each contract that the Municipality signs with a contractor and each subcontract the Contractor signs with a subcontractor must include the following assurance: The contractor, sub-recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49CFR part 26 in the award and administration of DOT-assisted contract. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

IV. MATERIAL SUPPLIERS OR MANUFACTURERS

- A. If the Contractor elects to utilize a DBE supplier or manufacturer to satisfy a portion or all of the specified DBE goal, the Contractor must provide the Municipality with:
 - 1. An executed "Connecticut Department of Transportation DBE Supplier/Manufacturer Affidavit" (sample attached), and
 - 2. Substantiation of payments made to the supplier or manufacturer for materials used on the project.
- B. Credit for DBE suppliers is limited to 60% of the value of the material to be supplied, provided such material is obtained from a regular DBE dealer. A regular dealer is a firm that owns, operates, or maintains a store, warehouse or other establishment in which the materials or supplies required for the performance of the Contract are bought, kept in stock and regularly sold or leased to the public in the usual course of business. To be a regular dealer, the firm must engage in, as its principal business, and in its own name, the purchase and sale of the products in question. A regular dealer in such bulk items as steel, cement, gravel, stone and petroleum products, need not keep such products in stock if it owns or operates distribution equipment Brokers and packagers shall not be regarded as material suppliers or manufacturers.
- C. Credit for DBE manufacturers is 100% of the value of the manufactured product. A manufacturer is a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Municipality, Department of Transportation or Contractor.

V. NON-MANUFACTURING OR NON-SUPPLIER DBE CREDIT:

- A. Contractors may count towards their DBE goals the following expenditures with DBEs that are not

manufacturers or suppliers:

1. Reasonable fees or commissions charged for providing a bona fide service such as professional, technical, consultant or managerial services and assistance in the procurement of essential personnel, facilities, equipment materials or supplies necessary for the performance of the Contract provided that the fee or commission is determined by the Municipality to be reasonable and consistent with fees customarily allowed for similar services.
2. The fees charged for delivery of materials and supplies required on a job site (but not the cost of the materials and supplies themselves) when the hauler, trucker, or delivery service is a DBE but is not also the manufacturer of or a regular dealer in the materials and supplies, provided that the fees are determined by the Municipality to be reasonable and not excessive as compared with fees customarily allowed for similar services.
3. The fees or commissions charged for providing bonds or insurance specifically required for the performance of the Contract, provided that the fees or commissions are determined by the Municipality to be reasonable and not excessive as compared with fees customarily allowed for similar services.

VI. BROKERING

- A. Brokering of work by DBEs who have been approved to perform subcontract work with their own workforce and equipment is not allowed, and is a Contract violation.
- B. DBEs involved in the brokering of subcontract work that they were approved to perform may be decertified.
- C. Firms involved in the brokering of work whether they are DBEs and/or majority firms who engage in willful falsification, distortion or misrepresentation with respect to any facts related to the project shall be referred to the U.S. Department of Transportation's Office of the Inspector General for prosecution under Title 18, U.S. Code, Section 10.20.

VII. REVIEW OF PRE-AWARD GOOD FAITH EFFORTS

- A. If the Contractor does not document commitments by subcontracting and/or procurement of material and/or services that at least equal the goal stipulated in III-B, the Contractor must document the good faith efforts that outline the specific steps it took to meet the goal. The Contract will be awarded to the Contractor if its good faith efforts are deemed satisfactory and approved by CDOT. To obtain such an exception, the Contractor must submit an application to the Municipality, which documents the specific good faith efforts that were made to meet the DEE goal. **Application form for Review of Pre-Award Good Faith Efforts is attached hereto.**

The application must include the following documentation:

1. a statement setting forth in detail which parts, if any, of the Contract were reserved by the Contractor and not available for subcontracting;
2. a statement setting forth all parts of the Contract that are likely to be sublet;
3. a statement setting forth in detail the efforts made to select subcontracting work in order to likely achieve the stated goal;
4. copies of all letters sent to DBEs;

5. a statement listing the dates and DBEs that were contacted by telephone and the result of each contact;
6. a statement listing the dates and DBEs that were contacted by means other than telephone and the result of each contact;
7. copies of letters received from DBEs in which they declined to bid;
8. a statement setting forth the facts with respect to each DBE bid received and the reason(s) any such bid was declined;
9. a statement setting forth the dates that calls were made to CDOT's Division of Contract Compliance seeking DBE referrals and the result of each such call; and
10. any information of a similar nature relevant to the application.

