

City of Taunton, MA

2022 Sewer & Drain Improvements

Contract S-2022-2, CWSRF 6796

October 15, 2021

Bidding Requirements, Bond Forms, Contract Agreement,
Conditions of the Contract and Technical Specifications

NOT FOR CONSTRUCTION



Professional Registration No.: 30863



BETA

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Lincoln, Rhode Island 02865
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DIVISION 00

SECTION 00100

INVITATION TO BID

CITY OF TAUNTON, MA 2022 SEWER & DRAIN IMPROVEMENTS CONTRACT S-2022-3 CWSRF NO. 6796

On behalf of the City of Taunton, MA, Veolia Water North America - Northeast, LLC ("Veolia") is seeking bids for 2022 Sewer & Drain Improvements project. Veolia has prequalified firms interested in submitting bids for this project. Only prequalified firms will be permitted to submit bids.

Sealed Bids for the construction of the 2022 Sewer & Drain Improvements project shall be sent to Carl Hendrickson, via electronic mail, at carl.hendrickson@veolia.com. All bids must be received by 4:00 PM, **XXX, 2020** in Portable Document Format (PDF).

The following documents must be included with the Bid Form:

- Appendix A1 - Certification Statement
- Appendix B - Diesel Retrofit Program - Statement of Intent to Comply
- Bid Bond

The subject line of the email submittal should read:

BID - Taunton 2022 Sewer & Drain Improvements – Contract S-2022-3, CWSRF 6796

The work consists of sewer & drain improvements as follows:

- Cured-in-place-Pipe (CIPP) lining of approximately 9,000 lf of sewer pipe between 8" and 18" in diameter.
- Excavated replacement of approximately 2,000 lf of sewer with associated laterals and manholes.
- Excavated spot repairs of sewers and drains
- Removal and disposal of contaminated soil and asbestos associated with the above work
- Appurtenant work and paving associated with the above scope.

Additional Details are provided in Section 00500 Construction Agreement, Attachment A - Scope of Work.

The Subcontractor shall complete all work required under the Contract within 365 calendar days after the date of the Notice of Award. Work performed beyond the completion date will be subjected to liquidated damages in the amount of \$1,000 per day.

A pre-bid conference will not be scheduled. Subcontractors can schedule site visits by contacting Carl Hendrickson at XXX. Veolia will transmit to all prospective Bidders of record such Addenda as Veolia considers necessary in response to questions. Oral statements may not be relied upon and will not be binding or legally effective.

A .pdf copy of the Contract Documents for the Work may be obtained from the office of Veolia by contacting Carl Hendrickson, m: XXX, carl.hendrickson@veolia.com. Hard copies will not be provided. The Contract Documents may be examined during normal business hours from 7:00 a.m. to 3:30 p.m. at the following location:

Taunton Wastewater Treatment Facility
825 West Water Street

Taunton, MA 02780

This Contract to be awarded as the result of this Advertisement for Bids is funded in part through the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, by loans from the Massachusetts Water Pollution Abatement Trust. This Contract will be subject to the Department of Environmental Protection regulations contained in 310 CMR 44.00, "DEP Selection, Approval and Regulation of Water Pollution Abatement Projects Receiving Financial Assistance from the State Revolving Fund" in effect on the date of issuance of the assistance award (DEP Project Approval Certificate) by the Department.

The Project requires compliance with the Massachusetts Department of Environmental Protection Diesel Retrofit Program (MDRP) by use of engine emission controls that are EPA certified, or their equivalent, on all diesel powered non-road construction equipment used at the job site. Bidders must submit a signed and dated Statement of Intent to Comply as part of their Bid Proposal Document. The Statement of Intent to Comply is attached as Appendix B to the Agreement.

Failure to comply with these DEP requirements may be deemed to render a proposal nonresponsive. No waiver of any provision of these DEP requirements will be granted unless approved by the Department of Environmental Protection.

As Security, each Bid must be accompanied by a Bid Bond having as surety thereto, such Surety Company or Companies as are authorized to do business in the State of Massachusetts of an amount not less than five (5) percent of the Bid. No bid will be accepted unless accompanied by the required bid deposit.

For the successful Bidder a Performance Bond and a Payment Bond, each in the amount of 100 percent of the Contract Price, will be required in the form described in Exhibit J to the Agreement. All such bonds shall be issued by eligible sureties listed in the current US Department of Treasury Circular 570, qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the Owner.

Bidders shall not include Federal Excise Taxes or State of Massachusetts Sales Taxes from which Public Building Projects are exempt.

No Bidder may withdraw its Bid within 30 days (Saturdays, Sundays and legal holidays excluded) after the actual date of the Bid Opening.

Veolia reserves the right to accept any Bid, waive any informalities or minor defects, or reject any or all Bids, if in its sole judgment it is in the best interest of Veolia to do so. Veolia does not discriminate on the basis of sex, race, age, physical disability, religion or national origin.

Disadvantaged Business Enterprise (DBE) goals are applicable to the total dollars paid to the construction contract. The goals for this project are a minimum of **5.47% percent D/MBE participation and 5.86% percent D/WBE participation by certified DBEs**. The two low bidders shall submit completed DBE forms (EEO-DEP-190C, EEO-DEP-191C and the DBE Certification of United States Citizenship form) by the close of business on the third business day after bid opening. Failure to comply with the requirements of this paragraph may be deemed to render a proposal non-responsive. No waiver of any provision of this section will be granted unless approved by the Department of Environmental Protection (MassDEP).

Minimum Wage Rates as determined by the Commissioner of Department of Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Sections 26 to 27D, as amended, apply to this project. It is the responsibility of the contractor, before bid opening, to request if necessary, any additional information on Minimum Wage Rates for those trades people who may be employed for the proposed work under this contract. Federal Minimum Wage Rates as determined by the United States Department of Labor under the Davis-Bacon Act also apply to this project.

Veolia reserves the right to waive any informality in or to reject any or all Bids if deemed to be in its best interest.

All questions shall be directed in writing via e-mail to Veolia: Attn: Carl Hendrickson, carl.hendrickson@veolia.com.

SECTION 00200

INSTRUCTIONS TO BIDDERS

ARTICLE 1. INVESTIGATION OF BIDDERS

1.1 The investigation of a Bidder will seek to determine whether available equipment and financial resources are adequate to assure Veolia that the Goods and Services will be delivered in accordance with the terms of the Agreement.

1.2 In evaluating Bids, Veolia will consider the qualifications of only those Bidders whose Bids are in compliance with the prescribed requirements.

1.3 Veolia reserves the right to reject any Bid if the evidence submitted by, or the investigation of, such Bidder fails to satisfy Veolia that such Bidder is properly qualified to carry out the obligations of the Procurement Documents and to complete the Goods and Services contemplated therein.

ARTICLE 2. COPIES OF PROCUREMENT DOCUMENTS

2.1 Complete sets of Procurement Documents shall be used in preparing Bids; neither Veolia nor Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Procurement Documents.

2.2 Veolia and Engineer in making copies of Procurement Documents available do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

ARTICLE 3. EXAMINATION OF PROCUREMENT DOCUMENTS

3.1 Before submitting a Bid, each Bidder must (a) examine the Procurement Documents thoroughly, (b) become familiar with Federal, State and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (c) study and carefully correlate Bidder's observations with the requirements of the Procurement Documents.

3.2 The submission of a Bid will constitute an incontrovertible representation that the Bidder has complied with every requirement of this Article 3 and that the Procurement Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for providing the Goods and Services.

ARTICLE 4. INTERPRETATIONS

4.1 All questions about the meaning or intent of the Procurement Documents shall be received **via e-mail** by Veolia, Attn: Mr. Carl Hendrickson, e: carl.hendrickson@veolia.com, m: XXX at least ten days before the date herein set for the opening of bids.

4.2 Written clarifications or interpretations will be issued by Addenda not later than five days before the bid opening date. Only questions answered by formal written Addenda will be binding. Oral and other clarifications or interpretations will be without legal effect. Addenda will be e-mailed to all parties recorded as having received the Procurement Documents.

4.3 Bidders are responsible for determining that they have received all Addenda issued.

ARTICLE 5. PRE-BID CONFERENCE

5.1 A pre-bid conference will not be scheduled. Subcontractors can schedule site visits by contacting Carl Hendrickson at XXX. Veolia will transmit to all prospective Bidders of record such Addenda as Veolia considers necessary in response to questions. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 6. BID FORM

6.1 Each Bid shall be submitted on the Bid Form on the pages appended to the Procurement Documents. One such copy of the Bid Form shall be removed and submitted separately. All blank spaces must be filled in.

6.2 Bid Forms shall be completed in ink or by typewriter. The Bid price of each item on the form shall be stated in words, and figures. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

6.3 Firm bids are required. Conditional bids will not be considered.

6.4 Bids by corporations shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.

6.5 Bids by Limited Liability Companies shall be executed in the Limited Liability name by the Manager (or other Limited Liability Company officer/representative accompanied by evidence of authority to sign.) The Limited Liability Company address and state where the Limited Liability Company was formed shall be shown below the signature.

6.6 Bids by partnerships shall be executed in the partnership name and signed by a partner, whose title shall appear under the signature. The official address of the partnership shall be shown below the signature.

6.7 All names shall be typed or printed below the signature.

6.8 The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

6.9 The address to which communications regarding the Bid are to be directed shall be shown.

6.10 One copy of each Bid shall be submitted via e-mail.

ARTICLE 7. RECEIPT OF BIDS

7.1 Bids will be received at the time and place indicated in the Invitation to Bid.

7.2 Veolia may consider informal any Bid not prepared and submitted in accordance with the provisions hereof.

7.3 Bidders are cautioned that it is the responsibility of each individual bidder to assure that their bid is in the possession of the responsible official or the designated alternate prior to the stated time and at the place of the Bid Opening. Owner is not responsible for bids delayed by e-mail services, of any nature.

ARTICLE 8. MODIFICATION AND WITHDRAWAL OF BIDS

8.1 Bids may be modified only by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

8.2 Bids may be withdrawn prior to the scheduled time (or authorized postponement thereof) for the opening of Bids.

8.3 Any Bid received after the time and date specified shall not be considered. No Bid may be withdrawn for a period of thirty days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids.

ARTICLE 9. AWARD OF CONTRACT

9.1 The Contract will be awarded to the lowest responsible and eligible Bidder (Successful Bidder). Such a Bidder shall possess the skill, ability, and integrity necessary for the faithful performance of the work. The term "lowest responsible and eligible Bidder" as used herein shall mean the Bidder whose Bid is the lowest of those Bidders possessing the skill, ability, and integrity necessary to the faithful performance of the Work.

9.2 Veolia reserves the right to reject any and all Bids, to waive any and all informalities if it is in Veolia's best interest to do so, and the right to disregard all nonconforming, non-responsive or conditional Bids.

9.3 If the Contract is to be awarded, Veolia will give the Successful Bidder an agreement within sixty days, excluding Saturdays, Sundays, and legal holidays.

9.4 The Owner may elect to increase the scope of work by selecting, in order, any of the add alternates listed in the Bid Form, such that no single alternate will be considered unless every alternate preceding it on the list has been added to the Base Bid.

9.5 Bidders to be considered responsive shall submit bids on all add alternates listed in the Bid Form. The low bidder will be determined by comparison of the Base Bid and any alternates selected by the Owner.

9.6 A Bid which includes for any item a Bid Price that is abnormally low or high may be rejected as unbalanced.

ARTICLE 10. SALES TAX

10.1 The goods and services to be provided under this Contract are exempt from the Sales and Use Taxes of the State of Massachusetts.

ARTICLE 11. COMMONWEALTH OF MASSACHUSETTS REQUIREMENTS

11.1 Applicable provisions of Massachusetts General Laws and Regulations and/or the United States Code and Code of Federal Regulations govern this Contract and any provision in violation of the foregoing shall be deemed null, void and of no effect. Where conflict between Code of Federal Regulations and State Laws and Regulations exist, the more stringent requirement shall apply. Note that the City of Taunton has special legislation for contracts associated with water and wastewater treatment facilities.

11.2 Minimum Wage Rates as determined by the Commissioner of Department of Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Sections 26 to 27D, as amended, apply to this project. It is the responsibility of the contractor, before bid opening, to request if necessary, any additional information on Minimum Wage Rates for those trades people who may be employed for the proposed work under this contract. Federal Minimum Wage Rates as determined by the United States Department of Labor under the Davis-Bacon Act also apply to this project. See Appendix G to the Agreement.

11.3 The contractor guarantees that the Work and Services to be performed under the Contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of the same shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Drawings, Specifications, and other contract documents, that the strength of all parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the Contract shall be fulfilled. This guarantee shall be for a period of one year from and after the date of completion and acceptance of the Work as stated in the final estimate. If part of the Work is accepted in accordance with that subsection of this AGREEMENT titled "Partial Acceptance", the guarantee for that part of the Work shall be for a period of one year from the date fixed for such acceptance.

If at any time within the said period of guarantee any part of the Work requires repairing, correction or replacement, the Owner may notify the contractor in writing to make the required repairs, correction or replacements. If the Contractor neglects to commence making such repairs,

corrections or replacements to the satisfaction of the Owner within seven (7) days from the date of receipt of such notice, or having commenced fails to prosecute such Work with diligence, the Owner may employ other persons to make said repairs, correction or replacements, and charge the costs, including compensation for additional professional services, to the Contractor."

11.4 This project is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR, Part 1926 and to all subsequent amendments, and to any applicable Massachusetts regulations. Contractors shall be familiar with the requirements of these regulations.

11.5 This project is subject to the requirements of the Department of Environmental Protection's Diesel Retrofit Program. Bidders must submit a signed and dated Statement of Intent to Comply form as part of their bid proposal documents.

11.6 This project is subject to the American Iron and Steel requirements of P.L. 113-76, the Consolidated Appropriations Act of 2014. See Appendix I to the Agreement.

11.7 Whenever it is written that an equipment manufacturer must have a specified period of experience with his product, equipment which does not meet the specified experience period can be considered if the equipment supplier or manufacturer is willing to provide an "Efficiency Guarantee Bond" or cash deposit for the duration of the specified time period which will guarantee replacement of that equipment in the event of failure.

SECTION 00300

BID FORM

THIS BID IS SUBMITTED TO: Veolia Water North America - Northeast, LLC

PROJECT IDENTIFICATION: City of Taunton, MA
2022 Sewer & Drain Improvements
Contract S-2022-3, CWSRF 6796

The undersigned declares that the only persons or parties interested in this Bid as principals are as stated; that the Bid is made without any collusion with other persons, firms, or corporations; that all the Procurement Documents as prepared by Veolia Water North America - Northeast, LLC, 53 State Street, 14th Floor, Boston, MA, 02109 and dated DATE have been carefully examined; that the undersigned is fully informed in regard to all conditions pertaining to the work and the place where it is to be delivered, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in providing the Goods and Services required under the Procurement Documents, of which this Bid Form is a part.

- A. The time period for holding bids, where Federal approval is not required is 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of bids and where Federal approval is required, the time period for holding bids is 30 days, Saturdays, Sundays and holidays excluded after Federal approval.
- B. If unsigned copies of the Construction Agreement are delivered to the undersigned within sixty days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids, the undersigned will within three days, excluding Saturdays, Sundays, and legal holidays, after the date of receipt of such notification, execute and return all copies of the Construction Agreement to Veolia.
- C. The undersigned hereby agrees to fully complete the Phase 2 Improvements in accordance with the terms stated in the Agreement.
- D. The undersigned acknowledges receipt of addenda:

Addendum No. _____, dated _____

Addendum No. _____, dated _____

Addendum No. _____, dated _____

- E. The undersigned agrees that, if they are selected as Contractor, they will within five days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the Company (Veolia), execute a contract in accordance with the terms of this bid and furnish a performance bond in the amount of 100% of the total contract price and also a labor and materials or payment bond in the amount of 100% of the total contract price, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Company and each in the sum of the contract price, the premiums for which are to be paid by the Contractor and are included in the contract price.
- F. The Subcontractor shall complete all work required under the Contract within XXX days of the issuance of a Notice to Proceed. Work performed beyond the completion date will be subjected to liquidated damages in the amount specified herein.
- G. Liquidated damages specified in this contract are \$1,000 per day for each calendar day beyond the contract completion date that work remains uncompleted.
- H. The time period for holding bids, where Federal approval is not required is 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of bids and where Federal approval is required, the time period for holding bids is 30 days, Saturdays, Sundays and holidays excluded after Federal approval.
- I. Pursuant to M.G.L.c.62C, s49A I certify under the penalties of perjury that I, to my best knowledge and belief, have filed all state tax returns and paid all State Taxes required under law.
- J. The undersigned bidder hereby certifies he/she will comply with the specific affirmative action steps contained in the EEO/AA provisions of this Contract, including compliance with the Disadvantaged

Business Enterprise provisions as required under these contract provisions. The contractor receiving the award of the contract shall incorporate the EEO/AA provisions of this contract into all subcontracts and purchase orders so that such provisions will be binding upon each subcontractor or vendor.