The review of the Contractor's good faith efforts may require an extension of time for award of the Contract. In such a circumstance, and in the absence of other reasons not to grant the extension or make the award, the Municipality will agree to the needed extension(s) of time for the award of the Contract, provided the Contractor and the surety also agree to such extension(s).

- B. Upon receipt of the submission of an application for review of pre-award good faith efforts, the Municipality shall submit the documentation to CDOT initiating unit for submission to the CDOT Division of Contract Compliance. CDOT Division of Contract Compliance will review the documents and determine if the package is complete, accurate and adequately documents the Contractor's good faith efforts. Within fourteen (14) days of receipt of the documentation the CDOT Division of Contract Compliance shall notify the Contractor by certified mail of the approval or denial of its good faith efforts.
- C. If the Contractor's application is denied, the Contractor shall have seven (7) days upon receipt of written notification of denial to request administrative reconsideration. The Contractor's request for administrative reconsideration should be sent in writing to the Municipality. The Municipality will forward the Contractor's reconsideration request to the CDOT initiating unit for submission to the DBE Screening Committee. The DBE Screening Committee will schedule a meeting within fourteen (14) days from receipt of the Contractor's request for administrative reconsideration and advise the Contractor of the date, time and location of the meeting. At this meeting the Contractor will be provided with the opportunity to present written documentation and/or argument concerning the issue of whether it made adequate good faith efforts to meet the goal. Within seven (7) days following the reconsideration meeting, the chairperson of the DBE Screening Committee will send the contractor via certified mail a written decision on its reconsideration request, explaining the basis of finding either for or against the request. The DBE Screening Committee's decision is final. **If the reconsideration is denied, the Contractor shall indicate in writing to the Municipality within fourteen (14) days of receipt of written notification of denial, the DBEs it will use to achieve the goal indicated in III-B.**
- D. Approval of pre-execution good faith efforts does not relieve the Contractor from its obligation to make additional good faith efforts to achieve the DBE goal should contracting opportunities arise during actual performance of the Contract work.

- I. When, as a recipient, you establish a Contract goal on a DOT-assisted Contract, a Bidder/Contractor must, in order to be responsible and/or responsive, make good faith efforts to meet the goal. The Bidder/Contractor can meet this requirement in either of two ways. First, the Bidder/Contractor can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose. Second, even if it doesn't meet the goal, the Bidder/Contractor can document adequate good faith efforts. This means that the Bidder/Contractor must show that it took all necessary and reasonable steps to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.
- II. In any situation in which you have established a Contract goal, Part 26 requires you to use the good faith efforts mechanism of this part. As a recipient, it is up to you to make a fair and reasonable judgment whether a Bidder/Contractor that did not meet the goal made adequate good faith efforts. It is important for you to consider the quality, quantity, and intensity of the different kinds of efforts that the Bidder/Contractor has made. The efforts employed by the Bidder/Contractor should be those that one could reasonably expect a Bidder/Contractor to take if the Bidder/Contractor were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE Contract goal. Mere pro forma efforts are not good faith efforts to meet the DBE Contract requirements. We emphasize, however, that your determination concerning the sufficiency of the firm's good faith efforts is a judgment call: meeting quantitative formulas is not required.
- III. The Department also strongly cautions you against requiring that a Bidder/Contractor meet a Contract goal (i.e., obtain a specified amount of DBE participation) in order to be awarded a Contract, even though the Bidder/Contractor makes an adequate good faith efforts showing. This rule specifically prohibits you from ignoring bona fide good faith efforts.
- IV. The following is a list of types of actions which you should consider as part of the Bidder/Contractor's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.
 - A. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the Contract. The Bidder/Contractor must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The Bidder/Contractor must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.
 - B. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out Contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.
 - C. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the Contract in a timely manner to assist them in responding to a solicitation.
 - D. (1) Negotiating in good faith with interested DBEs. It is the Bidder/Contractor's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

(2) A Bidder/Contractor using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as

well as Contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a Bidder/Contractor's failure to meet the Contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime Contractor to perform the work of a Contract with its own organization does not relieve the Bidder/Contractor of the responsibility to make good faith efforts. Prime Contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

- E. Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The Contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids/proposals in the Contractor's efforts to meet the project goal.
- F. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.
- G. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
- H. Effectively using the services of available minority/women community organizations; minority/women Contractors' groups local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.
- V. In determining whether a Bidder/Contractor has made good faith efforts, you may take into account the performance of other Bidder/Contractors in meeting the Contract For example, when the apparent successful Bidder/Contractor fails to meet the Contract goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts, the apparent successful Bidder/Contractor could have met the goal. If the apparent successful Bidder/Contractor fails to meet the goal, but meets or exceeds the average DBE participation obtained by other Bidder/Contractors, you may view this, in conjunction with other factors, as evidence of the apparent successful Bidder/Contractor having made good faith efforts.

CONNECTICUT DEPARTMENT OF TRANSPORTATION
DBE SUPPLIER/MANUFACTURER AFFIDAVIT

This affidavit must be completed by the State Contractor's DBE notarized and attached to the Contractor's request to utilize a DBE supplier a 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 organization)
of which I am the _____ certify and affirm that _____
(Title of Person) (DBE person, firm, association or organization)

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
(DBE person, firm, association or organization)
contractual responsibility 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 use function in the supply process.

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

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

(Signature of Person Certifying)

(Date)

**Construction Contracts - Required Contract Provisions
(FHWA Funded Contracts)**

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- EXHIBIT F – Federal Wage Rates (Attached at the end)
- EXHIBIT G - State Wage Rates (Attached at the end)

1. Federal Highway Administration (FHWA) Form 1273

The Contractor shall comply with the Federal Highway Administration (FHWA), Form 1273 attached at Exhibit A, as revised, which is hereby made part of this contract. The Contractor shall also require its subcontractors to comply with the FHWA – Form 1273 and include the FHWA – Form 1273 as an attachment to all subcontracts and purchase orders.

2. Title VI of the Civil Rights Act of 1964 / Nondiscrimination Requirements

The Contractor shall comply with Title VI of the Civil Rights Act of 1964 as amended (42 U.S.C. 2000 et seq.), all requirements imposed by the regulations of the United States Department of Transportation (49 CFR Part 21) issued in implementation thereof, and the Title VI Contractor Assurances attached hereto at Exhibit B, all of which are hereby made a part of this Contract.

3. Contractor Work Force Utilization (Federal Executive Order 11246) / Equal Employment Opportunity

- (a) The Contractor shall comply with the Contractor Work Force Utilization (Federal Executive Order 11246) / Equal Employment Opportunity requirements attached at Exhibit C and hereby made part of this Contract, whenever a contractor or subcontractor at any tier performs construction work in excess of \$10,000. These goals shall be included in each contract and subcontract. Goal achievement is calculated for each trade using the hours worked under each trade.
- (b) Companies with contracts, agreements or purchase orders valued at \$10,000 or more will develop and implement an Affirmative Action Plan utilizing the ConnDOT Affirmative Action Plan Guideline. This Plan shall be designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex or national origin, and to promote the full realization of equal employment opportunity through a positive continuation program. Plans shall be updated as required by ConnDOT.

4. Requirements of Title 49, Code of Federal Regulations (CFR), Part 26, Participation by DBEs

Pursuant to 49 CFR 26.13, the following paragraph is part of this Contract and shall be included in each subcontract the Contractor enters into with a subcontractor:

“The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26, Participation by DBEs, in the award and administration of U.S. DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this contract or such other remedy as ConnDOT (recipient) deems appropriate.”

5. Contract Wage Rates

The Contractor shall comply with:

The Federal and State wage rate requirements indicated in Exhibits F and G hereof, as revised, are hereby made part of this Contract. The Federal wage rates (Davis-Bacon Act) applicable to this Contract shall be the Federal wage rates that are current on the US Department of Labor website

(<http://www.wdol.gov/dba.aspx>) as may be revised 10 days prior to bid opening. These applicable Federal wage rates will be physically incorporated in the final contract document executed by both parties. The Department will no longer physically include revised Federal wage rates in the bid documents or as part of addenda documents, prior to the bid opening date. During the bid advertisement period, bidders are responsible for obtaining the appropriate Federal wage rates from the US Department of Labor website.

To obtain the latest Federal wage rates go to the US Department of Labor website (link above). Under Davis-Bacon Act, choose "Selecting DBA WDs" and follow the instruction to search the latest wage rates for the State, County and Construction Type. Refer to the Notice to Contractor (NTC) - Federal Wage Determinations (Davis Bacon Act).

If a conflict exists between the Federal and State wage rates, the higher rate shall govern.