- K. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Section Twenty-Nine F of Chapter Twenty-Nine, or any other applicable debarment provisions of any other Chapter of the General Laws or any rule or regulation promulgated thereunder; and is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.
- L. Bidders must fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled responsibilities of Participants Regarding transactions (Doing Business with Other Persons). Contractors, subcontractors, or suppliers that appear on the Excluded Parties List System at www.usgovxml.com/dataservice.aspx?ds=EPLS are not eligible for award of any contracts funded by the Massachusetts State Revolving Fund.
- M. Bidders must fully comply with the Diesel Retrofit Program. See Appendix B to the Agreement.
- N. In accordance with the above understanding, the undersigned proposes to furnish all Goods and Services, and complete the Work in its entirety in the manner and under the conditions required at the prices listed as follows:

<u>Item Number</u>	<u>Estimated Quantity</u>	<u>Brief Description: unit or lump-sum price bid in both words and figures.</u>	<u>Total in</u>
<u>Figures</u>			
Pipe Rehabilitation			
1A	XXX LF	Install 8-inch diameter cured-in-place pipe complete, as specified, per linear foot,	
		_____ dollars	
		and _____ cents (\$ _____) \$ _____	
1B	XXX LF	Install 10-inch diameter cured-in-place pipe complete, as specified, per linear foot,	
		_____ dollars	
		and _____ cents (\$ _____) \$ _____	
1C	XXX LF	Install 12-inch diameter cured-in-place pipe complete, as specified, per linear foot,	
		_____ dollars	
		and _____ cents (\$ _____) \$ _____	
1D	XXX LF	Install 18-inch diameter cured-in-place pipe complete, as specified, per linear foot,	
		_____ dollars	
		and _____ cents (\$ _____) \$ _____	

Sewer and Drain Pipe Replacement and Installation

Item Number	Estimated Quantity	Brief Description: unit or lump-sum price bid in both words and figures.	Total in Figures
2A	XXX LF	Dig & replace existing sewer pipe with new 8" PVC sewer pipe, as specified, per linear foot,	
		_____dollars	
		and_____cents (\$_____)	\$_____
2B	XXX EA	Connect existing drain main pipe (all diameters) to new/replacement drain structure, as specified, per connection,	
		_____dollars	
		and_____cents (\$_____)	\$_____
2C	XXX EA	Connect new drain main pipe (all diameters) to existing drain structure or culvert, as specified, per connection,	
		_____dollars	
		and_____cents (\$_____)	\$_____
2D	XXX EA	Cut, cap, and plug existing pipes, all sizes, as directed, per plug,	
		_____dollars	
		and_____cents (\$_____)	\$_____
2E	XXX LF	Abandon existing pipe in place all diameters, per linear foot,	
		_____dollars	
		and_____cents (\$_____)	\$_____
2F	XXX EA	Separate underdrain connections from sewer manholes, as shown on plans, per manhole,	
		_____dollars	
		and_____cents (\$_____)	\$_____

<u>Item Number</u>	<u>Estimated Quantity</u>	<u>Brief Description: unit or lump-sum price bid in both words and figures.</u>	<u>Total in Figures</u>
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Sewer and Drain Structures

3A	XXX EA	Install new 4-foot diameter pre-cast concrete manhole or catch basin bases, per base, _____dollars and _____cents (\$_____) \$_____	
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3B	XXX VF	Install new 4-foot diameter pre-cast concrete manhole or catch basin walls and cones, per vertical foot, _____dollars and _____cents (\$_____) \$_____	
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3C	XXX EA	Furnish & install standard manhole frames and covers as specified, per cover, _____dollars and _____cents (\$_____) \$_____	
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3D	XXX EA	Remove and replace standard manhole frames and covers as specified, per cover, _____dollars and _____cents (\$_____) \$_____	
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3E	XXX EA	Remove and dispose of existing manholes and catch basins, as specified, per structure, _____dollars and _____cents (\$_____) \$_____	
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3H	XXX VF	Seal and coat manhole walls and cones, complete, as shown on Sheet XXX, per vertical foot, _____dollars and _____cents (\$_____) \$_____	
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<u>Item Number</u>	<u>Estimated Quantity</u>	<u>Brief Description: unit or lump-sum price bid in both words and figures.</u>	<u>Total in Figures</u>
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Earth and Rock Excavation

4A	XXX* CY	Earth excavation below normal depth, as directed, per cubic yard, _____dollars	
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and _____cents (\$_____) \$_____

4B	XXX* CY	Rock excavation and disposal, as specified, per cubic yard, _____dollars	
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and _____cents (\$_____) \$_____

4C	XXX CY	Earth Excavation and Backfill for Test Pits As directed, per cubic yard, _____dollars	
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and _____cents (\$_____) \$_____

Miscellaneous Fill Materials

5A	XXX CY	Controlled Density Fill, as specified, per cubic yard, _____dollars	
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and _____cents (\$_____) \$_____

5B	XXX* CY	Additional gravel borrow, as specified, per cubic yard, _____dollars	
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and _____cents (\$_____) \$_____

5C	XXX* CY	Additional crushed stone, as specified, per cubic yard, _____dollars	
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and _____cents (\$_____) \$_____

<u>Item Number</u>	<u>Estimated Quantity</u>	<u>Brief Description: unit or lump-sum price bid in both words and figures.</u>	<u>Total in Figures</u>
5D	XXX* CY	Additional select borrow, as specified, per cubic yard,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____
5E	XXX* CY	Additional concrete, all classes, as specified, per cubic yard,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____
5F	XXX* LF	Concrete encasement, as directed, per linear foot,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____
Paving 6A	XXX LF	Trench-width gravel base course, in City streets & parking areas, 12-inch thickness, as specified, per linear foot,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____
6B	XXX LF	Temporary trench-width pavement, all areas, 4-inch thickness, as specified, per linear foot,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____
6C	XXX TON	Permanent bituminous binder course, to limits shown, in City streets & parking areas, 2.5-inch thickness, as specified, per ton,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____

<u>Item Number</u>	<u>Estimated Quantity</u>	<u>Brief Description: unit or lump-sum price bid in both words and figures.</u>	<u>Total in Figures</u>
6D	XXX TON	Permanent bituminous surface course, to limits shown, in City streets & parking areas, 1.5-inch thickness, as specified, per ton,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____
6E	XXX TON	Driveway apron and bituminous sidewalk restoration, complete, 3-inch thickness, as specified, per ton,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____
Contaminated Soils			
7A	1 LS	Contractor's Site-Specific Health and Safety Plan (HASP), as specified, the lump sum,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____
7B	1 LS	Transport and Disposal of Contaminated Soils (Category RCS-1 or above) and Groundwater allowance, the lump sum,	
		_____ dollars	
		and <u>zero</u> cents (\$ _____)	\$ _____
Miscellaneous			
8A	XXX* LF	Erosion Control, Silt Fencing & Straw Wattles, as specified and/or directed, per linear foot,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____
8B	XXX* LB	Calcium chloride for dust control, as directed, per pound,	
		_____ dollars	
		and _____ cents (\$ _____)	\$ _____

<u>Item Number</u>	<u>Estimated Quantity</u>	<u>Brief Description: unit or lump-sum price bid in both words and figures.</u>	<u>Total in Figures</u>
8C	1 LS	Miscellaneous utility relocation allowance, the lump sum, _____ dollars and <u>zero</u> cents (\$ _____) \$ _____	
8D	1 LS	Additional work in easements and Rights-of-Way, the lump sum, _____ dollars and _____ cents (\$ _____) \$ _____	
8E	1** LS	Mobilization and demobilization, the lump sum, _____ dollars and _____ cents (\$ _____) \$ _____	

* Indeterminate, quantity assumed for comparison of bids.

** The lump sum price for this item shall not exceed five percent (5%) of the total amount of the bid, excluding this item.

TOTAL OF TAUNTON 2022 SEWER & DRAIN IMPROVEMENTS BID

In Figures: \$ _____

In Words: _____

_____ **Dollars**

and _____ **Cents**

Amounts shall be shown in both words and figures, where indicated. In case of discrepancy, the amount shown in words will govern.

The above prices shall include all labor, materials, delivery, overhead, profit, insurance, and incidentals required to complete the Work.

- O. The names and residences of all persons and parties interested in the foregoing Bid as principals are as follows:

(Give first and last names in full.)

- P. Notice of acceptance should be e-mailed or delivered to the undersigned Bidder at the following address:

(Name of Bidder)

(Title)

(Business Address)

(City and State)

Date

Note: If the Bidder is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a limited liability company, indicate State of formation under signature; if a partnership, give full names and residential addresses, if different from business address.

STATEMENT OF INTENT TO COMPLY

This form must be signed and submitted by the bidder as part of the bid.

Local Governmental Unit City of Taunton, MA *SRF Project No.* 6796

Contract No. S-2022-3 *Contact Title* 2022 Sewer & Drain Improvements

Bidder _____

The undersigned, on behalf of the above-named Bidder, agrees that, if awarded the Contract:

- 1. the Bidder shall comply with the Department of Environmental Protection's ("DEP") Diesel Retrofit Program by ensuring that all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract are equipped or retrofitted with a pollution control device in accordance with the Diesel Retrofit Program Standard;*
- 2. the Bidder shall require all Subcontractors to comply with MassDEP's Diesel Retrofit Program by ensuring all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract are equipped or retrofitted with a pollution control device in accordance with the Diesel Retrofit Program Standard; and*
- 3. The Bidder shall submit and shall require each Subcontractor to submit a Diesel Retrofit Program Contractor Certification (form attached) with a Diesel Retrofit List to DEP (NAME and ADDRESS) and the Bidder within 10 days of the bidder being notified that it has been awarded the Contract. The Bidder shall require each Subcontractor to update such Certification and List within 2 days of using additional Diesel Construction Equipment on the project under the Contract.*

(Signature of Bidder's Authorized Representative)

(Date)

SECTION 00500
CONSTRUCTION AGREEMENT

Between

Veolia Water North America - Northeast, LLC

and

Subcontractor

Located in: Taunton, MA

**Project: City of Taunton
2022 Sewer & Drain Improvements
Contract S-2022-3, CWSRF 6796**

Date:

CONSTRUCTION AGREEMENT

THIS CONSTRUCTION AGREEMENT ("Agreement") is made and entered into as of _____, 2021 ("Effective Date") by and between Veolia Water North America - Northeast, LLC, a Delaware corporation (hereinafter "Company") whose address is 53 State Street, 14th Floor, Boston, MA 02127, and Subcontractor (hereinafter "Subcontractor"), whose address is Street, City (Town), State ZIP, (each a "Party" and collectively the "Parties"),

WHEREAS, in consideration of the mutual promises herein contained, Company and Subcontractor agree, promise, and obligate themselves as follows:

1. Subcontractor promises to provide the services described in Exhibit A, Scope of Work, (hereinafter the "Work") in accordance with the Agreement. The Work is provided to support Company's obligations to Taunton, MA (hereinafter "Client") in conjunction with Company's performance at the City of Taunton Wastewater Treatment Facility, Phase 2 Improvements (hereinafter the "Project") and its agreement with the Client (the "Prime Contract").
2. Company promises to pay Subcontractor for full, accurate, and timely performance of the Work and compensation as provided in Exhibit C and as set forth below in the Contract Documents.
3. This Agreement constitutes the entire understanding between the Parties, and cancels and supersedes all prior negotiations, representations, understandings and agreements, except that the indemnification obligations contained in any prior agreements shall survive the execution of this Agreement and consists of a) this Agreement; and b) its Exhibits (collectively referred to as "Contract Documents") incorporated and referenced as follows:
 - Notice of Award
 - Addenda _____ to _____
 - Bid Form
 - Exhibit A - Scope of Work (Note: Drawings and Specifications have been provided by Company and are not attached to this Agreement.)
 - Exhibit B - General Terms and Conditions
 - Exhibit C - Compensation
 - Exhibit C.1 - Interim Waiver and Release of Liens and Claims upon Payment
 - Exhibit C.2 - Unconditional Final Waiver and Release of Liens
 - Exhibit D - Insurance Requirements
 - Exhibit E - Insurance Supplement
 - Exhibit F - Additional / Special Terms - Illustrative Schedule
 - Exhibit G - Terms and Conditions for Hazardous or Contaminated Non-Hazardous Waste
 - Exhibit H - IT Security Requirements
 - Exhibit I - Anti-Corruption Compliance
 - Exhibit J - Bonding / Letters of Credit requirements

In the event of an inconsistency between provisions of the Agreement, the inconsistency shall be resolved by giving precedence as follows: 1) this Agreement, 2) Exhibit F Additional/Special Terms, 3) Exhibit B General Terms and Conditions, 4) Exhibit A Scope of Work, and 5) any remaining Contract Documents.

4. The Effective Date set forth above is the date as to which all Contract Documents have reference for purposes of coordination of their meaning and effect. Any work commenced and any payments made pursuant to an award or letter of intent prior to the execution date hereof shall be deemed to have been done and paid after the Effective Date and governed by the terms of this Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be signed by their respective authorized representatives, effective as of the date indicated above.

Veolia Water North America - Northeast, LLC:	Subcontractor:
By:	By:
Title:	Title:
Typed Name:	Typed Name:
Date:	Date:

EXHIBIT A
SCOPE OF WORK

1 DESCRIPTION

Except as otherwise expressly provided herein, Subcontractor shall provide all labor, supervision, material, supplies, equipment, inspections, and any other incidentals required to perform the Work as described in this Scope of Work for the Project. The Work is generally described as follows:

**City of Taunton Wastewater Treatment Facility
Phase 2 Improvements – Bid Package #1
Contract S-2022-3, CWSRF 6796**

2 PERFORMANCE PERIOD / SCHEDULE

Time is of the essence in the performance of this Work. Subcontractor shall make whatever adjustments in working hours, manpower, equipment, etc. deemed necessary to complete the Work in accordance with the terms of the Agreement and the specific schedule requirements hereof.

The time of completion of this contract is 365 calendar days. The Subcontractor shall prepare a Project schedule.

Liquidated damages specified in this contract are \$1,000 per day for each calendar day beyond the contract completion date that work remains uncompleted.

3 REPORTING REQUIREMENTS

The Subcontractor shall prepare daily reports and a monthly progress report providing significant progress completed that month summarized in bullet points and also providing percent of project complete.

4 DATA REQUIREMENTS

INTENTIONALLY LEFT BLANK

5 SPECIAL EQUIPMENT WARRANTIES

Subcontractor warrants that the goods and equipment ("Equipment") shall be free from liens and defects in title, design, material, workmanship, and performance, and shall conform and perform in all respects to the terms of this Order, the specifications and applicable drawings and shall be new and of the best quality. If, any time prior to the earlier of one (1) year from the date of actual productive use of the Equipment or from completion of performance of the services, it appears the Equipment or services do not conform to these warranties or the specifications, and Company so notifies the Subcontractor, Subcontractor shall promptly correct such nonconformity and take all other action to remedy the results of any defect or nonconformity to the satisfaction of the Company, at Subcontractor's sole expense, failing which Company may reject or revoke acceptance and cover, or Company may perform Subcontractor's work and correct such defects at Subcontractor's expense. These rights shall survive acceptance and the warranty shall inure to the benefit of and be enforceable by Company and its customer.

6 COMPANY FURNISHED ITEMS

With respect to the Company Furnished Products identified below, Subcontractor shall fulfill the described responsibilities:

- Bid Package #2 – Electrical
- Bid Package #3 – Instrumentation and Control
- Bid Package #4 – Secondary Sludge Pumps Procurement

Subcontractor's Responsibilities:

- Review Company provided shop drawings.
- Inspect for completeness or damage, jointly with Company.
- Handle, store, install and finish products.
- Repair or replace products/items damaged after receipt.
- Arrange for manufacturer's inspections, service, start-up services and training.

7 WORKING HOURS

The Work to be performed is located at 825 West Water Street, Taunton, MA ("Project Site") and the working hours are 7:00 A.M. to 3:30 P.M. Monday through Friday. Subcontractor shall coordinate with designated Veolia staff for deviations to this requirement.

8 COMMONWEALTH OF MASSACHUSETTS PROVISIONS

- A. Note that the City of Taunton has special legislation for contracts associated with water treatment facilities. This legislation amends the MGL.
- B. The Contractor agrees that it will fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled Responsibilities of Participants Regarding Transactions (Doing Business with Other Persons). The Contractor shall not award any subcontracts or purchase any materials from suppliers that appear on the Excluded Parties List System. The Contractor shall include this requirement in each subcontract and require it to be included in all subcontracts regardless of tier. The Contractor shall maintain reasonable records to demonstrate compliance with these requirements.
- C. The fair share goals for disadvantaged business enterprise (DBE) participation for this contract are a minimum of 5.47% percent Disadvantaged Minority Business Enterprise (D/MBE) participation and 5.86% percent Disadvantaged Women Business Enterprise(D/WBE) participation, applicable to the total dollar amount paid for the construction contract. The Contractor shall take all affirmative steps necessary to achieve this goal, and shall provide reports documenting the portion of contract and subcontract dollars paid to DBEs, and its efforts to achieve the goals, with each invoice submitted or at such greater intervals as specified by the (municipality). The contractor shall require similar reports from its subcontractors.
- D. During the performance of this contract, the contractor agrees as follows:
 - a. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.
 - b. The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.
 - c. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
 - d. The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
 - e. The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain

compliance with such rules, regulations, and orders. Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230

- f. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- g. The contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States." [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966-1970
- E. The contractor shall not participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue code 1986, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.
- F. Pursuant to M.G.L. c.44, s31C, I certify that an appropriation has been made in the total amount of the contract.
- G. The Contractor acknowledges to and for the benefit of the City of Taunton and the Commonwealth of Massachusetts (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel," that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a)the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees)incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.
- H. All construction contracts are subject to the Davis Bacon wage rate requirements and must include the provisions found in Appendix G in the contract. The Davis Bacon Act Requirements are included.
- I. The Contractor agrees that it will fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled Responsibilities of Participants Regarding Transactions (Doing Business with Other Persons). The Contractor shall not award any subcontracts or purchase any materials from suppliers that appear on the Excluded Parties List System. The Contractor shall include this requirement in each subcontract and require it to be included in all subcontracts regardless of tier. The Contractor shall maintain reasonable records to demonstrate compliance with these requirements.
- J. M.G.L statutes:

M.G.L c.30 s 39F Payment to Subcontractor
c.30 s 39I Deviation from Plans and Specifications

c.30 s 39J No Arbitrary Decisions are Final
c.30 s 39L Construction Work by Foreign Corporations
c.30 s 39N Differing Site Conditions
c.30 s 39O Equitable Adjustments for Delays
c.30 s 39P Decision on Interpretation of Specifications
c.30 s 39R Contractor's Records
c.149 s 34 Limitations on Hours of Work
c.82 s 40 Excavations; Notice; Penalties

Section 39F.

- a. Every contract awarded pursuant to sections forty-four A to L, inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.
 - a. Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.
 - b. Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.
 - c. Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.
 - d. If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for

- extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.
- e. Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.
 - f. The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.
 - g. All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.
 - h. The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.
 - i. If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).
- b. Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to subparagraph (f) of paragraph (1) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.
 - c. "Subcontractor" as used in this section (i) for contracts awarded as provided in sections forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor

and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (a) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

- d. A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter all interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal there from as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest carried for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1).
- e. In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1) any amount held under a trustee writ or pursuant to a restraining order or injunction.

Section 39N. Every contract subject to section forty-four A of the chapter one hundred and forty-nine or subject to section thirty-nine M chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning, the filing investigation and settlement of such claims if, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

Section 39O. Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

- a. The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.
- b. The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.