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

As required by Section 1.05.12 (Payrolls) of the State of Connecticut, Department of Transportation's Standard Specification for Roads, Bridges and Incidental Construction (FORM 816), as may be revised, every Contractor or subcontractor performing project work on a Federal aid project is required to post the relevant prevailing wage rates as determined by the United States Secretary of Labor. The wage rate determinations shall be posted in prominent and easily accessible places at the work site.

6. Americans with Disabilities Act of 1990, as Amended

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

7. Connecticut Statutory Labor Requirements

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

(b) Debarment List. Limitation on Awarding Contracts. The Contractor shall comply with Section 31-53a of the Connecticut General Statutes, as revised.

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

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

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

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

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

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

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

Forms and instructions are available anytime by:

Internet: Visit the DRS website at www.ct.gov/DRS to download and print Connecticut tax forms; or

Telephone: Call 1-800-382-9463 (Connecticut calls outside the Greater Hartford calling area only) and select Option 2 or call 860-297-4753 (from anywhere).

9. Executive Orders

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the contract as if they had been fully set forth in it. The contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order No. 14 and/or Executive Order No. 49 are applicable, they are deemed to be incorporated into and are made a part of the contract as if they had been fully set forth in it. At the Contractor's request, the Department shall provide a copy of these orders to the Contractor.

10. Non Discrimination Requirement (pursuant to section 4a-60 and 4a-60a of the Connecticut General Statutes, as revised): References to "minority business enterprises" in this Section are not applicable to Federal-aid projects/contracts. Federal-aid projects/contracts are instead subject to the Federal Disadvantaged Business Enterprise Program.

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

- i. "Commission" means the Commission on Human Rights and Opportunities;
- ii. "Contract" and "contract" include any extension or modification of the Contract or contract;
- iii. "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;
- iv. "gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose.
- v. "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;
- vi. "good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements;
- vii. "marital status" means being single, married as recognized by the State of Connecticut, widowed, separated or divorced;
- viii. "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders;

- ix. "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32-9n; and
- x. "public works contract" means any agreement between any individual, firm or corporation and the State or any political subdivision of the State other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

For purposes of this Section, the terms "Contract" and "contract" do not include a contract where each contractor is (1) a political subdivision of the State, including, but not limited to, a municipality, (2) a quasi-public agency, as defined in Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

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

- (c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.
- (d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.
- (e) The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes §46a-56; provided if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.
- (f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.
- (g) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the Contractor agrees to provide each labor union or representative of workers with which such Contractor has a collective bargaining Agreement or other contract or understanding and each vendor with which such Contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the Contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the Contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes § 46a-56; and (4) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor which relate to the provisions of this Section and Connecticut General Statutes § 46a-56.
- (h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes § 46a-56; provided, if such Contractor becomes involved in, or is threatened with,

litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.”

The Nondiscrimination Certifications can be found at the Office of Policy and Management website.

<http://www.ct.gov/opm/cwp/view.asp?a=2982&Q=390928>

11. Whistleblower Provision

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

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

12. Connecticut Freedom of Information Act

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

(b) Confidential Information. The State will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the State receives from the Contractor. However, all materials associated with the Contract are subject to the terms of the FOIA and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation and rationale sufficient to justify each exemption consistent with the FOIA must accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt

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

13. Service of Process

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

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

This Contract is subject to the provisions of Section 3-112a of the General Statutes of the State of Connecticut, as revised.

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

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

16. Forum and Choice of Law

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

17. Summary of State Ethics Laws

Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.

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

- (a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract. For the purposes of this Section, "Contractor Parties" means the Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.
- (b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.
- (c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.
- (d) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.
- (e) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.
- (f) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

19. Campaign Contribution Restriction

For all State contracts, defined in Conn. Gen. Stat. §9-612(f)(1) as having a value in a calendar year of \$50,000 or more, or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this contract expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," a copy of which is attached hereto and hereby made a part of this contract, attached as Exhibit E.

20. Tangible Personal Property

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

- (1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;
 - (2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;
 - (3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;
 - (4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and
 - (5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.
- (b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.
- (c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.

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

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

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

22. Consulting Agreement Affidavit

The Contractor shall comply with Connecticut General Statutes Section 4a-81(a) and 4a-81(b), as revised. Pursuant to Public Act 11-229, after the initial submission of the form, if there is a change in the information contained in the form, a contractor shall submit the updated form, as applicable, either (i) not later than thirty (30) days after the effective date of such change or (ii) prior to execution of any new contract, whichever is earlier.