K. Appendices:

1. Appendix A1 - Certification Statement
2. Appendix B - Diesel Retrofit Program
3. Appendix E - Disadvantaged Business Enterprises
4. Appendix F - DIVISION OF MUNICIPAL SERVICES POLICIES
5. Appendix G - Davis Bacon Act Requirements
6. Appendix I - American Iron and Steel Requirements

9 GENERAL REQUIREMENTS

A. 2022 Sewer & Drain Improvements:

- Cured-in-place-Pipe (CIPP) lining of approximately 9,000 lf of sewer pipe between 8" and 18" in diameter.
 - Excavated replacement of approximately 2,000 lf of sewer with associated laterals and manholes.
 - Excavated spot repairs of sewers and drains
 - Removal and disposal of contaminated soil and asbestos associated with the above work
 - Appurtenant work and paving associated with the above scope.
- Safety Requirements:
 - The Subcontractor is to meet and review the Veolia safety plan for this facility prior to initiating work and shall submit a site-specific safety plan. The minimum PPE requirements are Steel toed boots, ANSI approved hard hats, and ANSI approved safety glasses.
 - Certain tasks may require additional personnel protective equipment - such as a respirator, hearing protection, fall protection, tyvek suits. Prior to performing these tasks - a job site safety analysis must be facilitated.

CERTIFICATION STATEMENT

Pursuant to M.G.L. c.44, s31C, I certify that an appropriation has been made in the total amount of the contract.

City of Taunton, Massachusetts
City Auditor

Contract Approved As To Form:

City of Taunton Massachusetts
City Solicitor

DIESEL RETROFIT PROGRAM CONTRACTOR CERTIFICATION

Each Contractor and its Subcontractor(s) must sign and email this form to the DEP DMS project engineer, within 10 days after the contractor is awarded.

Local Governmental Unit: **City of Taunton** SRF Project No.: **6796**

Contract No.: **S-2022-3** Contact Title: **2022 Sewer & Drain Improvements**

Contractor: _____

I, _____, an authorized signatory for
(Authorized Representative)

(Contractor)

whose principal place of business is at _____ do hereby certify that any and all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract (hereinafter "Diesel Construction Equipment") have pollution control devices, such as oxidation catalysts or particulate filters, installed on the exhaust system side of the diesel combustion engine equipment in accordance with the Diesel Retrofit Program Standard.

I am submitting on behalf of _____ a list of all said Diesel Construction Equipment, labeled "Diesel Retrofit List," that will be used in connection with this Contract by
(Contractor)

_____. I hereby certify that the information on the attached Diesel Retrofit List is correct and accurate as of the date of signature. The List includes the following information for each piece of Diesel Construction Equipment:

1. Equipment type, make, model;
2. Vehicle Identification Number or VIN;
3. Engine model and year of manufacture;
4. Engine HP rating;
5. Emission Control Device ("ECD") type (Diesel Oxidation Catalyst or Diesel Particulate Filter);
6. ECD make, model, and manufacturer;
7. ECD EPA or CARB Verification Number or manufacturer's certification that the DOC or DPF meets or exceeds emission reductions provided by similar emission control technology verified by EPA or CARB;
8. ECD installation date;
9. Type of fuel to be used; and
10. Whether the equipment is owned or rented.

Contractor shall notify DEP within 48 hours of any new Diesel Construction Equipment brought onto the Contract site. Contractor shall maintain detailed records of all Diesel Construction Equipment used at the Contract site, including the dates and duration times the Diesel Construction Equipment is used at the Contract site. Contractor shall make such records available for inspection by DEP. Contractor shall ensure that the emissions control technology for each piece of Diesel Construction Equipment is operated, maintained, and serviced as recommended by the manufacturer. Contractor shall retrofit prior to the end of the Contract any Diesel Construction Equipment no longer exempt from meeting the Diesel Construction Equipment Standard under exemption 3 (because it had an engine that met the EPA particulate matter (PM) Tier emission standards currently in effect at the start of the Contract for non-road diesel engines for the applicable engine power group and such emissions standards were superseded during the Contract).

I acknowledge that this certificate is being furnished as a requirement under this Contract and is subject to applicable State and federal laws, both criminal and civil. Signed under pains and penalty of perjury on

this date _____.

Signature: _____

Printed Name: _____

Title: _____

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
 MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF MUNICIPAL SERVICES

SCHEDULE OF PARTICIPATION FOR SRF CONSTRUCTION

Project Title: _____ **Project Location:** _____

Disadvantaged Minority Business Enterprise Participation in the SRF Loan Work

Name & Address of D/MBE	Nature of Participation	Dollar Value of Participation
1.		
2.		
3.		
Total D/MBE Commitment:		\$
Percentage D/MBE Participation = (Total D/MBE Commitment) / (Bid Price) =		%

Disadvantaged Women Business Enterprise Participation in the SRF Loan Work

Name & Address of D/WBE	Nature of Participation	Dollar Value of Participation
1.		
2.		
3.		
Total D/WBE Commitment:		\$
Percentage D/WBE Participation = (Total D/WBE Commitment) / (Bid Price) =		%

The Bidder agrees to furnish implementation reports as required by MassDEP to indicate the D/MBEs and D/WBE(s) which it has used or intends to use. Breach of this commitment constitutes a breach of the contract.

Name of Bidder: _____

Date: _____ By: _____
Signature

NOTE: Participation of a DBE may be counted in only their certified category; the same dollar participation cannot be used in computing the percentage of D/MBE participation and again of D/WBE participation.

LETTER OF INTENT FOR SRF CONSTRUCTION

This form is to be completed by the D/MBE and D/WBE and must be submitted by the Bidder no later than close of business on the third business day after notification by the LGU. A separate form must be completed for each D/MBE and D/WBE involved in the project.

Project Title: _____ Project Location: _____

TO: _____
(Name of Bidder)

FROM: _____
(Please Indicate Status D/MBE or D/WBE)

° I/we intend to perform work in connection with the above project as (check one):

- An individual
- A partnership
- A corporation
- A joint venture with: _____
- Other (explain): _____

° It is understood that if you are awarded the contract, you intend to enter into an agreement to perform the activity described below for the prices indicated.

DBE PARTICIPATION

Description of Activity	Date of Project Commencement	\$ Amount	% Bid Price
		\$	%

° The undersigned certify that they will enter into a formal agreement upon execution of the contract for the above referenced project.

BIDDER	DBE
(Authorized Original Signature) Date	(Authorized Original Signature) Date
ADDRESS:	ADDRESS:
TELEPHONE #:	TELEPHONE #:
FEIN:	FEIN:
EMAIL ADDRESS:	EMAIL ADDRESS:

ORIGINALS:

- ° Compliance Mgr. City/Town Project Location
- ° DEP Program Manager for DEP's AAO Director

*** Attach a copy of current (within 2 years) DBE Certification**

DBE CERTIFICATION OF UNITED STATES CITIZENSHIP

For the SRF program, under the EPA Disadvantage Business Enterprise (DBE) Rule, a DBE must be owned or controlled by a socially and economically disadvantaged person that is also a **citizen of the United States** (See 40 CFR 33.202). “Ownership” is defined at 13 CFR 124.105 and “control” is defined at 13 CFR 124.106.

DBEs are certified for the SRF program through the Supplier Diversity Office using the federal Department of Transportation (DOT) DBE rules. EPA allows the use of DBEs certified under the DOT rules as long as they are also United States citizens. To ensure compliance with the EPA rule, MassDEP must verify United States citizenship through the completion of the following form for each DBE used on the project.

SRF Project Number _____

Contract Number _____

Contract Title _____

DBE Subcontractor _____

The undersigned, on behalf of the above named DBE subcontractor, hereby certifies that the DBE firm is either owned or controlled by a person or persons that are citizens of the United States.

Printed Name and Title of DBE Signatory

DBE Signature

Date

DISADVANTAGED BUSINESS ENTERPRISE
PROGRAM DBE SUBCONTRACTOR PARTICIPATION
FORM

The United States Environmental Protection Agency (EPA) requires that this form be provided to all subcontractors on the project. At the option of the subcontractor, this form may be filled out and submitted directly to the EPA DBE Coordinator.

NAME OF SUBCONTRACTOR	PROJECT NAME
ADDRESS	CONTRACT NO.
TELEPHONE NO.	E-MAIL ADDRESS
PRIME CONTRACTOR NAME:	

Please use the space below to report any concerns regarding the above EPA-funded project (e.g., reason for termination by prime contractor, late payment, etc.).

CONTRACT ITEM NO.	ITEM OF WORK OR DESCRIPTION OF SERVICES RECEIVED FROM THE PRIME CONTRACTOR	AMOUNT SUBCONTRACTOR WAS PAID BY PRIME CONTRACTOR
_____ Subcontractor Signature		_____ Title/Date

Equivalent to EPA form 6100-2

REQUEST FOR WAIVER FOR SRF CONSTRUCTION

Upon exhausting all known sources and making every possible effort to meet the minimum requirements for DBE participation, the Bidder may seek relief either partially or entirely from these requirements by submitting a completed waiver package by the close of business on the third business day after notification by the LGU. Failure to comply with this process shall be cause to reject the bid thereby rendering the Bidder not eligible for award of the contract.

General Information

Project Title: _____ Project Location: _____
Bid Opening (time/date) _____
Bidder: _____
Mailing Address: _____
Contact Person: _____ Telephone No. _____

Minimum Requirements

The bidder must demonstrate that good faith efforts were undertaken to comply with the percentage goals as specified. The firm seeking relief must show that such efforts were taken appropriately in advance of the time set for opening bid proposals to allow adequate time for response(s) by submitting the following:

- A. A detailed record of the effort made to contact and negotiate with disadvantaged minority and/or woman owned businesses, including:
 - 1. names, addresses, telephone numbers and contact dates of all such companies contacted;
 - 2. copies of written notice(s) which were sent to DBE potential subcontractors prior to bid opening;
 - 3. a detailed statement as to why each subcontractor contacted (i) was not willing to do the job or (ii) was not qualified to perform the work as solicited; and
 - 4. in the case(s) where a negotiated price could not be reached the bidder should detail what efforts were made to reach an agreement on a competitive price.
 - 5. copies of advertisements, dated not less than ten (10) days prior to bid opening, as appearing in general publications, trade-oriented publications, and applicable minority/women-focused media detailing the opportunities for participation;

- B. MassDEP may require the bidder to produce such additional information as it deems appropriate.
- C. No later than fifteen (15) days after submission of all required information and documentation, MassDEP shall make a determination, in writing, whether the waiver request is granted and shall provide that determination to the bidder and Awarding Authority. If the waiver request is denied, the facts upon which a denial is based will be set forth in writing.

CERTIFICATION

The undersigned herewith certifies that the above information and appropriate attachments are true and accurate to the best of my knowledge and that I have been authorized to act on behalf of the bidder in this matter.

(authorized original signature)

DATE

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER RESOURCES
DIVISION OF MUNICIPAL SERVICES POLICIES

The Division of Municipal Services (DMS) has established the following policies for all Division financially-assisted projects.

POLICY MEMORANDUM NO. PM-1

EASEMENTS AND RIGHTS OF WAY

Prior to the approval of financial assistance for construction, the owner shall obtain and shall thereafter retain, a fee simple or such estate or interest in the site of construction and rights of access as will assure undisturbed use and possession for the purpose of construction and operation for the estimated life of the project. The Division may refuse to approve financial assistance until it has received from the owner sufficient assurances that such interests have been obtained. Unless the Division otherwise notifies the owner, the certificate (under pains and penalties of perjury) of the owner's legal representative shall constitute such sufficient assurance.

Additional cost which result from interruptions of construction or extensions of contract time caused by the owner's failure to obtain the necessary interests in land shall be ineligible for financial assistance, and all such additional costs shall be borne by the owner.

POLICY MEMORANDUM NO. PM-2

PERMITS

The owner shall be responsible for identifying and obtaining all federal, state, local and railroad permits required by the nature and location of construction, including but not limited to building construction permits and permits for street and highway cuts and openings, and all such permits shall be listed in a separate permits section of the contract documents. To the extent possible, such permits shall be obtained by the owner prior to the solicitation of bids for construction, and copies of all permits so obtained shall be included in the said permits section. The status of the application for each permit, including the permit conditions, and costs, not obtained prior to the solicitation of bids shall also be indicated in the contract documents permits section. The Division may refuse to approve financial assistance for construction unless and until it has received from the owner sufficient assurances that all necessary permits have been or will be obtained prior to the commencement of construction.

Policy Memorandum No. PM-2 – Permits (Con't)

The contractor shall be responsible for obtaining all permits required of his equipment, work force, or particular operations (such as blasting) in the performance of the contract and not otherwise specified in the two preceding paragraphs as to be obtained by the owner. These permit fees shall be paid by the contractor.

The owner shall be responsible for the payment of all other permit fees required by the construction.

The following permits shall not be eligible for financial participation by the Department of Environmental Protection (DEP).

- Permits and insurance for construction in railroads' rights of way;
- Building permits;
- Permits for opening public streets and other public or municipal rights of way;
- Permits for the use of explosives;
- Permits for the disposal of waste materials;
- Permits and fees for connecting to municipal utilities.

Permits required by extraordinary circumstances and not specifically excluded from eligibility above may be eligible for DEP participation. For such permits to be so eligible, the owner or his representative must notify the DEP project engineer in advance of obtaining such permit and receive from the engineer specific agreement that such permit will be eligible for DEP participation. Eligibility for such participation will not be made retroactively.

Additional costs which result from interruptions of construction or extensions of contract time resulting from the owner's or the contractor's failure to obtain the necessary permits may be ineligible for participation.

POLICY MEMORANDUM NO. PM-3

FIELD CONTROLS

The Owner shall be responsible for indicating on the contract drawings all easement limits and all property and other control lines for locating the principal component parts of the work together with those elevations and bench marks used in the design of the work, all hereinafter referred to as "field controls". Where easement and property limits have not previously been established in the field, the owner shall be responsible for establishment of such limits. From the information provided by the Owner, unless otherwise specified, the Contractor shall develop and make all layouts required for construction, such as slope stakes, batter boards, stakes for pipe locations and other working points, lines, elevations and cut sheets.

Whenever he has reason to believe that an error exists or whenever he is otherwise unable to locate the field controls, the contractor shall promptly notify the owner and the owner's engineer of such error with appropriate documentation.

POLICY MEMORANDUM NO. PM-4

RECORD DRAWINGS

The Owner shall be responsible for the preparation of all record drawings required by this contract. This responsibility may be delegated to the Owner's representative. The responsibility for preparation of record drawings shall not be delegated or transferred to the contractor. They may use the contractor's and sub-contractor's certified AS BUILT drawings along with their own marked up set in the preparation of the Record Drawings.

Division approved contract drawings shall be revised upon completion of the contract to reflect any changes made and/or final quantities, as appropriate.

POLICY MEMORANDUM NO. PM-5

PLAN SCALE

Unless otherwise approved in advance by the Division, the horizontal scale for construction plans for non-structural facilities shall be 1" = 40'. A larger horizontal scale shall be used where appropriate to show sufficient detail to construct the project. The vertical scale for construction plans for non-structural facilities shall be 1" = 4'. Based on the best information available at the time of their preparation, the location of underground utilities and support structures for overhead utilities shall be shown on the plans.

Unless otherwise exempted in advance by the Division, construction plans shall be updated whenever the date of the advertisement for bids for the construction of such facilities is more than one year after the date of approval by the Division or EPA; and in the case of approval by both such agencies, the later approval date shall be used in determining the need for update.

The consulting engineer shall receive adequate compensation for updating plans and specifications, and such additional cost shall be eligible for assistance to the extent not otherwise prohibited by USEPA and Division regulations and program guidance.

All revision, or review without need for revision, shall be noted and dated on the plans prior to advertisement of the project for bid.

POLICY MEMORANDUM NO. PM-6

BORINGS LOGS

All soil borings shall be taken as close as practicable to the construction line, and the location of all such borings shall be clearly indicated on the contract drawings. The plan view shall show the location and boring number of each boring. The profile view shall show the location, elevation, and depth of each soil boring, the location of each change in soil stratum, the groundwater level, and the average of blow counts at each five foot interval. As a minimum, boring logs to be submitted with the plans and specifications shall show the name of the company taking the borings, the soil classification, the number of blows per foot of penetration, the groundwater elevation, and the date on which the borings were taken.

As part of the submission of plans and specification for approval, the owner's representative shall include written justification for the lesser frequency and depth of borings where their interval is more than approximately 300' or their depth is less than 50% below depth of pipe invert.

POLICY MEMORANDUM NO. PM-7

BREAKDOWN OF BID ITEMS

The following items shall, where applicable, be listed separately in the bid documents.

- 1. Mobilization
- 2. Pavement
 - a. Municipal
 - i. temporary
 - ii. permanent
 - b. State
 - i. temporary
 - ii. permanent
- 3. Concrete cradle or encasement
(to be identified where applicable)
- 4. Rock-Excavation
- 5. Wood or steel sheeting left in place
- 6. Excavation of unsuitable materials below grade.
- 7. Select and/or borrow material
- 8. Dewatering
- 9. Special Dewatering (coffer dam)

Mobilization costs are the costs of initiating the contract, exclusive of the cost of materials. Payment for mobilization shall be a lump sum at the price bid for this item in the proposal and shall be payable when the contractor is operational on the site. For purposes of this policy, “operational” shall mean the substantial commencement of work on site.

The lump sum price bid for mobilization shall not exceed five per centum (5%) of the total amount of the bid.

POLICY MEMORANDUM NO. PM-8

PAVEMENT

All roads and trenches therein shall be refilled and repaved in accordance with specifications provided by the owner in the contract documents. Please note that this policy may be excludable on federally assisted projects where bid alternative items may be required (i.e. trench width vs. full width pavement). You are advised to seek project specific clarification.

Loan eligibility shall be limited to the following:

- A. Where the depth of the pipe invert is 0 to 8’, the maximum pavement widths which shall be eligible for financial assistance are as follows:

<u>Nominal Pipe Diameter</u>	<u>Maximum Eligible Widths</u>	
	<u>Initial Pavement</u>	<u>Permanent Trench</u>
0-24”	6’-6”	8’-6”

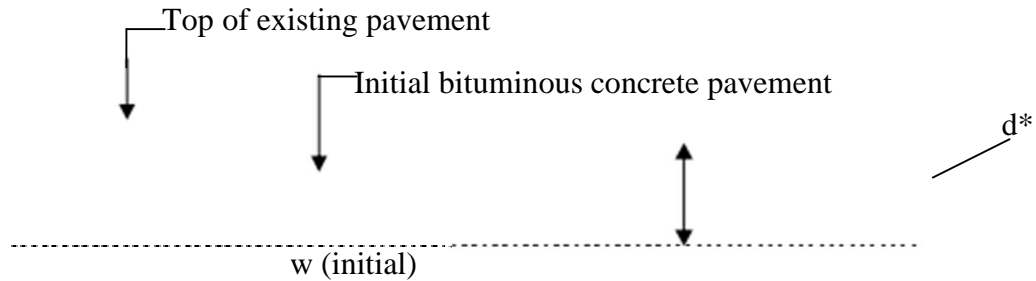
Where the nominal pipe diameter is greater than 24” the maximum eligible width for initial re-paving shall be the nominal diameter of the pipe plus four (4) feet, and for permanent trench re-paving the maximum eligible width shall be the nominal pipe diameter plus six (6) feet.