The Affidavit/Form may be submitted in written format or electronic format through the Department of Administrative Services (DAS) website.

23. Cargo Preference Act Requirements (46 CFR 381.7(a)-(b)) – Use of United States Flag Vessels

The Contractor agrees to comply with the following:

(a) ***Agreement Clauses.***

- (1) Pursuant to Pub. L. 664 ([43 U.S.C. 1241\(b\)](#)) at least 50 percent of any equipment, materials or commodities procured, contracted for or otherwise obtained with funds granted, guaranteed, loaned, or advanced by the U.S. Government under this agreement, and which may be transported by ocean vessel, shall be transported on privately owned United States-flag commercial vessels, if available.
- (2) Within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (a)(1) of this section shall be furnished to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(b) ***Contractor and Subcontractor Clauses.*** The contractor agrees—

- (1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
- (2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
- (3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

EXHIBIT A

FHWA-1273 -- Revised May 1, 2012

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the

assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential

minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26, and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26, in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating

areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (ii) The classification is utilized in the area by the construction industry; and
- (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or

any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

- (i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is

registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit

any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;
- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under

construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

- a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.
- d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered

transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with

obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency,

a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR
APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL
ACCESS ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

EXHIBIT B**TITLE VI CONTRACTOR ASSURANCES**

During the performance of this Contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

1. **Compliance with Regulations:** The Contractor shall comply with the regulations relative to nondiscrimination in federally assisted programs of the United States Department of Transportation (hereinafter, "USDOT"), Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the "Regulations"), which are herein incorporated by reference and made a part of this contract.

2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the Contract, shall not discriminate on the grounds of race, color, national origin, sex, age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by Subsection 5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:**

In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, national origin, sex, age, or disability.

4. **Information and Reports:** The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Connecticut Department of Transportation (ConnDOT) or the Funding Agency (FHWA, FTA and FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to ConnDOT or the Funding Agency, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the ConnDOT shall impose such sanctions as it or the Funding Agency may determine to be appropriate, including, but not limited to:

- A. Withholding contract payments until the Contractor is in-compliance; and/or
- B. Cancellation, termination, or suspension of the Contract, in whole or in part.

6. **Incorporation of Provisions:** The Contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the ConnDOT or the Funding Agency may -direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the ConnDOT to enter into such litigation to protect the interests of the Funding Agency, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States

EXHIBIT C**CONTRACTOR WORKFORCE UTILIZATION (FEDERAL EXECUTIVE ORDER 11246) /
EQUAL EMPLOYMENT OPPORTUNITY
(Federal - FHWA)****1. Project Workforce Utilization Goals:**

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted or funded) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where the work is actually performed.

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

The goals for minority and female utilization are expressed in percentage terms for the contractor's aggregate work-force in each trade on all construction work in the covered area, are referenced in the attached Appendix A.

2. Executive Order 11246

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

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

The Contractor shall implement the specific affirmative action standards provided in a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in

which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs (OFCCP) Office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

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

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

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

- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites; and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off the street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason thereafter; along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the Union or Unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or women sent by the Contractor, or when the Contractor has other

information that the Union referral process has impeded the Contractor's efforts to meet its obligations.

- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO Policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company EEO Policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment, decisions including specific Foreman, etc. prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO Policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work-force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and

employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

- n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review at least annually of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (a through p). The efforts of a contractor association, joint contractor union, contractor community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work-force participation, makes a good faith effort to meet with individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

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

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

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

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

The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in these

specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

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

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

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

FEDERALLY FUNDED OR ASSISTED PROJECTS
APPENDIX A
(Labor Market Goals)

Standard Metropolitan Statistical Area (SMSA)

Female

Minority

Bridgeport – Stamford – Norwalk – Danbury	10.2%
6.9%	

Bethel	Bridgeport	Brookfield	Danbury
Darien	Derby	Easton	Fairfield
Greenwich	Milford	Monroe	New Canaan
New Fairfield	Newton	Norwalk	Redding
Shelton	Stamford	Stratford	Trumbull
Weston	Westport	Wilton	