- B. For each additional four (4) feet (or fraction thereof) of pipe invert depth, add three feet to the eligible width limits stated in paragraph A.

Policy Memorandum No. PM-8 – Pavement (Con't)

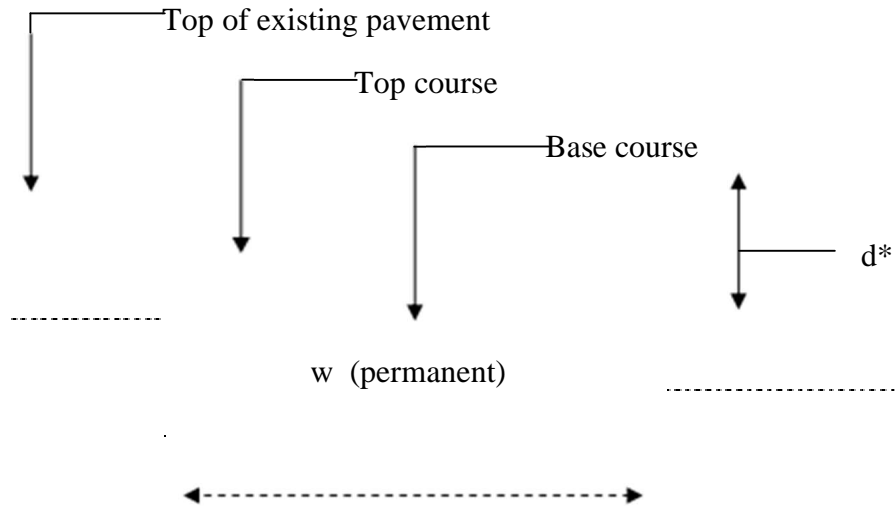
At the design phase of a project the owner has the option to elect either Initial Pavement with Option I (Permanent Trench replacement) or Initial with Option II (curb to curb over initial)

Initial Pavement



d* = depth of existing pavement to a maximum of 3 inches (see general notes #3)
w = maximum eligible Initial pavement width as described in paragraphs “A” & “B” on page DEP-DMS-CG’s-P4.

OPTION I Permanent Trench Pavement

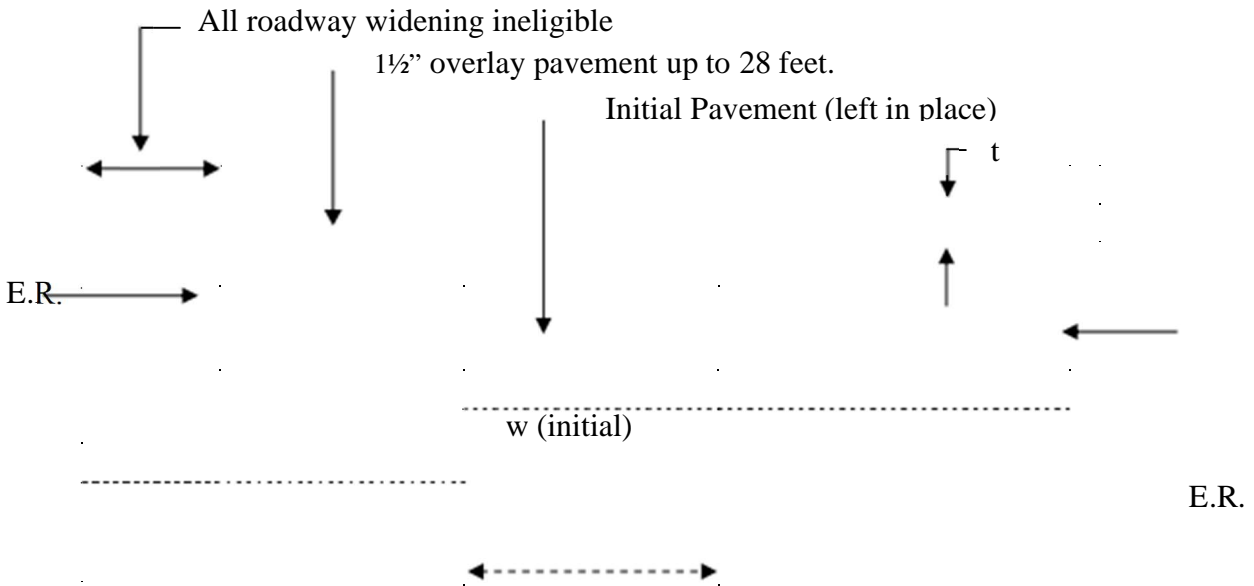


d* = depth of existing pavement trench to a maximum of 3 inches (see general notes #3)
w = maximum eligible permanent pavement width as described in paragraphs “A” & “B”.
equals initial width plus 2 feet and includes:

- Cutting edges for the permanent trench
- Removal of initial patch plus two feet of existing pavement
- Fine grading/compacting gravel
- Placement of Permanent Trench pavement in two courses.

Policy Memorandum No. PM-8 – Pavement (Con't)

OPTION II Curb to Curb Pavement (overlay pavement for roadways up to 28 feet)



E.R.= edge of existing paved roadway

t = one and one half inch (1½") overlay of bituminous concrete pavement

GENERAL NOTES:

1. Repavement of settled areas and crown restoration within the trench limits shall be the responsibility of the contractor.
2. Leveling outside the trench limits shall be the responsibility of the owner.
3. Sewer trench re-fill and pavement re-paving on public ways under the jurisdiction of the Massachusetts Department of Public Works, the Metropolitan District Commission, or other such agency shall be in accordance with permit(s) issued therefore by that Department or Commission, as the case may be.
4. The Division will consider requests for increase in the participating pay limits defined in paragraphs A and B, when such increases are, in the Division's opinion, reasonable. Such requests should be documented in writing and submitted to the Division in a timely manner.
5. Projects which deviate from the above options are required to seek Division review and approval.

POLICY MEMORANDUM NO. PM-9

PIPE TESTING

Monthly payment estimates shall be prepared in accordance with contract documents. All pipe shall be tested in accordance with the contract documents and sound engineering practice. If, after 60 days following submission of a monthly payment estimate for pipe items, the pipe for which payment is requested has not been successfully tested, the owner may withhold up to 10% of the amount requested for such pipe items until the pipe has been so tested. However, in the case of a major (pipe diameter 24 inches or greater) interceptor pipe installation, sums retained by the owner pursuant to this policy memorandum shall not exceed two per centum (2%) of the costs of such pipe items.

POLICY MEMORANDUM NO. PM-10

CHANGE ORDERS

Executed change orders submitted to the Division for review and processing for financial assistance must be prepared on the attached Change Order Forms (PM-10, Attachment 1, pages A-1 & A-2) with a duplicate copy, calculation sheet(s) (PM-10, Attachment 2), and all other supporting documentation necessary for evaluation. Failure to comply with these instructions will result in delays in processing the change order and/or limited financial assistance.

M.G.L. c.44, s.31C requires that the auditor, accountant, or other municipal officer having similar duties must certify that adequate funding in an amount sufficient to cover the total cost of the change order has been made. Change orders will not be processed or approved until this certification is made on the face of the Change Order Form (PM-10 Attachment 1).

Payment of Change Orders:

Payment of all change orders shall be in accordance with the relevant provisions of Massachusetts General laws, Chapter 30, Section 39G for non-building construction and Section 39K for building construction.

Payment of change orders shall be made in accordance with one of the following three methods:

- A. Existing unit prices as set forth in the contract; or
- B. Agreed upon lump sum or unit prices; or
- C. Time and materials

A. **Payment for work for which there is a unit price in the contract:**

Where the contract contains a unit price for work and the Engineer orders a change for work of the same kind as other work contained in the contract and is performed under similar physical conditions, the contractor may accept full and final payment at the contract unit price(s) for the acceptable quantities.

Policy Memorandum No. PM-10 – Change Orders (Con't)

B. Payment for work or materials for which no price is contained in the contract:

If the Engineer directs, the contractor shall submit promptly in writing to the Engineer and offer to do the required work on a lump sum or unit price basis, as specified by the Engineer. The stated price, either lump sum or unit price, shall be divided so as to show that it is the sum of:

- (1) The estimated cost of labor, plus
- (2) Direct Labor Cost, plus
- (3) Material and Freight Costs, plus
- (4) Equipment Costs, plus
- (5) An amount not to exceed 20% of the sum of items (1) through (4) for overhead and profit, plus (if applicable),
- (6) In the case of work done by a subcontractor an amount not to exceed 7 ½ %, for the general contractor of the sum of items (1) through (4) for his overhead and profit, less, if applicable,
- (7) Credits for work deleted from the contract.

C. Payment for work on a time and materials basis:

Unless an agreed lump sum and/or unit price is obtained from above and is so stated in the change price, the contractor shall accept as full payment for which no other agreement is contained in contract, and amount equal to:

- (1) The estimated cost of Labor, plus
- (2) Direct Labor Cost, plus
- (3) Material and Freight Costs, plus
- (4) Equipment Costs, plus
- (5) An amount not to exceed 20% of the sum of items (1) through (4) for overhead and profit, plus (if applicable),
- (6) In the case of work done by a subcontractor an amount not to exceed 7 ½ %, for the general contractor of the sum of items (1) through (4) for his overhead and profit, less, if applicable,
- (7) Credits for work deleted from the contract.

Explanation of items (1) through (7) as outlined in “B” and “C”:

- (1) Labor – Only those workers employed on the project who are doing the extra work, including the foreman in charge, are allowable. General foremen, superintendents, or other supervisory personnel are considered to be included in the overhead markup as provided in items (5) and/or (6). Hourly labor rates in excess of those as listed in the contract wage rates (Federal or State, whichever applies) require documentation. As a minimum, an explanation and the appropriate copy of the certified payroll are required.

Policy Memorandum No. PM-10 – Change Orders (Con't)

(4) Equipment – Only the equipment required as a result of the change order is allowable. Equipment rental rates shall be governed by the current Nielson/Dataquest Rental Rate bluebook for Construction Equipment (the “Bluebook”). In determining the rental rate the following shall apply:

- (a) For equipment already on the project – the monthly prorated rental rate by the hourly use shall be applicable;
- (b) For equipment not on the project the daily rate, the weekly rate, or monthly rate will prevail, whichever will prove to be most cost effective. Small tools and manual equipment are examples of costs not allowable under this item. These costs are considered to be included in the overhead markup as provided in items (5) and/or (6) (1 month (normal use) = 176 hours)

(5) & (6) Overhead and Profit – All other costs not previously mentioned are considered to be included in this item, be it for the general contractor or subcontractor(s).

(7) Credits – Work deleted, material and equipment removed from the contractor, stored and/or returned shall be credited to the cost of the change order, less costs.

The Contractor shall furnish itemized statements of the cost of the work ordered and shall give the Engineer access to all accounts, bills and vouchers relating thereto; and unless the Contractor shall furnish such itemized statements, and access to all accounts, bills and vouchers, he shall not be entitled to payment for any items of extra work for which such information is sought by the Engineer. Deviations from any of the above will be reviewed for financial assistance on a case-by-case basis.

The change order will be prepared in such manner as to clearly separate Eligible and Ineligible Costs.

CHANGE ORDER FORM

SRF Number _____
Public Entity _____
Contract Number _____
Change Order Number _____

Contract Amount (As Bid) \$ _____

Net Change in Contract Price (this change order) \$ _____

Total Adjusted Contract Price (including this and all other change orders) \$ _____

This change order extends the time to complete the work by _____ calendar days.

The extended completion date is _____

This change order checked by _____
(Chief) Resident Engineer Date

This change order is requested by: _____

This change order is recommended by: _____

Consultant Engineer P.E. Number Date

The undersigned agree to the terms of the change order.

Contractor Date

Owner Date

Certification of Appropriation under M.G.L. c.44, §31C: Adequate funding in an amount sufficient to cover the total cost of this change order is available.

By: _____
Certification Officer (Auditor, accountant, treasurer) Date

Do not write below: this space reserved for STATE AGENCY APPROVAL

CHANGE ORDER FORM (Continued)

PM-10 Attachment 1

Page 2 of 2

Public Entity _____

SRF No: _____ Contract No. _____ Change Order No. _____

Contract Title: _____

Owner's Name: _____

Owner's Address: _____

Contractor's Name: _____

Contractor's Address: _____

Description of Change

Reason for Change

CALCULATION SHEET

(1)	Labor			
	Foreman	10 hrs @ \$10.00/hr.	\$	100.00
	Engineer	10 hrs @ 8.50/hr		85.00
	Operator	10 hrs @ 9.50/hr		95.00
	Laborers	24 hrs @ 7.00/hr		<u>168.00</u>
				\$448.00
(2)	Direct Labor Cost (use the agreed upon Direct Labor Cost)			
*	(30)% of \$448			
*	(Used for example purposes only)			134.00
(3)	Materials & Freight			
	150 l.f. of 12" pipe @ \$2.00/l.f.		\$	300.00
	15 v.f. precast SMH			1,700.00
	Freight (slip # _____ Enclosed)			<u>25.00</u>
				2,025.00
(4)	Equipment			
	1 Backhoe	10 hrs @ \$80.00/hr	\$	800.00
	1 Truck-crane	10 hrs @ \$100.00/hr		<u>1,000.00</u>
				1,800.00
		Total (Items 1 through 4)		<u>4,407.00</u>
(5)	20% markup for Overhead, Profit			
	20% of \$4,407			881.00
(6)	7 ½% markup for general contractor (if subcontractor is involved)			
	7 ½% of \$4,407			331.00
(7)	Credits (deductibles)			
				<u>- 323.00</u>
		Total Cost	\$	5,296.00

Reminder: Provide support documentation as necessary i.e. vouchers, correspondence, Calculation, photographs, reports

POLICY MEMORANDUM NO. PM-11

UTILITY RELOCATION

The construction of treatment facilities, sewers, pumping stations, force mains and appurtenant work can cause the relocation of utilities. Costly relocation can sometimes be minimized by early communication and cooperation of the representatives of the municipality (owner) and the utilities.

Every possible effort should be made by the owner and each utility to establish the location of existing utilities in the vicinity of the proposed construction. The owner or its consulting engineer should make every reasonable effort to design the proposed construction so that relocation of existing utilities is minimized whenever possible. If the proposed construction is in an area of many existing utilities or in an otherwise critical area, the utilities are encouraged to mark the location of their existing utilities at the site during the design phase of the project.

During the design phase of the project, the municipality should provide timely notice to all utilities known or thought to have facilities in or proximate to the site of such future construction.

POLICY MEMORANDUM NO. PM-12

**REFUNDABLE DEPOSITS FOR
PLANS AND SPECIFICATIONS**

For each set of project plans and specifications provided, the owner may require a deposit in form of cash or other appropriate security, in an amount sufficient to cover the costs of production of such plans and specifications.

Upon return of the plans and specifications to the owner within a reasonable time and in good condition, such deposit shall be refunded.

Actual mailing costs, if any, shall be borne by the party requesting such plans and specifications.

POLICY MEMORANDUM NO. PM-13

BID OPENING PROCEDURES

As a minimum, bid documents shall be reviewed/inspected for conformance to the following bid opening procedure in the order presented below. Failure to comply with any of these steps shall render the bid non-responsive and upon determination of such non-responsiveness, such bid shall be rejected immediately, set aside, and shall receive no further consideration.

Bid Opening Procedure

Step #1. Timeliness – The bid must be filed at the place and within the time specified therefore in the invitation to bid, and no bid shall be accepted after such time. The time at which a bid is filed should be time/date stamped or otherwise prominently noted on the bid;

Policy Memorandum No. PM-13 – Bid Opening Procedures (Con't)

Step #2. Bid Security – Properly executed bid security, in the amount and terms specified in the invitation to bid (equal to 5% of Base Bid or Highest Possible Amount considering all alternatives) shall be placed in a seal envelope and attached to the outside of the envelope containing the bid at the time of its submission;

A. Bid Bond

The Bid bond must be dated On or Before the Bid Date;
Issued by a Bonding Company Licensed in Massachusetts;
Accompanied by a Current Power of Attorney;
Signed by Surety;

B. Check

The Check must be a Certified, Cashiers or Bank Treasurer's;
Dated On or Before the Bid Date;

Step #3. Bid Signature – The bid and all accompanying documents so required shall be signed by the bidder or its authorized representative before submission;

Step #4. Addenda – All addenda shall be sent certified mail, return receipt requested, by the owner to all individuals and organizations which have received plans and specifications and shall be mailed not later than five days prior to the date established for submission of bids. All bidders shall include with their bids written acknowledgement of receipt of all addenda, which acknowledgement may be on a form provided therefore by the owner.

Alternates – Any Alternates shall be acknowledged.

Step #5. Written Dollar Amounts – The total dollar amount of each bid shall be read, and the three lowest bids shall be selected for further consideration. The remaining bids shall then be set aside. The three apparent low bids shall be read to determine whether the unit price for each line item of each bid has been written therein in words. If it has not, such bid shall be rejected and shall receive no further consideration. ***Bid amounts shall be consistent (words vs. numbers) and if words and numbers differ, the words govern.*** This procedure shall then be repeated with the next apparent low bid until three are acceptable which have all the unit prices written in words, at which time the lowest bid shall be announced as the apparent low bidder, and the bid opening procedure shall be closed.

The Division recommends that this policy memorandum be included in all contract specifications and that the owner's evaluator(s) use the attached form (PM-13 Attachment 1) for bid opening procedures.

The Contractor's Bid Opening Checklist also attached hereto, is for use by each contractor to assure that his bid conforms with this policy memorandum. It is recommended that the checklist (PM-13 Attachment 2) be included in information for bidders, or at the end of the bid proposal, or in some other prominent part of the bid specifications

FORM FOR BID OPENING PROCEDURES

(to be completed by the owner's evaluator(s))

CONTRACT NO.: _____

DATE: _____

CONTRACT NAME: _____

BID OPENING TIME: _____

All non-responsive bids shall be rejected forthwith by the awarding authority upon determination of such bids' non-responsiveness at the time bids are opened and read. Failure to comply with any one of the requirements shall render the bid non-responsive, and upon determination of such non-responsiveness such bid shall be rejected and receive no further consideration.

A = Acceptable

N-R = Non-Responsive (explain reasons on supplemental sheet & attach)

BIDDER	1. TIMELINESS	2. BID SECURITY	3. SIGNATURE	4. ADDENDA ALTERNATIVES	5. WRITTEN DOLLAR AMOUNTS	COMPLIANCE (CIRCLE ONE)	
						YES	NO
1						YES	NO
2						YES	NO
3						YES	NO
4						YES	NO
5						YES	NO
6						YES	NO
7						YES	NO
8						YES	NO
9						YES	NO
10						YES	NO

POLICY MEMORANDUM NO. PM-14

PAYMENT FOR ROCK EXCAVATION

There shall be in the contract documents a separate pay item for rock excavation. For such purposes, “rock” shall mean igneous, sedimentary, metamorphic, and conglomerate rock, which for excavation must be drilled, blasted, broken, or ripped by power tools. Boulders and concrete structures one cubic yard or greater, however removed, are included within this definition of rock for payment purposes. At the option of the owner or his representative a separate pay item for boulders, concrete structures, or concrete road base may be used.

<u>Depth From Ground Surface</u> <u>To Invert Pipe</u>	<u>Pay Width</u> <u>(Nominal Pipe Diameter)</u>	
* 0 – 12’	0-24”	Over 24”
* Over 12’ – 20’	5’0”	D+3’0”
	7’0”	D+5’

Engineer’s plans and specifications shall establish pay limits below pipe and structures.

- See PM-14 Attachment 1 (typical cross section)

Payment width for depths over twenty feet (20’) shall be determined on a case-by-case basis consistent with the foregoing chart.

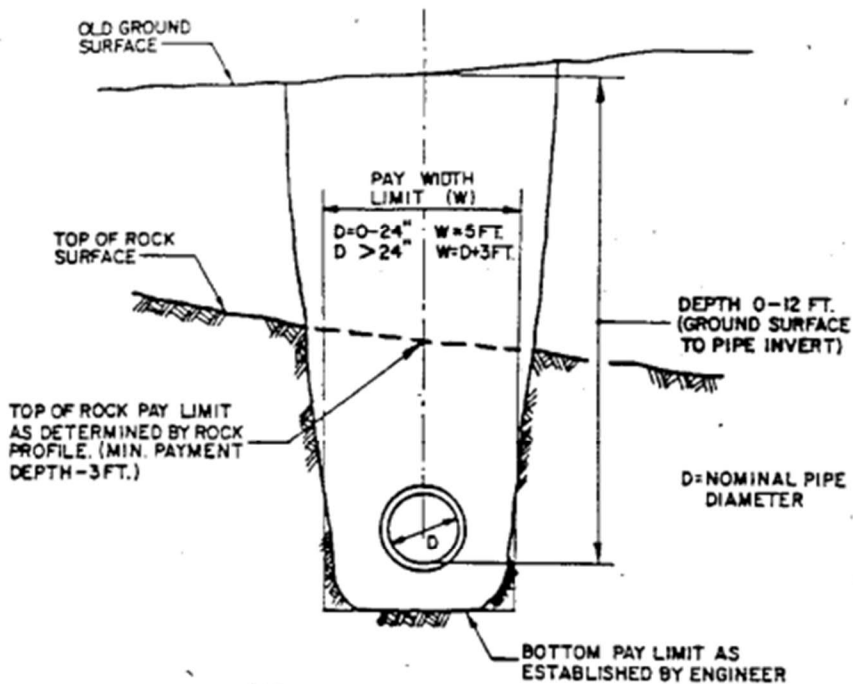
The pay limit for rock removal outside proposed manholes shall commence one foot (1’) outside the widest dimension of the structure of shall be the maximum connecting trench width, whichever is greater.

Payment depth for rock which is encountered in a trench shall be no less than three feet (3’) when removal can be accomplished only by drilling and blasting or by use of jack (air or hydraulic) hammers.

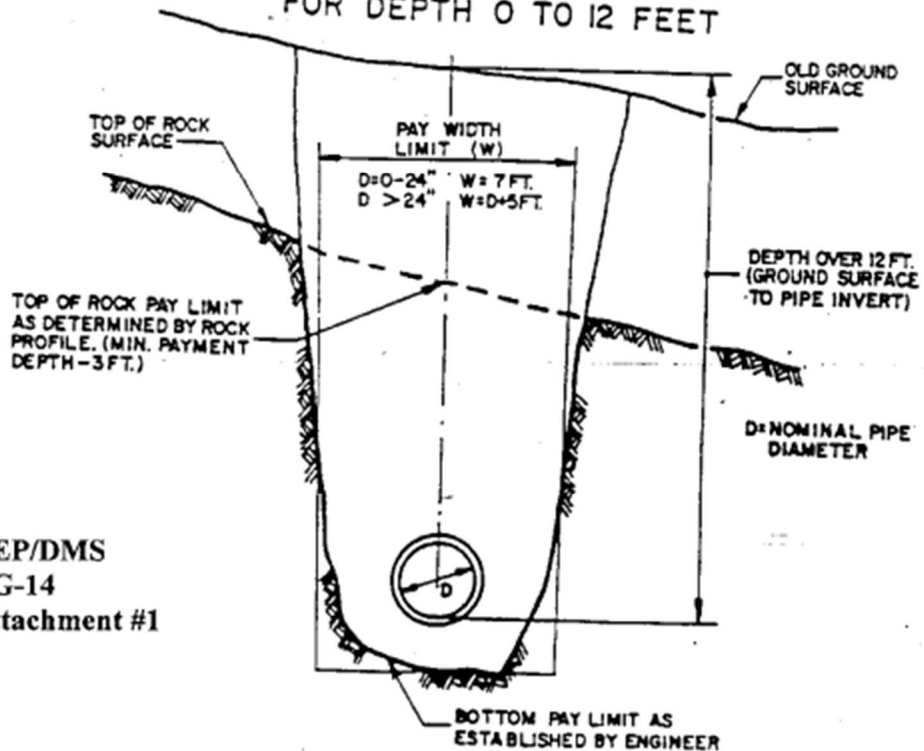
Payment for rock removed, using the same or equal equipment as utilized for normal trench excavation, shall be limited to the actual depth removed within the limits established by the contract documents.

Boulders encountered within the pay limits of excavation, whose volume is one cubic yard or greater, part of which extends outside said limits shall be paid in accordance with the actual volume excavated.

CG-14 ROCK EXCAVATION



FOR DEPTH 0 TO 12 FEET



DEP/DMS
 CG-14
 Attachment #1

FOR DEPTH OVER 12 FEET AND UP TO 20 FEET

POLICY MEMORANDUM NO. PM-15

TRAFFIC POLICE

The reasonable costs for police details required for traffic control on a construction project which receives financial assistance shall be considered as an eligible administrative cost. A police detail item shall not be included as a bid item in the contract documents.

“Police” as used in this memorandum includes local, county, capital, state, regular and auxiliary police.

Owner’s Responsibility

It shall be the owner’s responsibility to submit in writing the hourly rate of pay to be established for detailed traffic police and each change in rate during the course of the project. It is the owner’s responsibility to arrange, document and pay for such police details. The owner or its representative shall meet with the police chief or other officer in charge of police detail duty to review contract needs. The owner shall maintain a daily record of the following:

- a. Officer’s name
- b. Hours worked
- c. Location of assignment
- d. Hourly rate

POLICY MEMORANDUM NO. PM-16

**DOCUMENTATION REQUIRED TO
SUBSTANTIATE CONTRACT QUANTITIES**

<u>Unit</u>	<u>Documentation required</u>
Acres (A)	Location, station, offset and calculations. Location = Street right-of-way, etc; Station = Point on Baseline; Offset = Distance left or right of Baseline
Cubic Yard (C.Y.)	Location, stations, widths, depths, calculations and Cross sections as necessary
Each (Ea.)	Location, station, and offset.
Gallon (Gal.)	Location, stations, calculations (if appropriate) and delivery slips.
Hour (Hr.)	Hours and location.
Linear Feet (L.F.)	Location, stations, and offsets.
Month (Mo.)	Location, period of time and calculations if applicable.

1000 Foot Board Measure (MFBM)	Location, stations, offset, elevations, grade, and calculations. Attach invoices where applicable.
Pound (Lb.)	Locations, stations, and calculations (if applicable). Attach Delivery weight slips.
Square Feet (S.F.)	Locations, stations and calculations
Square Yard (S.Y.)	Locations, stations and calculations
Ton	Locations, stations and calculations (if applicable). Attach Delivery weight slips.
Vertical Feet (V.F.)	Locations, stations, elevations, and offsets.

Note:

1. All of the above, that apply must be submitted with a final payment request or change order as applicable.
2. Where in place measurement is not possible or practical, delivery slips may be used to substantiate quantities. 3. Change orders – See PM-10 in which some of the above may be applicable in justifying materials, equipment and labor.
4. When necessary, itemized quantities must be separated into eligible and non-eligible units with separate calculations to justify eligible costs.
5. Overruns and underruns of any specific item shall be explained with an appropriate sentence or paragraph.
6. On all quantities, units of payment shall be maintained at the project site and shall be updated daily so that upon field inspection by the C.O.E., EPA or DMS, the quantities paid to date can be substantiated.
7. In the case of unforeseen conditions, photos should be submitted with the applicable item in addition to the recommended documentation.
8. Documentation of units of payment shall be clearly legible and cross referenced to the applicable sheets of the record drawings.
9. For record drawings policy, please see PM-4.

DMS Policies 1 through 16 Approved By:

Steven J. McCurdy
Division of Municipal Services

DWS POLICY 88-02
DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLICY FOR REVIEW OF SEWER LINE/WATER SUPPLY PROTECTION

The Department of Environmental Protection seeks to protect existing and potential water supplies from the potentially negative effects of leaking sewer lines through the adoption of a Department policy on this subject.

The following restrictions will apply to new sewer construction statewide:

Gravel Packed Wells

- ~ Within the 400 foot radius protective distance around gravel packed wells, all sewer lines and appurtenances are prohibited, unless they are necessary to eliminate existing and/or potential sources of pollution to the well.

Tubular Wells

- ~ Within the 250 foot radius protective distance around tubular wells, all sewer lines and appurtenances are prohibited, unless they are necessary to eliminate existing and/or potential sources of pollution to the well.

Gravel Packed and Tubular Wells

- ~ Within a minimum radius of 2,640 feet or unless otherwise documented by an appropriate study specifically defining the area of influence and approved by the Division of Water Supply, all sewer lines and appurtenances will be designed and constructed for maximum water tightness.
- Force Mains or Pressure Sewers: shall be tested at 150% above maximum operating pressure or 150 p.s.i. whichever is greater. Testing shall conform to the requirements of the American Water works Association (AWWA) standard c 600.
- Gravity Sewers: shall be tested by approved methods which will achieve test results for infiltration or exfiltration of less than 100 gallons/inch diameter/mile/24 hours.
- Manholes: shall be installed with watertight covers with locking or bolted and gasketed assemblies. Testing for infiltration/exfiltration shall conform to the same standards as the maximum allowed for pipes in the manhole as required for gravity sewers, indicated above.
- Satisfactory test results for Force Mains, Manholes and Gravity Sewers shall be performed prior to the expiration of the contractor's one year guarantee period.
- All pumping stations within this zone shall have standby power high water alarms telemetered to an appropriated location that is manned at all times. An emergency contingency plan must be developed by the owner and approved by the BWR.
- A minimum of Class B bedding as defined by WPCF-MOP9 must be used for all piping.
- Service connections (laterals and house connections) shall be rigidly inspected by the appropriate municipal official. Certified inspection reports shall be submitted to the BWR.

Bedrock Wells

The above requirements are the same for bedrock wells, with the Department reserving the right to require more stringent controls on a case-by-case basis.

Surface Water Supplies

- ~ Within 100 feet of all surface water supplies and tributaries all sewer lines and appurtenances are prohibited except as required to cross tributaries or to eliminate existing or potential pollution to the water supply. In the latter case, watertight construction methods shall be used.
- ~ Tributary stream crossings shall employ watertight construction methods of sewer lines and manholes. Watertight construction must extend 100 feet to either side of the stream.
- ~ Within 1,000 feet of surface water supplies and tributaries, all pumping stations shall have standby power and high water alarms telemetered to an appropriate location that is manned at all times. An emergency contingency plan must be developed by the owner of the wastewater treatment facility and submitted to the BWR for approval.
- ~ Beyond 1,000 feet and within the watershed of surface water supplies the Department may in specific circumstances after review, require additional controls.

Potential Public Water Supplies

The above requirements also apply to potential public water supplies.

Baseline Data Requirements

Two (2) copies of an appropriately scaled map(s) shall be submitted to the Department which details the proposed sewers and/or appurtenances and also includes the following:

- (1) the location of all nearby existing or potential surface water supplies, tributaries thereto, and watershed boundaries;
- (2) the location of existing and potential public and municipal potable groundwater supply wells.

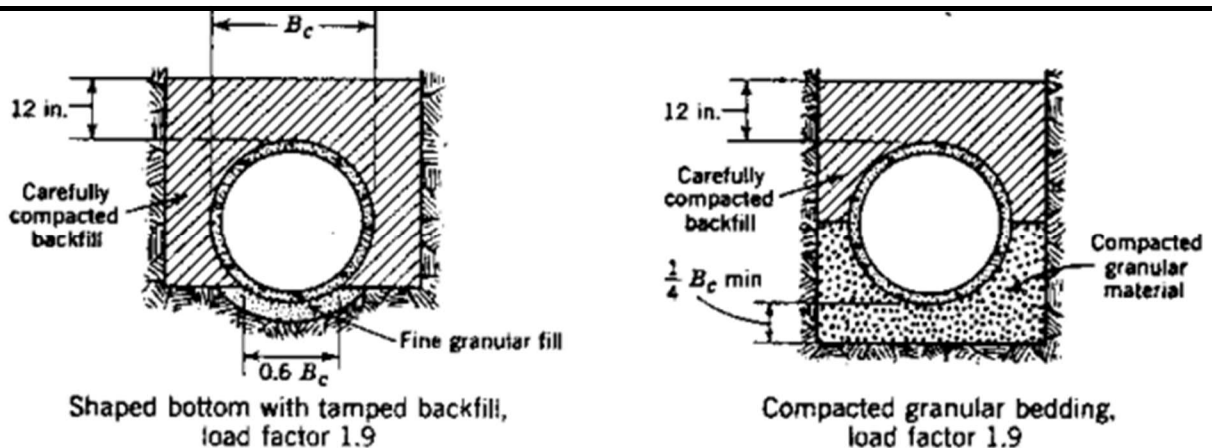
The Department reserves the right to impose more restrictive measures than those contained in this policy as deemed appropriate.

Definitions

- Appurtenances – all attachments to sewer lines necessary for the transport and operation and maintenance of sewer lines, including manholes, pumping station, siphons, etc.
- Area of influence – that area of an aquifer which contributes water to a well under the most severe recharge and pumping condition that can be realistically anticipated (i.e. pumping at the safe yield of the well for 180 days without any natural recharge occurring). It is bounded by the groundwater divides which result from pumping the well and by the contact of the edge of the aquifer with less permeable materials such as till and bedrock. At some locations, streams and lakes may form recharge boundaries.
- Potential public water supply – areas designated by communities for water supply purposes where land has been set aside and Department approved pump tests conducted and surface water supplies as defined below.
- Surface Water Supply – Waters classified as Class A by the DWPC.
- Public Water Supply Systems – as defined in 310 CMR 22.02 (DEP Drinking Water Regulations).

- Class B Bedding – as defined in WPCF Manual of Practice No. 9.

APPROVED: (Signature on File)



Class B---First-Class Bedding – Class B bedding may be achieved by either of two construction methods:

- a. Shaped Bottom with Tamped Backfill. The bottom of the trench excavation shall be

shaped to conform to a cylindrical surface with a radius at least 2 in. (5 cm) greater than the radius to the outside of the pipe and with a width sufficient to allow six-tenths of the width of the pipe barrel to be bedded in fine granular fill placed in the shaped excavation.

Carefully compacted backfill shall be placed at

the sides of the pipe to a thickness of at least 12 in. (30 cm) above the top of the pipe.

Shaped trench bottoms are difficult to achieve under current construction conditions.

- b. **Compacted Granular Bedding with Tamped Backfill.** The pipe shall be bedded in compacted granular material placed on a flat trench bottom. The granular bedding shall have a minimum thickness of one-fourth the outside pipe diameter and shall extend halfway up the pipe barrel at the sides. The remainder of the side fills and a minimum depth of 12 in. (30 cm) over the top of the pipe shall be filled with carefully compacted material.

Davis Bacon Act Requirements

All construction projects are subject to the Davis Bacon wage rate requirements and must include the appropriate sections of the following document in its entirety in the contract documents.

The vast majority of SRF projects will be bid by Governmental Entities (i.e., Cities, Towns, Authorities, Water Districts, Wastewater Districts). These projects must include the following language in construction contracts:

I.3. Contract and Subcontract Provisions

I.4. Contract Provisions for Contracts in Excess of \$100,000 (if applicable)

I.5. Compliance Verification

This language may be found on pages DB-3-DB-11.

In certain cases, SRF projects may be bid by non-Governmental Entities (i.e., private water companies, private PWSs, etc.). These projects must include the following language in construction contracts:

II.3. Contract and Subcontract Provisions

II.4. Contract Provisions for Contracts in Excess of \$100,000 (if applicable)

II.5. Compliance Verification

This language may be found on pages DB-11-DB-21

Preamble

With respect to the Clean Water and Safe Drinking Water State revolving Funds, EPA provides capitalization grants to each State which in turn provides subgrants or loans to eligible entities within the State. Typically, the subrecipients are municipal or other local governmental entities that manage the funds. For these types of recipients, the provisions set forth under Roman Numeral I, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section 3(ii)(A), below and for compliance as described in Section I-5.

Occasionally, the subrecipient may be a private for profit or not for profit entity. For these types of recipients, the provisions set forth in Roman Numeral II, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section II-3(ii)(A), below and for compliance as described in Section II-5.

I. Requirements For Subrecipients That Are Governmental Entities:

The following terms and conditions specify how recipients will assist EPA in meeting its Davis-Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance with respect to State recipients and subrecipients that are governmental entities. If a subrecipient has

questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. If a State recipient needs guidance, the recipient may contact Valerie Marshall at EPA Region 1 (617-918-1674) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at <https://www.dol.gov/whd/govcontracts/dbra.htm>

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2012 Appropriations Act, the following clauses:

(1) Minimum wages.