Hartford – Bristol – New Britain	6.9%
6.9%	

Andover	Avon	Berlin	Bloomfield
Bolton	Bristol	Burlington	Canton
Colchester	Columbia	Coventry	Cromwell
East Granby	East Hampton	East Hartford	East Windsor
Ellington	Enfield	Farmington	Glastonbury
Granby	Hartford	Hebron	Manchester
Marlborough	New Britain	New Hartford	Newington
Plainville	Plymouth	Portland	Rocky Hill
Simsbury	South Windsor	Southington	Stafford
Suffield	Tolland	Vernon	West Hartford
Wethersfield	Willington	Windsor	Windsor Locks

New Haven – Waterbury – Meriden	9.0%
6.9%	

Beacon Falls	Bethany	Branford	Cheshire
Clinton	East Haven	Guilford	Hamden
Madison	Meriden	Middlebury	Naugatuck
New Haven	North Branford	North Haven	Orange
Prospect	Southbury	Thomaston	Wallingford
Waterbury	Watertown	West Haven	Wolcott
Woodbridge	Woodbury		

New London – Norwich	4.5%
6.9%	

Bozrah	East Lyme	Griswold	Groton
Ledyard	Lisbon	Montville	New London
Norwich	Old Lyme	Old Saybrook	Preston
Sprague	Stonington	Waterford	

Non SMSA**Female****Minority**

Litchfield – Windham			
6.9%			5.9%
Abington	Ashford	Ballouville	Bantam
Barkhamsted	Bethlehem	Bridgewater	Brooklyn
Canaan	Canterbury	Central Village	Cahplin
Colebrook	Cornwall	Cornwall Bridge	Danielson
Dayville	East Canaan	East Killingly	East Woodstock
Eastford	Falls Village	Gaylordsville	Goshen
Grosvenor Dale	Hampton	Harwinton	Kent
Killigly	Lakeside	Litchfield	Moosup
Morris	New Milford	New Preston	New Preston Marble Dale
Norfolk	North Canaan	No. Grosvenordale	North Windham
Oneco	Pequabuck	Pine Meadow	Plainfield
Pleasant Valley	Pomfret	Pomfret Center	Putnam
Quinebaug	Riverton	Rogers	Roxbury
Salisbury	Scotland	Sharon	South Kent
South Woodstock	Sterling	Taconic	Terryville
Thompson	Torrington	Warren	Warrenville
Washington	Washington Depot	Wauregan	West Cornwall
Willimantic	Winchester	Winchester Center	Windham
Winsted	Woodstock	Woodstock Valley	

EXHIBIT D**Health Insurance Portability and Accountability Act of 1996 (“HIPAA”).**

- (a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), the Contractor must comply with all terms and conditions of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.
- (b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and
- (c) The State of Connecticut Agency named on page 1 of this Contract (hereinafter the “Department”) is a “covered entity” as that term is defined in 45 C.F.R. § 160.103; and
- (d) The Contractor, on behalf of the Department, performs functions that involve the use or disclosure of “individually identifiable health information,” as that term is defined in 45 C.F.R. § 160.103; and
- (e) The Contractor is a “business associate” of the Department, as that term is defined in 45 C.F.R. § 160.103; and
- (f) The Contractor and the Department agree to the following in order to secure compliance with the HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act (hereinafter the HITECH Act), (Pub. L. 111-5, sections 13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E.
- (g) Definitions
 - (1) “Breach shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(1))
 - (2) “Business Associate” shall mean the Contractor.
 - (3) “Covered Entity” shall mean the Department of the State of Connecticut named on page 1 of this Contract.
 - (4) “Designated Record Set” shall have the same meaning as the term “designated record set” in 45 C.F.R. § 164.501.
 - (5) “Electronic Health Record” shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5))

- (6) "Individual" shall have the same meaning as the term "individual" in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).
 - (7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and parts 164, subparts A and E.
 - (8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, limited to information created or received by the Business Associate from or on behalf of the Covered Entity.
 - (9) "Required by Law" shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.
 - (10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his designee.
 - (11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.
 - (12) "This Section of the Contract" refers to the HIPAA Provisions stated herein, in their entirety.
 - (13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R. § 164.304.
 - (14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and parts 164, subpart A and C.
 - (15) "Unsecured protected health information" shall have the same meaning as the term as defined in section 13402(h)(1)(A) of HITECH. Act. (42 U.S.C. § 17932(h)(1)(A)).
- (h) Obligations and Activities of Business Associates.
- (1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.
 - (2) Business Associate agrees to use appropriate safeguards to prevent use or disclosure of PHI other than as provided for in this Section of the Contract.
 - (3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic protected health information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.
 - (4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.