(i) 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 (a)(1)(iv) 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 §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 (a)(1)(ii) 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. Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, 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 State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) 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.

(iii) 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.

(iv) 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 subrecipient(s), shall upon written request of the EPA Award Official or 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 (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, 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.

(i) 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.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls 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 the weekly payrolls. 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 <https://www.dol.gov/whd/forms/wh347.pdf> 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 subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, 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 subrecipient(s).

(B) 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:

(1) 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;

(2) 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;

(3) 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.

(C) 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 (a)(3)(ii)(B) of this section.

(D) 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.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA 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 Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, 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--

(i) Apprentices. 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.

(ii) Trainees. 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.

(iii) 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.

- (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 in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses 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 Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) 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).

(ii) 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).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any 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 Item 3, above 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 (a)(1) of this section the contractor and any subcontractor responsible therefore 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 (a)(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 (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall 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 (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(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 (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its

assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at https://www.dol.gov/whd/whd_district_offices.pdf.

II. Requirements For Subrecipients That Are Not Governmental Entities

The following terms and conditions specify how recipients will assist EPA in meeting its DB responsibilities when DB applies to EPA awards of financial assistance with respect to subrecipients that are not governmental entities. If a subrecipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient for guidance. If a State recipient needs guidance, the recipient may contact Valerie Marshall at EPA Region 1 (617-918-1674) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at <https://www.dol.gov/whd/govcontracts/dbra.htm>

Under these terms and conditions, the subrecipient must submit its proposed DB wage determinations to the State recipient for approval prior to including the wage determination in any solicitation, contract task orders, work assignments, or similar instruments to existing contractors.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients must obtain proposed wage determinations for specific localities at www.wdol.gov. After the Subrecipient obtains its proposed wage determination, it must submit the wage determination to (insert contact information for State recipient DB point of contact for wage determination) for approval prior to inserting the wage determination into a solicitation, contract or issuing task orders, work assignments or similar instruments to existing contractors (ordering instruments unless subsequently directed otherwise by the State recipient Award Official).

(b) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(c) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(d) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(e) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2011 Full-Year Continuing Appropriation, the following clauses:

(1) Minimum wages.

(i) 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 (a)(1)(iv) 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 §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 (a)(1)(ii) 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. Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, 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 State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient(s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request, and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) 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.

(iii) 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.

(iv) 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 subrecipient(s) shall upon written request of the EPA Award Official or 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 (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, 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.

(i) 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.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls 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 the weekly payrolls. 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 <https://www.dol.gov/whd/forms/wh347.pdf> 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 subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, 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 subrecipient(s).

(B) 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:

- (1) 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;
- (2) 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;
- (3) 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.

(C) 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 (a)(3)(ii)(B) of this section.

(D) 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.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA 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 Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, 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--

(i) Apprentices. 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.

(ii) Trainees. 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.

(iii) 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.

(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 in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses 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 Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) 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).

(ii) 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).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any 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 Item 3, above 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 (b)(1) of this section the contractor and any subcontractor responsible therefore 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 (b)(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 (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient shall upon the request of the EPA Award Official or 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 (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(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 (b)(1) through (4) of this section.

(c) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a). The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c). The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB . In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d). The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at https://www.dol.gov/whd/whd_district_offices.pdf.

EXHIBIT B

GENERAL TERMS AND CONDITIONS

1 WORK OF THE SUBCONTRACTOR

- 1.1 All Work shall be performed in accordance with sound and generally accepted professional practices and industry standards by professional, managerial, and administrative personnel fully qualified in the respective professional disciplines required and practicing under similar circumstances at the same time and in the same locality.
- 1.2 In performing the Work hereunder, Subcontractor shall:
 - (a) Have the complete professional, managerial, or technical responsibility for the validity, accuracy, and reliability of the Work performed, and its work shall conform to all applicable codes, standards, statutes, rules and regulations and the Work criteria and definition;
 - (b) Designate a Manager, in charge of the entire Work on a continuous basis with responsibility for providing adequate supervision or direction and having authority to take all action that may be required in performance of this Agreement. When required by state law, such individual shall have an appropriate engineering license or other appropriate registration;
 - (c) Comply with all government, state and local laws, ordinances, codes or regulations which apply to performance of the Work;
 - (d) Be properly licensed in the governmental jurisdiction where the Work is being performed and where the Project is located and secure at its own expense, all necessary licenses, permits, registrations, certificates and such other documents which may be required by the appropriate governmental authority or authorities to perform the Work.
- 1.3 All Subcontractor's personnel shall be subject to the review and approval by Company. Subcontractor shall immediately remove from the Project any personnel designated by Company; and Subcontractor shall hold harmless Company on account of such action. Subcontractor shall not remove or reassign its Manager in charge of the Work or its other Key Personnel designated in this Agreement without the prior written approval of Company, unless such personnel are no longer employed by Subcontractor.
- 1.4 The Work shall be performed at locations satisfactory to Company and such locations shall not be changed without the written approval of Company. Company shall have access at all times to the locations where Work is performed and to all of the drawings, specifications, data, calculations, models, test results and specimens, documents and other things related to the Work or the Project.
- 1.5 Subcontractor shall be responsible for the professional quality, technical accuracy and timely completion of its services furnished under this Agreement. In the event Subcontractor's services hereunder should not prove satisfactory to Company or Client, as a result of human error, omission or otherwise, Subcontractor shall, without additional compensation, and at its own cost and expense, remedy the defective services and the consequences thereof, provided such corrective services are requested in writing by Company or Client, within the period of warranty for such corrective Work as required by Client of Company under the Prime Contract executed by and between Client and Company.
- 1.6 Review and approval by Company of Subcontractor's drawings, samples, or other representations shall not relieve Subcontractor of the obligation to complete the entire Work in strict compliance with the requirements of this Agreement and to represent to Company that the Work will be sufficient and adequate to fulfill the purposes of the Project, and satisfy all applicable obligations and requirements of Company under the Prime Contract.

2 SCHEDULE AND DELAYS

- 2.1 Time is of the essence in this Agreement. Subcontractor agrees to commence the Work promptly when directed by Company and to prosecute the Work diligently to completion. Subcontractor shall schedule its services in compliance with Company's directions and consistent with the Project schedule. The schedule for the Work shall be subject to revision by Company to coordinate the overall Project progress. In the event the Work is delayed, Company may direct the Subcontractor to supplement its labor force, add equipment, or work overtime at Subcontractor's expense in order to alleviate any delay.
- 2.2 Delays caused solely by Company, its Client, or incurred as a result of "Force Majeure" which shall only include acts of God, fire, labor strikes or picketing, epidemic, pandemic, and unseasonable weather shall be excusable and shall entitle Subcontractor to an extension of the Project schedule, but there shall be no adjustment in the Subcontractor's compensation. Company will determine the normal working hours for the Work and overtime shall be subject to Company's prior written approval.
- 2.3 If the Prime Contract imposes the risk of penalties or liquidated or other damages on Company for delays, then, to the extent such penalties or damages are imposed on Company because of delays within the control of Subcontractor, then Subcontractor shall defend, hold harmless, and indemnify Company against such penalties or damages.

3 PERMITS

Subcontractor shall be solely responsible for acquiring and maintaining, at its own cost, any and all permits, licenses, easements, waivers and permissions of every nature necessary to perform the Works in full compliance with any applicable laws and/or regulations.

4 CHARGES AND PAYMENT CONDITIONS

- 4.1 Subcontractor agrees to provide such supporting documentation for each invoice as Company may reasonably require. Company's payment terms are NET 30 (i.e., undisputed amount paid within thirty (30) days after receipt of a correct invoice, which references the Company's Purchase Order Number). Payment of any invoice by Company shall not imply inspection, approval, or acceptance of the Work by Company or Client.

Subcontractor shall bear the risk of Client's insolvency, non-payment, and dispute of amounts invoiced. In the event of non-payment by Client, Company shall not be obligated to make payment to Subcontractor, but both parties shall cooperate in seeking payment from Client. **It is expressly acknowledged that receipt of payment by Company from the Client on account of the work performed by the Subcontractor shall be a condition precedent to any obligation by Company to make any payment to the Subcontractor hereunder.**

The final milestone payment invoice, not less than 10% of the Agreement Price, shall be paid upon completion and acceptance of the Work by Company and Client. Payment of any invoice by Company shall not imply review, approval, or acceptance of the Work by Company.

- 4.2 Subcontractor shall certify to Company in writing at the time of submittal of each invoice that all sub-subcontractors, subconsultants and suppliers have been paid for work and material from previous progress payments received, prior to receipt of any further progress payments. This provision in no way creates any contractual relationship between any sub-subcontractor, subconsultant or supplier and Company or any liability on Company for the Subcontractor's failure to make timely payments to them.
- 4.3 As a condition precedent to Company's final payment under this Agreement, Subcontractor shall furnish certifications, satisfactory to Company, that state that no liens of any kind, including, but not limited to, mechanics' liens or other claims arising directly or indirectly out of any act or omission of Subcontractor or any of its subconsultants, sub-subcontractors or suppliers, have been made or attached against the Work or upon any property owned by Company or its Client. Company at any

time, without notice, may pay and discharge liens, claims, and encumbrances filed by Subcontractor's sub-subcontractors or suppliers and deduct the amount paid, together with costs and attorneys' fees, from compensation due Subcontractor hereunder.

- 4.4 The acceptance by Subcontractor of the final payment under this Agreement shall constitute and operate as a release to Company for all claims and liability to Subcontractor, its representatives, subconsultants, sub-subcontractors, supplies and assigns for any additional compensation or payment relating to any and all things done or furnished to the services rendered by Subcontractor. However, final payment shall in no way relieve the Subcontractor of liability for its obligations or for faulty or defective work discovered after final payment.
- 4.5 The compensation to be paid to Subcontractor includes, and Subcontractor shall be liable for and shall pay, and shall defend, hold harmless, and indemnify Company against, all taxes, contributions, interest accrued, penalties imposed, and all taxes, excises, assessments, and other charges levied by any government agent, authority, or any other jurisdictional body on, or because of, the services performed hereunder or any labor, materials, supplies, or services furnished for or used in the performance of the Work.

5 CHANGES AND ADDITIONAL COMPENSATION

- 5.1 Company, by written order (hereinafter "Change Order"), may make changes in the Work including, but not limited to, increasing or decreasing the Work or directing acceleration in the performance of the Work. Where practicable, Company and Subcontractor shall negotiate, prior to the issuance of a Change Order, the amount of any charge for increases or decreases in the Work or schedule change related to the Change Order. In the event the parties cannot agree, Company may issue the Change Order and the Subcontractor shall proceed with the Work, being compensated for the change in Work on a cost reimbursable basis as set forth in Article 4.2.
- 5.2 No change shall be made by Subcontractor in the Work or its manner of performance, without prior instructions from Company, in a written Change Order specifying the change in plans, specifications, procedures, schedule, sequence, or other requirements of this Agreement, and specifying whether there is to be an adjustment in the price for performance and how any such adjustment shall be determined. No adjustment in price or time of performance shall be made for changes in arrangement, aesthetics, substitution of equivalent materials, or equipment or other changes, unless such changes significantly affect Subcontractor's cost of performing the Work. An equitable adjustment will be made in price or time of performance or both, if the change ordered by Company substantially increases or decreases the cost and/or time of performance of the Work. The method of changing the price shall be specified in the Change Order. In the event a Change Order does not specify pricing for services, Subcontractor shall be paid all actual, direct additional cost incurred, without allocation of its home office general and administrative expense, plus ten percent (10%) of such costs, and Subcontractor shall maintain and furnish Company accurate and detailed records daily segregating the cost of the change in the Work. In case of deletion or reduction of the Work by such change, Subcontractor shall not be entitled to anticipated contribution to its home office overhead and profit from any portion of the Work not performed.
- 5.3 Whenever an event occurs or condition arises which Subcontractor considers to constitute a basis for additional compensation or time, and Company has not issued a Change Order, Subcontractor shall so notify Company immediately by telephone, and confirm in writing within five (5) business days, after the occurrence of the event or discovery of the condition, requesting Company to issue a Change Order under the procedure set forth above and forwarding adequate supporting information to substantiate Subcontractor's position. Subcontractor shall not proceed with respect to the event or condition forming the subject of the claim until advised in writing, or orally and confirmed in writing, by Company to do so. Company's liability to Subcontractor for any such events or conditions shall be limited to any sums or extension of time obtained from Client therefor.
- 5.4 Upon receipt of the notice from Subcontractor, Company shall either initiate the Change Order procedure or give other instructions by telephone or in writing, as appropriate. If Company orders Subcontractor to proceed and concludes that no Change Order is warranted, the disagreement shall

constitute a dispute and Subcontractor shall proceed in accordance with Company's instructions. The dispute shall be resolved in accordance with Article 19.0 Disputes.

6 INDEMNIFICATION

Subcontractor releases and agrees to indemnify and defend Company, its Client, their officers, directors, and employees from and against any and all suits, actions, claims, demands, damages, liabilities, interest, attorney's fees, costs, and expenses of whatsoever kind, including those arising out of injury, disease, or death of Subcontractor's employees in any manner directly or indirectly caused, occasioned, or contributed to in whole or in part, or claimed to be caused, occasioned, or contributed to in whole or in part, by reason of any act, omission, fault, or negligence whether active or passive of Subcontractor, its subconsultants or sub-subcontractors, or of anyone acting under its direction or control. Subcontractor's aforesaid release and indemnity shall apply in the event of joint or contributory negligence, whether active or passive, or strict liability of Company or its Client to the fullest extent permitted by law, but in no event shall the release and indemnity obligation apply to liability caused by the willful misconduct or sole negligence of the party released or indemnified.

7 SAFETY

- 7.3 Subcontractor shall be responsible for the health and safety of its employees and the employees of its subconsultants and sub-subcontractors, if any, while present at the Subcontractor's home and branch offices and other locations where Work is performed. While performing Work on Company's or Client's property and/or at Project Sites, Subcontractor shall place the highest priority on safety and safe working practices. Therefore, it will be the responsibility of Subcontractor to provide and maintain a safe working environment for its employees while working on Company's or Client's property and/or Project Sites and to protect the health and safety of Subcontractor's employees, agents and subconsultants and sub-subcontractors and their respective employees, and Company employees, the public and other third parties. All tools, equipment, facilities, and other items used by Subcontractor and practices employed by Subcontractor in accomplishing the Work are considered to be part of the working environment.
- 7.4 Subcontractor shall comply with all applicable laws, rules and regulations relating to health and safety, including but not limited to, those set forth in the Occupational Health and Safety Act, as amended (OSHA).
- 7.5 Whenever Subcontractor has any employees at the site of the Work, either temporarily on visits or on assigned basis, Subcontractor shall comply with all of the regulations and directives of Company and/or the Client with respect to safety, security, entrances, parking areas, sanitation, and other provisions for maintenance of good order and coordination of the activities of all participants in the Work as a whole.

8 DOCUMENTS

- 8.1 The Work and all records relating to it, including, without limitation, all drawings, specifications, reports, summaries, samples, photographs, memoranda, notes, calculations, and other documents developed by Subcontractor during the period of performance of this Project is work product and shall be deemed to be the property of Company or Client. Subcontractor shall maintain all such materials in kind, or on microfilm, except for samples, for a period of not less than two (2) years after completion of the Work, or for such longer time as may be required by the Prime Contract.
- 8.2 All dimensions in notes and drawings prepared in the performance of the services specified in this Agreement shall be in the foot/pound system, unless otherwise required or approved by Company.
- 8.3 Subcontractor shall return to Company all drawings and written materials furnished to Subcontractor by Company, including all copies thereof, if any, made by Subcontractor, except that Subcontractor may retain one copy of the same in its files for record purposes only.

- 8.4 Subcontractor will limit access to Company's and Client's confidential and technical information to Subcontractor's employees who reasonably require such access for performance of Work pursuant to this Agreement.

9 PATENTS AND COPYRIGHTS

- 9.1 If Subcontractor or its personnel make any inventions or prepare copyrightable material as a result of the performance of this Agreement, Subcontractor promptly shall disclose such inventions or materials to Company. Subcontractor agrees to grant, and hereby grants, to Company the entire right, title, and interest in and to such inventions and copyrightable materials, and Subcontractor shall cooperate with Company and execute all documents necessary to perfect Company's rights in the inventions or materials and to allow Company to prosecute and obtain patents and copyrights thereon.
- 9.2 Subcontractor shall indemnify and hold harmless Company and Client against any loss, cost or liability for infringement of any period or proprietary rights involving any services furnished hereunder.

10 CONFIDENTIALITY AND NONDISCLOSURE

Subcontractor shall not disclose information regarding this Agreement or the Work, except for information that is required for the purposes of the performance of Work or in the public domain, to any person. Noncompliance by the Subcontractor or others under the control or direction of the Subcontractor with this obligation shall be sufficient cause for Company immediately to terminate this Agreement for cause without prior written notice, and shall entitle Company to injunctive and other relief from a court of competent jurisdiction. In addition, Subcontractor agrees to comply with any more restrictive confidentiality requirements imposed by Client in the Prime Contract.

11 AUDIT

Not Used

12 INSPECTION AND NON-WAIVER

- 12.1 Subcontractor shall permit representatives of Company to inspect and observe the Work at all reasonable times, and all Work shall be subject to acceptance and approval by Company. However, the exercise of any such rights shall not relieve Subcontractor of its responsibility to perform the Work in accordance with all Agreement requirements.
- 12.2 The failure of Company to insist upon strict performance of any of the terms of this Agreement or to exercise any rights conferred by this Agreement shall not be construed as a waiver of its right to assert or rely on any such terms or rights on any future occasion or as a waiver of any other terms or rights.

13 REMEDIES UPON DEFAULT

In addition to any rights provided by any other provisions of this Agreement or any applicable law, Company shall have the right to retain any money in its possession due to the Subcontractor under this Agreement so as to reimburse Company for any damage or costs caused by or attributable to the acts or omissions of the Subcontractor with respect to this Agreement or any other subcontract or contract between the parties including, but not limited to, Subcontractor's late completion, breach of warranty, breach of guarantees, negligence or any other contractual breach. Failure to withhold payment shall in no event be construed as a waiver of any right of Company to assert any claim for breach of any obligation under this or any other agreement between the parties.

14 WARRANTY

- 14.1 Subcontractor warrants that all Works will be as represented by Subcontractor, free from defects in materials, workmanship, and design, in conformance with all applicable specifications, descriptions,

samples, and drawings referred to in this Agreement and in Order(s), merchantable and fit for their intended purposes.

- 14.2 Subcontractor warrants that the production, packaging, labeling and transportation of all goods will comply with all applicable national, regional, state and local laws, rules, regulations, ordinances and orders.
- 14.3 Subcontractor warrants that it has the experience and ability as may be necessary to perform all Works with a high standard of quality and that all Works will be performed in a workmanlike, professional manner and in accordance with the highest standards in the industry.
- 14.4 Subcontractor warrants that it will make all appropriate tax payments and tax withholdings for all individuals it provides to perform Works and, in the case of Works performed in the United States of America, will verify such individuals as being legally able to work in the United States.
- 14.5 All warranties will survive inspection, testing and acceptance of the Works and expiration or termination of this Agreement.
- 14.6 All warranties are considered independent. Each will be separately construed and interpreted without reference to any other warranty.

15 TERMINATION AND SUSPENSION

15.1 Termination for Convenience. Company, by ten (10) days written notice, may terminate this Agreement in whole or part for any reason, including solely for its convenience. Subcontractor will be paid for reasonable costs of all work performed including a reasonable overhead and profit. No money will be paid for interruption of business or loss of business opportunities, for overhead and profit on Work not completed, or for any other intangible costs. In no event shall the total sums paid Subcontractor exceed the Agreement price.

15.2 Termination for Cause. If, in the reasonable opinion of Company, the Subcontractor shall at any time, (1) fail in any material respect to prosecute timely the Work, (2) fail to comply with any material provision of this Agreement, (3) make a general assignment for the benefit of its creditors, (4) have a receiver appointed, or (5) become insolvent, then, after serving seven (7) days written notice, unless the condition specified in such notice shall have been eliminated within seven (7) days, Company, at its option and without voiding the other provisions of this Agreement, may, after an additional seven (7) days, (i) take such steps as are necessary to overcome the condition, in which case the Subcontractor shall be liable to Company for any cost hereof, or (ii) partially or wholly terminate for default the Subcontractor's continued performance of its duties under this Agreement. In the event of a termination for default, Company may, at its option, use all of Subcontractor's work product for completion of the Work by others, take assignment of any or all of the Subcontractor's agreements with subconsultants, sub-subcontractors or suppliers and/or have the remainder of the Subcontractor's obligations completed by whatever means Company deems expedient. In case of a termination for default, the Subcontractor shall not be entitled to receive any further payment until the Work shall be fully completed and accepted by Company and the Client and payment made in full by the Client at which point the Subcontractor shall be paid the remainder of its fee less any costs or expenses incurred by Company as a result of Company taking any steps necessary to overcome the deficiency or complete the Subcontractor's duties hereunder.

15.3 Suspension.

- (a) Company may order Subcontractor, in writing, to suspend, interrupt or defer all or any part of its Work for such period of time as may be appropriate to the convenience of Company and/or Client.
- (b) If the performance of all or any part of Subcontractor's Work is suspended, interrupted or deferred by the direction of Company for a period greater than ninety (90) continuous days, an equitable adjustment shall be made for any increase in the cost of affected Work and the

schedule of such affected Work shall be adjusted in accordance with the provisions of this Agreement. However, no adjustments shall be made for any such suspension, interruption or deferment whereby performance would have been so suspended, interrupted or deferred by any other cause, including the fault or negligence of Subcontractor, or whereby an equitable adjustment is provided for or excluded under any other provision of this Agreement. Should any such suspension, interruption or deferment be directed by the Client, any equitable adjustment in cost and/or schedule adjustment, subject to the provisions of this Article, Subcontractor shall be compensated therefor only to the extent Company can recover such cost and/or schedule adjustment from the Client.

- (c) No claim hereunder shall be allowed unless such claim, in an amount stated, is asserted in writing within fifteen (15) days after termination of such suspension, delay or interruption, but in no case later than the date of Final Payment.

16 INDEPENDENT CONTRACTOR, NON- ASSIGNMENT, AND SUBCONTRACTS

- 16.1 In the performance of the Work, Subcontractor shall operate as, and have the status of, an independent contractor and shall not act as or be an agent or employee of Company or its Client. As an independent contractor, Subcontractor shall be solely responsible for executing the Work.
- 16.2 Subcontractor shall not assign this Agreement without the prior written consent of Company. After assignment, this Agreement shall inure to the benefit of, and shall be binding upon, Company's and Subcontractor's respective successors and assigns. Subcontractor shall notify Company in writing of each subconsultant or sub-subcontractor it intends to use before entering into a subcontract. None of the Work may be subcontracted by Subcontractor without the prior written approval of Company.
- 16.3 Each subcontract with a subconsultant or sub-subcontractor must contain provisions, or be made expressly subject to provisions, for changes, notice, indemnification, insurance, nondisclosure and confidentiality, patents and inventions, documents, termination, suspension, dispute resolution, inspection and non-waiver, ethics and gratuities, employment practices, audit, liens and encumbrances, at least as restrictive in form and content as those contained or referred to in this Agreement. Subcontractor shall advise each prospective subconsultant or sub-subcontractor of these requirements and shall ensure that each subconsultant or sub-subcontractor complies with them.

17 TRUTH IN NEGOTIATIONS REPRESENTATIONS

- 17.1 Subcontractor warrants that sub-subcontractor has not employed or retained any company or person other than a bona fide employee working solely for Subcontractor, to solicit or secure this Agreement and that has not paid or agreed to pay any person, company, corporation, individual or firm, other than a bona fide employee working solely for subcontractor, any fee, commission, percentage, gift or any other consideration contingent upon or resulting from the award or making of this Agreement.
- 17.2 Subcontractor warrants that the prices for the Work sold Company hereunder are not less favorable than those currently extended to any other customer of Subcontractor for the same or similar services in similar quantities. Subcontractor further warrants that wage rates and other factual unit costs supporting the compensation are accurate, complete and current at the time of the Agreement. The Subcontractor agrees that the original Agreement price and any additions thereto shall be adjusted to exclude any significant sums by which Company or Client determines the Agreement price was increased due to inaccurate, incomplete, or non-current wage rates and other factual unit costs.

18 ETHICS AND GRATUITIES

The Subcontractor represents and warrants that in connection with its performance of this Agreement, it has not or will not, directly or indirectly, pay, give, offer, promise to pay or give, or authorize the payment or giving of any money, gift, or things of value to any governmental official, political party, or candidate for political office; or to any person who knowingly will give all or a portion of the money, gift, or thing of value to any such official in its official capacity. Breach of this

representation or warranty shall be considered a default under the terms of this Agreement and shall, in addition to any other remedies, entitle Company to recover all amounts paid to Subcontractor under this Agreement.

19 EMPLOYMENT PRACTICES

Subcontractor shall not discriminate against any employee or applicant for employment or applicant for employment because of race, color, national origin, religion, sex, age or for any reason prohibited by law. To the extent applicable to the Work on this Project, Subcontractor shall comply with Executive Order 11246 or any amendment, replacement or counterpart thereof.

20 COMMUNICATIONS AND NOTICES

- 20.1 All inquiries the Subcontractor may have concerning this Agreement shall be made to Company and not directly to the Client.
- 20.2 All of Subcontractor's correspondence/ communication regarding this Agreement shall include Company's Agreement Number and Work Description, and shall be mailed or delivered to Company's Designated Representative.
- 20.3 Notices of changes, deficiencies, delays, claims or disputes shall be in writing, and shall furnish full information to the extent available. The party notified will acknowledge receipt by endorsement of a copy if requested or will otherwise confirm receipt in writing. To avoid difficulty in delivery of Notice, sufficient Notice shall be deemed to have been given by mailing via Registered or Certified Mail or equivalent to the Site address shown on page 1 of this Agreement.

21 DISPUTES

- 21.1 The Parties agree to attempt to resolve disputes through informal mediation. The Parties may pursue their respective remedies at law or equity for any claim, controversy, or dispute relating to this Agreement, except as follows: Subcontractor acknowledges that the Prime Contract may include a disputes resolution clause pursuant to which Company may be limited to certain dispute resolution procedures such as arbitration or administrative proceedings in the event of a dispute relating to the Prime Contract. In the event that such provisions govern disputes between Company and its Client, Subcontractor agrees to be bound by the procedures in the Prime Contract with respect to disputes under this Agreement in the same manner that Company is bound under the terms of the Prime Contract. Subcontractor consents to joinder in any proceedings between Company and its Client upon Company's request. Subcontractor shall not have the right to join in proceedings between Company and the Client unless Company consents to the joinder.
- 21.2 The Subcontractor shall carry on the Work and maintain the Project schedule during any dispute proceedings, unless otherwise instructed by Company.

22 GOVERNING LAW

This Agreement shall be governed by and construed in accordance with the laws of the jurisdiction in which the Project is located.

23 SETOFF

Company is authorized to deduct any sums owed it by Subcontractor (whether or not the debt arises out of this Agreement) from the payments due Subcontractor under this Agreement. Company may also withhold payment from Subcontractor in an amount sufficient to protect Company from any claims of third parties or any liens which arise as a result of Subcontractor's or its subconsultants' and sub-subcontractors' performance of the Work.

24 SURVIVAL

The warranty, liability, indemnity, audit, ownership of work product, patent, and confidentiality (including publicity releases) provisions of this Agreement shall survive its termination or final settlement. The provisions of this Agreement relating to termination and settlement of disputes and claims (including choice of law) shall survive its termination, but not its final settlement.

25 SEVERABILITY

Any provisions of this Agreement held in violation of any law or ordinance shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon the Parties. Company and Subcontractor shall in good faith attempt to replace any invalid or unenforceable provisions of this Agreement with provisions that are valid and enforceable and that come as close as possible to expressing the intention of the original provisions.

26 REMEDIES

The remedies reserved for Company herein shall be cumulative and additional to any other or further remedies provided in law or equity. Any waiver by Company of any provision of this Agreement shall not constitute a waiver of any other provisions of the Agreement.

27 HEADINGS

The descriptive headings at the beginning of the articles, clauses, and subclauses of this Agreement are provided for convenience only and do not affect the interpretation or construction of this Agreement. In some instances an article or clause contains provisions not covered by the heading hereof, in other instances an article or clause contains provisions that are described in the heading of another article or clause.

EXHIBIT C
COMPENSATION

1.0 AGREEMENT PRICE

- 1.1 Company shall pay Subcontractor for complete, satisfactory and timely performance of the Work in strict accordance with the requirements hereof, the following firm fixed price, which excludes all applicable taxes and which is not subject to escalation: \$_____.
- 1.2 Change Orders
- 1.1. As allowed in DEP's Policy Memorandum #10 - the agreed upon DIRECT LABOR MARKUP (percentage) for Change Orders on this project shall be _____%. The "direct labor mark-up" rate shall account for the cost of Worker's Compensation Insurance, Federal Social Security and State Unemployment Compensation.
- 1.2. The agreed-upon mark-up for Overhead and Profit (OH&P) on this project shall be 15 percent (15%).
- 1.3. The agreed-upon mark-up for the Contractor's Overhead and Profit (OH&P) on Subcontractors shall be five percent (5%).
- 1.4. Any Change Orders authorized on a Time and Materials (T&M) basis shall have daily time and materials forms prepared by the Contractor and signed by Veolia.

2.0 INVOICES

- 2.1 Payment will be made in accordance with Article 3.0 of Exhibit B.
- 2.2 Subcontractor's invoice shall:
- 2.2.1 Reflect Company's Purchase Order ("PO") number and Site ID
- 2.2.2 Be numbered sequentially
- 2.2.3 Be submitted by email to us.apinvoices@veolia.com for approval
- 2.2.4 Be submitted on a monthly basis no later than the fifteenth (15th) day of the following month
- 2.2.5 Show previous amount billed, current amount billed, and amount billed to date by each activity and by the sum of all activities
- 2.2.6 Be accompanied by such supporting documentation as Company may reasonably require
- 2.3 An executed waiver and release form in the respective formats referenced as Exhibit C.1 - Interim Waiver And Release of Liens and Claims Upon Payment and Exhibit C.2 - Unconditional Final Waiver and Release of Liens and Claims upon Final Payment shall accompany Subcontractor's final invoice.

EXHIBIT C.1

INTERIM WAIVER AND RELEASE OF LIENS AND CLAIMS UPON PAYMENT

(To be provided by Subcontractor with Interim Progress Payment Invoices)

STATE OF Massachusetts
COUNTY OF Worcester

The undersigned, Subcontractor ("Subcontractor"), has been engaged under subcontract with Veolia Water North America - Northeast, LLC ("Company") to furnish certain materials, equipment, services, and/or labor for the project known as Taunton MA, Wastewater Treatment Facility, Phase 2 Improvements, which is located at 825 West Water Street, Taunton, MA ("Property"), and more particularly described as follows: Taunton MA, Wastewater Treatment Facility, Phase 2 Improvements.

Upon receipt of the sum of \$ _____, the Subcontractor waives and releases any and all liens or claims of liens and all claims, demands, actions, causes of action or other rights against Company and the Client and upon the foregoing described Project and Property through the date of _____, 20__ ("Current Date") and reserving those rights and liens that the Subcontractor might have in any retained amounts, on account of materials, equipment, services and/or labor furnished by the undersigned to or on account of Company for said **Taunton MA, Wastewater Treatment Facility, Phase 2 Improvements**. Exceptions as follows:

(if no exception entry or "none" is entered above, Subcontractor shall be deemed not to have reserved any claim.)

Subcontractor further represents that all employees, laborers, materialmen, sub-subcontractors and sub-subconsultants employed by the Subcontractor in connection with the Project and all bills incurred through the Current Date for materials, equipment, services and/or labor, and taxes furnished by such parties to the Subcontractor in connection with the Subcontractor's work on the Project have been, or shall be within 10 days of receipt of payment from Company stated above, fully paid and that no obligations, legal, equitable or otherwise, are, or shall be then, owed by the Subcontractor to such parties.

This Waiver and Release is freely and voluntarily given and the undersigned acknowledges and represents that it has fully reviewed the terms and conditions of this Waiver and Release, that it is fully informed with respect to the legal effect of this Waiver and Release, and that it has voluntarily chosen to accept the terms and conditions of this Waiver and Release in return for the payment recited above.

The undersigned understands that the failure to complete correctly or fully any of the blank spaces in this document shall not invalidate the document so long as the subject matter of this Waiver and Release may reasonably be determined.

FOR SUBCONTRACTOR:

Applicable to Payment Request(s) No. _____
(or) Invoice(s) No. _____ By: _____
Date: _____ Title: _____

AFFIDAVIT

On this ____ day of _____, 20__, before me appeared the above-signed, known or identified to me personally, who, being first duly sworn, did say that s/he is the authorized representative of the above-referenced Subcontractor and that this document was signed under oath personally and on behalf of the Subcontractor and the above-signed acknowledged that this Affidavit was executed as a free act and deed of Subcontractor.

Signature _____ (Seal)
Signature of Notary Public

EXHIBIT C.2

UNCONDITIONAL FINAL WAIVER AND RELEASE OF LIENS AND CLAIMS UPON FINAL PAYMENT

(To be provided by Subcontractor with Final Invoice)

STATE OF Massachusetts

COUNTY OF Worcester

The undersigned, Subcontractor ("Subcontractor"), has, under an agreement with Veolia Water North America - Northeast, LLC ("Company"), furnished certain materials, equipment, services, and/or labor for the project known as Taunton MA, Wastewater Treatment Facility, Phase 2 Improvements, which is located at 825 West Water Street, Taunton, MA, County of Worcester ("Property"), and more particularly described as follows: Taunton MA, Wastewater Treatment Facility, Phase 2 Improvements

Upon receipt of the sum of \$_____, such receipt being hereby acknowledged, the Subcontractor waives and releases any and all claims, demands, actions, causes of action or other rights against Company, the Client, the Project and Property, at law, in contract, tort, equity or otherwise, and any and all liens or claims of liens or any right against any labor and/or material bond Subcontractor has, may have had or may have in the future arising out of Subcontractor's performance of work on the Project.

This Waiver and Release applies to all facts, acts, events, circumstances, changes, constructive or actual delays, accelerations, extra work, disruptions, interferences and the like which have occurred, or may be claimed to have occurred prior to the date of this Waiver and Release, whether or not known to the Subcontractor at the time of execution of this Waiver and Release.

The Subcontractor further represents that all of its obligations, legal, equitable, or otherwise, relating to or arising out of its work on the Project have been, or shall be within 10 days of the date stated below, fully satisfied, including, but not limited to obligations relating to:

- Employees, laborers, materialmen, sub-subcontractors and sub-subcontractors employed by the Subcontractor;
- Labor, materials, equipment and supplies furnished by others to the Subcontractor; and
- Sales and use taxes, social security taxes, income tax withholding, unemployment insurance, privilege taxes, license fees, and any other taxes and obligations imposed by governmental authorities.

This Waiver and Release is freely and voluntarily given and the Subcontractor acknowledges and represents that it has fully reviewed the terms and conditions of this Waiver and Release, that it is fully informed with respect to the legal effect of this Waiver and Release, and that it has voluntarily chosen to accept the terms and conditions of this Waiver and Release in return for the payment recited above. The Subcontractor understands, agrees and acknowledges that, upon payment; this document waives rights unconditionally and is fully enforceable to extinguish all claims of the Subcontractor as of the date of execution of this document by the Subcontractor. The Subcontractor understands that the failure to complete correctly any of the blank spaces in this document shall not invalidate the document so long as the subject matter of this Waiver and Release may reasonably be determined.

FOR SUBCONTRACTOR:

Applicable to Payment Request(s) No. _____

Signed: _____(SEAL)

*If all, print "all" _____

By: _____

Date: _____

Title: _____

AFFIDAVIT

On this ___ day of _____, 20___, before me appeared the above-signed, known or identified to me personally, who, being first duly sworn, did say that s/he is the authorized representative of the above-referenced Subcontractor and that this document was signed under oath personally and on behalf of the Subcontractor and the above-signed acknowledged that this Affidavit was executed as a free act and deed of Subcontractor.