- (5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any security incident of which it becomes aware.
- (6) Business Associate agrees to insure that any agent, including a subcontractor, to whom it provides PHI received from, or created or received by Business Associate, on behalf of the Covered Entity, agrees to the same restrictions and conditions that apply through this Section of the Contract to Business Associate with respect to such information.
- (7) Business Associate agrees to provide access, at the request of the Covered Entity, and in the time and manner agreed to by the parties, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an Individual in order to meet the requirements under 45 C.F.R. § 164.524.
- (8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner agreed to by the parties.
- (9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary determining Covered Entity's compliance with the Privacy Rule.
- (10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (11) Business Associate agrees to provide to Covered Entity, in a time and manner agreed to by the parties, information collected in accordance with clause h. (10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (12) Business Associate agrees to comply with any state or federal law that is more stringent than the Privacy Rule.
- (13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. sections 164.504(e), 164.308, 164.310, 164.312, and 164.316.

- (14) In the event that an individual requests that the Business Associate (a) restrict disclosures of PHI; (b) provide an accounting of disclosures of the individual's PHI; or (c) provide a copy of the individual's PHI in an electronic health record, the Business Associate agrees to notify the covered entity, in writing, within two business days of the request.
- (15) Business Associate agrees that it shall not, directly or indirectly, receive any remuneration in exchange for PHI of an individual without (1) the written approval of the covered entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and (2) the valid authorization of the individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act,(42 U.S.C. § 17935(d)(2)) and in any accompanying regulations
- (16) Obligations in the Event of a Breach
- A. The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. 17932(b) and the provisions of this Section of the Contract.
- B. Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. 17932(g)) . A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.
- C. The Business Associate agrees to include in the notification to the Covered Entity at least the following information:
1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.
 2. A description of the types of unsecured protected health information that were involved in the breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).
 3. The steps the Business Associate recommends that individuals take to protect themselves from potential harm resulting from the breach.
 4. A detailed description of what the Business Associate is doing to investigate the breach, to mitigate losses, and to protect against any further breaches.
 5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to

individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and; if so, include contact information for said official.

- D. Business Associate agrees to provide appropriate staffing and have established procedures to ensure that individuals informed by the Covered Entity of a breach by the Business Associate have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its Web site and a postal address. Business Associate agrees to include in the notification of a breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Contractor.
 - E. Business Associate agrees that, in the event of a breach, it has the burden to demonstrate that it has complied with all notifications requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.
- (i) Permitted Uses and Disclosure by Business Associate.
- (1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the Privacy Rule if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.
 - (2) Specific Use and Disclosure Provisions
 - (A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.
 - (B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.
 - (C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide Data Aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).
- (j) Obligations of Covered Entity.

- (1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45 C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.
 - (2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.
 - (3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.
- (k) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.
- (l) Term and Termination.
- (1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.
 - (2) Termination for Cause Upon Covered Entity's knowledge of a material breach by Business Associate, Covered Entity shall either:
 - (A) Provide an opportunity for Business Associate to cure the breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity; or
 - (B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or
 - (C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.
 - (3) Effect of Termination
 - (A) Except as provided in (l)(2) of this Section of the Contract, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity, or created or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with clause h. (10) of this Section of the Contract to the Covered Entity

within ten business days of the notice of termination. This provision shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.

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

(m) Miscellaneous Provisions.

- (1) Regulatory References. A reference in this Section of the Contract to a section in the Privacy Rule means the section as in effect or as amended.
- (2) Amendment. The Parties agree to take such action as is necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191.
- (3) Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract.
- (4) Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.
- (5) Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with the Privacy Standard. Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, the Privacy Standard.
- (6) Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate's own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the provisions of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.

(7) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the

HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (*italicized words are defined on the reverse side of this page*).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract or state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly solicit** contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor or principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil penalties—Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to "Lobbyist/Contractor Limitations."

DEFINITIONS

“State contractor” means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. “State contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person’s capacity as a state or quasi-public agency employee.

“Prospective state contractor” means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. “Prospective state contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person’s capacity as a state or quasi-public agency employee.

“Principal of a state contractor or prospective state contractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

“State contract” means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. “State contract” does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

“State contract solicitation” means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

“Managerial or discretionary responsibilities with respect to a state contract” means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

“Dependent child” means a child residing in an individual’s household who may legally be claimed as a dependent on the federal income tax of such individual.

“Solicit” means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

“Subcontractor” means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor’s state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. “Subcontractor” does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person’s capacity as a state or quasi-public agency employee.

“Principal of a subcontractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.

EXHIBIT F

(federal wage rate package will be inserted here for final executed contract only. Refer to NTC – Federal Wage Determinations)

EXHIBIT G

(state wages will be inserted here)

Project: Reconstruction Of Cross Street

**Minimum Rates and Classifications
for Heavy/Highway Construction**

ID#: H 25288

**Connecticut Department of Labor
Wage and Workplace Standards Division**

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

Project Number: 87-145

Project Town: Naugatuck

FAP Number:

State Number:

Project: Reconstruction Of Cross Street

CLASSIFICATION	Hourly Rate	Benefits
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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**

1) Boilermaker	33.79	34% + 8.96
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1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	33.48	31.66
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2) Carpenters, Piledrivermen	32.60	25.34
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Project: Reconstruction Of Cross Street

2a) Diver Tenders	32.60	25.34
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3) Divers	41.06	25.34
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03a) Millwrights	33.14	25.74
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4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	49.75	21.05
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4a) Painters: Brush and Roller	33.62	21.05
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4b) Painters: Spray Only	36.62	21.05
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4c) Painters: Steel Only	35.62	21.05
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Project: Reconstruction Of Cross Street

4d) Painters: Blast and Spray 36.62 21.05

4e) Painters: Tanks, Tower and Swing 35.62 21.05

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) 38.82 26.25+3% of gross wage

6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection 35.47 35.14 + 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) 42.62 31.21

---LABORERS----

8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist 30.05 20.10

Project: Reconstruction Of Cross Street

9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	30.30	20.10
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10) Group 3: Pipelayers	30.55	20.10
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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	30.55	20.10
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12) Group 5: Toxic waste removal (non-mechanical systems)	32.05	20.10
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13) Group 6: Blasters	31.80	20.10
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Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	31.05	20.10
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Group 8: Traffic control signalmen	16.00	20.10
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Project: Reconstruction Of Cross Street

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	32.22	20.10 + a
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13b) Brakemen, Trackmen	31.28	20.10 + a
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---CLEANING, CONCRETE AND CAULKING TUNNEL----

14) Concrete Workers, Form Movers, and Strippers	31.28	20.10 + a
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15) Form Erectors	31.60	20.10 + a
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Project: Reconstruction Of Cross Street

---ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL
IN FREE AIR:----

16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	31.28	20.10 + a
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17) Laborers Topside, Cage Tenders, Bellman	31.17	20.10 + a
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18) Miners	32.22	20.10 + a
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---TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED
AIR: ----

18a) Blaster	38.53	20.10 + a
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19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	38.34	20.10 + a
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Project: Reconstruction Of Cross Street

20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	36.41	20.10 + a
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21) Mucking Machine Operator	39.11	20.10 + a
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---TRUCK DRIVERS---(*see note below)

Two axle trucks	29.13	23.33 + a
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Three axle trucks; two axle ready mix	29.23	23.33 + a
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Three axle ready mix	29.28	23.33 + a
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Four axle trucks, heavy duty trailer (up to 40 tons)	29.33	23.33 + a
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Project: Reconstruction Of Cross Street

Four axle ready-mix	29.38	23.33 + a
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Heavy duty trailer (40 tons and over)	29.58	23.33 + a
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Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	29.38	23.33 + a
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---POWER EQUIPMENT OPERATORS---		
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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)	39.55	24.05 + a
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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)	39.23	24.05 + a
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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)	38.49	24.05 + a
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Project: Reconstruction Of Cross Street

Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	38.10	24.05 + 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)	37.51	24.05 + a
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Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	37.51	24.05 + a
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Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	37.20	24.05 + a
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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).	36.86	24.05 + a
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Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	36.46	24.05 + a
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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).	36.03	24.05 + a
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Project: Reconstruction Of Cross Street

Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc. 33.99 24.05 + a

Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment. 33.99 24.05 + a

Group 12: Wellpoint Operator. 33.93 24.05 + a

Group 13: Compressor Battery Operator. 33.35 24.05 + a

Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain). 32.21 24.05 + a

Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator. 31.80 24.05 + a

Group 16: Maintenance Engineer/Oiler 31.15 24.05 + a

Project: Reconstruction Of Cross Street

Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	35.46	24.05 + a
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Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	33.04	24.05 + 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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Project: Reconstruction Of Cross Street

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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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.

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.

As of: Thursday, September 20, 2018

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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: Thursday, September 20, 2018