Signature _____ (Seal)

Signature of Notary Public

EXHIBIT D

INSURANCE REQUIREMENTS

Without in any way limiting Subcontractor's liability hereunder, Subcontractor shall maintain the following minimum limits of insurance at its own expense during the performance of the Work, with insurance companies rated A-VII or higher by A.M. Best's, to cover the risk of losses associated with this Agreement:

<u>Coverage</u>	<u>Limits</u>
(i) Workers' Compensation	\$100,000
(ii) Employers' Liability	\$1,000,000 each accident \$1,000,000 each employee \$1,000,000 policy limit
(iii) Commercial General Liability written on ISO CG 00 01 coverage form or its equivalent. No limiting or exclusionary endorsements material to Subcontractor's obligations in this Subcontract may be attached. Coverage shall include: a) contractual liability; b) explosion, collapse & underground perils (XCU); c) third-party over action coverage; d) Riggers Liability endorsement for the use of cranes, booms or other rigging equipment, if applicable; and e) amendment of the aircraft exclusion to include coverage for the use of commercial UAVs (drones), if applicable	\$2,000,000 each occurrence for property damage and bodily injury (PD/BI) \$2,000,000 general aggregate per project \$2,000,000 products/completed operations aggregate
(iv) Automobile Liability - covering all owned (if any), hired and non-owned autos. If Subcontractor is performing any hauling, endorsements MCS-90 and/or CA 99 48 shall be attached.	\$2,000,000 combined single limits - each accident
(v) Umbrella/Excess Liability providing coverage at least as broad as the underlying policy(ies)	May be utilized to meet limits outlined above
(vi) Property	Subcontractor shall be solely responsible for protecting and insuring all property owned or leased or used by Subcontractor in conjunction with the Work during the term of this Subcontract
(vii) Professional Liability (Errors & Omissions), if applicable to the Work - Coverage shall not exclude Technology Errors & Omissions coverage if Subcontractor will have any type of access to any Company systems, including, but not limited to, any Company-owned or managed IT asset (network, server or application) wherever it is hosted	\$1,000,000 each claim \$1,000,000 annual aggregate
(viii) Contractor's Pollution Liability, if applicable to the Work	\$1,000,000 each claim \$1,000,000 annual aggregate

Prior to providing any Work under this Agreement, Subcontractor will provide Company with an ACORD certificate of insurance evidencing that the above described coverages are in full force and effect. Subcontractor will name Company and Client as additional insured with respect to coverages (iii), (iv), and (viii), (and (v) if applicable) above. All policies will be primary and non-contributory, provide a full waiver of the insurer's right of subrogation in favor of Company and Client, if applicable, and/or any sub-subcontractor with respect to claims that are covered or should have been covered by valid and collectible insurance provided hereunder and said waiver will extend to any deductibles, co-insurance or

retentions. Subcontractor will not permit any cancellation or non-renewal in the insurance coverage to be provided hereunder without thirty (30) days' written notice to Company.

All policies shall be issued on occurrence-based forms, except for coverages (vii) or (viii), which may be issued on a claims-made form. All claims-made policies will at least be retroactive to the earlier of the date of this Agreement or the commencement of Subcontractor's services in relation to the Work, and shall be maintained for three (3) years after the expiration or termination of this Agreement.

These insurance requirements will not be construed in any matter as waiving, restricting or limiting Company's rights or Subcontractor's obligations under this Agreement. Company does not represent that coverage or limits herein will be adequate to protect Subcontractor. Subcontractor remains responsible for any liability not paid by insurance including deductibles and retentions.

EXHIBIT E
INSURANCE SUPPLEMENT (IF APPLICABLE)
INTENTIONALLY LEFT BLANK

EXHIBIT F
ADDITIONAL / SPECIAL TERMS
INTENTIONALLY LEFT BLANK

EXHIBIT G

TERMS AND CONDITIONS FOR SERVICES INVOLVING HAZARDOUS OR CONTAMINATED NON-HAZARDOUS WASTE OR MATERIALS

1. DEFINITIONS

- 1.1. "Hazardous Waste or Hazardous Materials": Means any substance falling within the definition of hazardous waste or hazardous material as set forth in the United States Resource Conservation and Recovery Act, 42 U.S.C §6901 et seq., the United States Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C §9601 et seq., or any other federal, state or local statutes, regulations and ordinances which are applicable to the handling, remediation or transportation of Hazardous Waste or Hazardous Materials.
- 1.2. "Non-Hazardous Contaminated Materials": Means any material considered contaminated by State or Federal law or regulation but is not listed under RCRA and are able to pass TCLP, e g, oil contaminated materials.
- 1.3. "Law" or "Laws": Means all federal, state and local statutes, laws, ordinances and any regulations, orders and administrative guidelines (by whatever title, and without respect to whether enforceable at law) issued thereunder that are applicable to the performance of the Work under this Agreement. To the extent that a Permit is required for Subcontractor to perform the Work, "Law" includes "Permit."
- 1.4. "Permit" or "Permits": Means every permit, license, authorization, certification, permission, or equivalent control document required under any federal, state or local statute, law ordinance, regulation or order.

2. WARRANTY

- 2.1. Subcontractor warrants that it is aware of and is knowledgeable about all Laws, including Environmental Protection Agency (EPA) Regulations, U.S. Department of Transportation (DOT) Regulations, the Occupational Safety and Health Act (OSHA) Regulations and the Resource Conservation and Recovery Act (RCRA), which may be applicable to the handling, remediation, disposal or transportation of Non-Hazardous Contaminated Materials, Hazardous Waste or Hazardous Materials which comprise all or part of the Work under this Agreement. Subcontractor further warrants that the Work will be accomplished in a manner which complies with Laws including, but not limited to, EPA DOT, OSHA and RCRA.
- 2.2. Subcontractor warrants that it is fully aware of the extent of the Work required by this Agreement, that it has conducted adequate research and analysis with respect to the handling, remediation, disposal and/or transportation of Non-Hazardous Contaminated Materials, Hazardous Waste or Hazardous Materials which comprise all or part of the Work under this Agreement, and that it has the expertise, experience, personnel, equipment (including the necessary health and safety personal protective equipment), facilities and financial resources necessary to perform the Work in accordance with all Laws.
- 2.3. Subcontractor warrants that it possesses or shall obtain, prior to commencing the Work, all Permits and other forms of documentation required in order to perform the Work in full compliance with all Laws, and shall ensure that all of the Subcontractor's employees, and all sub-subcontractors and their employees at any tier shall also possess the necessary Permits, and other forms of required documentation prior to the commencement of the Work.
- 2.4. If Work requires the generation of a Site-Specific Safety and Health Plan (SSHP) as required by OSHA, the Subcontractor and its sub-subcontractors shall generate such a plan for their employees in compliance with 29 CFR 19101.20/1926.65. This plan shall be made available to Company prior

to the start of any field activities. The Subcontractor's SSHP is solely the responsibility of Subcontractor, who shall evaluate the potential hazards to its employees and adhere to its SSHP. The Subcontractor's SSHP shall, at a minimum, conform to the requirements, where applicable, established in Company SSHP if one is generated. However, the Company SSHP does not, nor is it intended to, address procedures or activities of Subcontractor or its sub-subcontractors.

2.5. Subcontractor warrants that it is aware of and understands the currently known hazards and risk of injury to persons, property and the environment associated with the handling, remediation, disposal and/or transportation of Non-Hazardous Contaminated Materials, Hazardous Waste or Hazardous Materials which comprise all or part of the Work, Subcontractor shall have instructed its employees and the employees of its sub-subcontractors at any tier in the proper safety procedures and safety equipment to be used in the performance of the Work in compliance with all Laws, including OSHA.

3. TRANSPORTING WASTES OFF-SITE

3.1. Any vehicles/waste shipment containers leaving an exclusion zone shall be decontaminated prior to leaving the Project Site. The Subcontractor shall inspect all waste shipment containers prior to leaving the Project Site to ensure that the least possible amount of soil adheres to wheels and undercarriages.

3.2. Subcontractor shall not deliver site materials to any facility other than the approved disposal facility(ies) listed on the shipping manifest.

3.3. Subcontractor shall be responsible for and all actions necessary to remedy situations involving transit of mud, soil, contaminates, or waste materials trucked offsite. This cleanup shall be accomplished at the Subcontractor's expense.

3.4. Subcontractor shall prepare and submit for approval by Client through Company, a route selection report containing results of any inspections of the proposed access routes to determine road conditions, overhead clearance, weight restrictions, and required traffic control measures.

3.5. The Subcontractor shall ensure that waste shipment containers are protected against contamination by properly covering and lining them with compatible materials or by decontaminating them prior to any use other than hauling contaminated materials.

3.6. Prior to leaving the Project Site, a load inspection of all shipments shall be conducted by a designated responsible party approved by Company's Designated Representative. The load inspection report shall be submitted to Client through Company, which shall verify and provide written documentation of the following:

- A complete and accurate manifest.
- Utilization of the proper DOT approved shipping container in accordance with 49 Code of Federal Regulation (CFR).
- Labeling in accordance with DOT regulations specified by 49 CFR.
- A bill of lading traceable to the manifest.
- Validation that all waste shipment containers are in good condition and are not leaking.
- A statement that the driver is physically fit to perform his duties.
- Validation that the driver has written documentation in his possession of completion of the required DOT safety training and health monitoring.
- A statement that the driver's log book is current.
- Validation that a certificate of insurance is in force.

3.7. Site materials will be stored and transported in bulk containers when practical.

4. NOTIFICATION OF RELEASE

4.1. The Subcontractor shall be prepared and qualified to respond to emergency situations and releases for operations under the Subcontractor's control.

4.2. Should any release of Non-Hazardous Contaminated Materials, Hazardous Waste or Hazardous Materials occur during the performance of the Work, Subcontractor shall immediately notify all appropriate agencies and take all appropriate action. The Subcontractor shall also notify Company of such release by telephone or facsimile within four (4) hours of the incident. Subcontractor shall provide Company with copies of all notices of the release provided to any person, agency or authority by Subcontractor or its agents. Such copies shall be provided to Company simultaneously with the service of the original to any person, agency or authority.

EXHIBIT H

IT Security Requirements

At all times during its performance of work arising under this Agreement, Subcontractor shall comply with (and ensure that its managers/members, employees, agents and representatives of any type comply with) all requirements and policies of Veolia or its customers concerning information security, safety and other business operations, and all applicable Federal, foreign, state and local laws, rules, ordinances, codes and regulations including, but not limited to, all laws regulating the conduct of Works.

CONFIDENTIAL INFORMATION

At the expiration or termination of this Agreement, Subcontractor shall return or destroy (if requested by Company) all copies, extracts or other reproductions in whole or in part of the Confidential Information disclosed to the Subcontractor by Company. If Company requests that the documents be destroyed, Subcontractor shall provide a certification of such destruction, by an officer of Subcontractor. Subcontractor shall retain no copies of any Confidential Information.

NOTICES

Subcontractor is required to provide notification to Company of any suspected or actual breach of security, intrusion or unauthorized use or disclosure of Company personally identifiable information or Confidential Information and/or any actual or suspected use or disclosure of data in violation of any applicable federal or state laws or regulations in connection with the services and/or deliverables contained within this Agreement. In addition to sending notification to the General Counsel, notification shall also be sent to: na.information.security@veolia.com

WARRANTIES

Subcontractor warrants that it will maintain commercially reasonable security standards for its and its end users' systems, including without limitation the use of sufficiently secure passwords and regularly required password change, maintain its systems with proper patching and security updates; will use good industry virus protection software and practices, and other security best practice procedures to protect Company data and to avoid introducing any virus that could disrupt the proper operation of the Company systems used or corrupt the data.

Subcontractor also warrants that it shall use all reasonable endeavors to ensure that its end users do not upload or distribute files that contain viruses, malicious files or other harmful code on to, or disrupt or attempt to disrupt the systems and networks used during the Works. In the event a virus or other such code is introduced into the Company systems due to Subcontractor's failure to use such endeavors or Company data is breached from Subcontractor's systems, Subcontractor will at its cost assist Company in mitigating the direct effects of such issue.

VIRUSES

Subcontractor warrants it has not knowingly included any known viruses (including, but not limited to Trojan horses, or worms, or other software code designed to permit unauthorized access to, or to erase or otherwise harm, Company software, hardware, or data) with any material provided to Company.

OWNERSHIP OF DATA

Company will at all times retain ownership in the data, proprietary information and materials that Company provides to Subcontractor, including all patent, copyright and other intellectual property rights of Company, and all materials prepared by Subcontractor pursuant to this Agreement, including but not limited to surveys, results and findings.

EXHIBIT I

ANTI-CORRUPTION COMPLIANCE

1. In carrying out the terms of this Agreement, Subcontractor hereby undertakes to strictly comply with applicable laws prohibiting the bribery of public officials and private persons, influence peddling, money laundering that may in particular entail a public contract debarment, including:
 - (a) the 1977 Foreign Corrupt Practices Act of the United States,
 - (b) the 1999 Canadian Corruption of Foreign Public Officials Act,
 - (c) the 2010 UK Bribery Act, the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions of December 17, 1997. SUBCONTRACTOR undertakes to put in place and implement all necessary and reasonable policies and measures to prevent corruption.
2. Subcontractor declares that to its knowledge, its legal representatives, directors, employees, agents, and anyone performing services for or on behalf of Company pursuant to this Agreement do not and will not directly or indirectly offer, give, agree to give, authorize, solicit, or accept the giving of money or anything else of value or grant any advantage or gift to any person, company or undertaking whatsoever including any government official or employee, political party official, candidate for political office, person holding a legislative, administrative or judicial position of any kind for or on behalf of any country, public agency or state owned company, official of a public international organization, for the purpose of corruptly influencing such person in their official capacity, or for the purpose of rewarding or inducing the improper performance of a relevant function or activity by any person in order to obtain or retain any business for Company or to gain any advantage in the conduct of business for Company.
3. Subcontractor further undertakes to ensure that neither Subcontractor nor any of its legal representatives, directors, employees, agents, sub-contractors and anyone performing services for or on behalf of Company under this Agreement has been, or is listed by any government agency as being debarred, suspended, proposed for suspension or debarment, or otherwise ineligible for participation in government procurement programs and/or bidding following invitations to bid advertised by the World Bank or any other international development bank.
4. Subcontractor undertakes to retain for an appropriate period following termination of this Agreement, accurate supporting documentation of its compliance with the terms of this clause.
5. Subcontractor agrees to notify Company of any breach of any term of this clause within a reasonable time.
6. If Company notifies Subcontractor that it has reasonable grounds to believe that Subcontractor has breached any term of this clause:
 - (a) Company is entitled to suspend performance of this Agreement without notice for as long as Company considers necessary to investigate the relevant conduct without incurring any liability or obligation to Subcontractor for such suspension;
 - (b) Subcontractor is obliged to take all reasonable steps to prevent the loss or destruction of any documentary evidence in relation to the relevant conduct.
7. If Subcontractor breaches any term of this clause:
 - (a) Company may immediately terminate this Agreement without notice and without incurring any liability.
 - (b) Subcontractor undertakes to indemnify Company, to the maximum extent permitted by law, for any loss, damages, or expenses incurred or suffered by Company arising out of such breach.

EXHIBIT J

BONDING / LETTER OF CREDIT REQUIREMENTS

Effective on the date this Contract is entered into the Subcontractor shall provide financial security for the performance of its obligations hereunder through a Performance Bond issued by a surety company: (1) approved by the Owner having a rating of "A" in the latest revision of the A.M. Best Company's Insurance Report; (2) listed in the United States Treasury Department's Circular 570, "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsurance Companies"; and (3) properly registered and licensed to conduct business in the State of Connecticut. The bond shall be issued in the name of the Subcontractor, as principal, and the Company and Client, as obligee, in the full amount (100%) of the Work, to be adjusted to account for any adjustments, and shall remain open until the final completion of the Work and any modifications.

DIVISION 01

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work covered by the Contract, listing of Owner, Project location, Engineer. Sequence requirements, the Contractor's use of the premises and Owner's occupancy requirements.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work includes, but is not necessarily limited to approximately:
- Cured-in-place Pipe (CIPP) lining of approximately XXX LF of pipe (service and main) between 6" and 20" in diameter, including bypass pumping.
 - Disconnection of underdrains from approximately 10 sewer manholes
 - Excavated replacement of approximately XXX LF of sewer pipe and associated manholes.
 - Associated pavement and appurtenant work related to items listed above

all as more particularly indicated, shown or described in the Drawings, Specifications, and other Contract Documents.

1.03 OWNER

- A. City of Taunton DPW**
90 Ingell Street
Taunton, MA 02708
Telephone: **508-821-1434**
Contact: **Fred Cornaglia, Commissioner**

1.04 PROJECT LOCATION

- A. Various Locations**
Taunton, MA

1.05 ENGINEER

- A. BETA Group, Inc.
6 Blackstone Valley Place
Lincoln, Rhode Island 02865
Telephone: 401-333-2382
Fax: 401-333-9225
Contact: Michael Andrus, P.E.

1.06 WORK SEQUENCE

- A. Work under this Contract may be coordinated with other work which may be under construction or contemplated within the City, and that work under the Contract may conform to conditions which it has been undertaken or conditions attached to a right-of-way or particular location for this work, the Engineer may determine the point or points and time or times when portions of work will commence or be carried on and may issue orders pertaining to the work sequence, relative to the rate of progress on several portions of the work.
- B. The Contractor's attention is directed to the fact that certain portions of the work will be required to be performed at night.

1.07 CONTRACTOR USE OF PREMISES

- A. The Contractor's use of premises shall be within the limits shown on the Drawings and as defined in Section 00500 – Contract Agreement, for the performance of the Work.
- B. The Contractor shall assume full responsibility for security of all materials and equipment on the site, including those of his subcontractor's.
- C. If directed by the Owner, the Contractor shall move any stored items that interfere with operations of the Owner.
- D. Obtain and pay for use of additional storage or work areas if needed to perform the Work.

1.08 OWNER OCCUPANCY REQUIREMENTS

- A. All existing collection systems, pump stations and forcemains servicing the City must remain in full service at all times, throughout the duration of the project. Contractor shall conduct his operations in accordance with Section 02149 - Maintaining Existing Flow.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01020

ALLOWANCES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Contingencies and their respective value which have been established in the BID as an estimated lump sum to facilitate comparison of bids only.

B. Related Sections

1. Section 00300 - Bid Forms
2. Section 01025 - Measurement and Payment
3. Section 01570 – Traffic Regulations

1.02 ALLOWANCES

A. Transport and Disposal of Contaminated Soils (Category RCS-1) and Groundwater – Bid Item No. XX

1. Transport and dispose of contaminated soils and asbestos containing material (ACM) as specified in Sections 02076 and 02080 or as directed by the Engineer.
2. The actual amount to be paid under this Item to the Contractor for work done by others will be the paid invoiced amount from transporters, disposal facilities, etc. without mark-up, overhead, or profit. Work done by the Contractor
3. Coordinate all work with the Owner and Engineer.
4. Rent, install, operate (including sampling), and remove groundwater treatment systems to meet sewer discharge permit.

B. Miscellaneous Utility Relocation – Bid Item No. XX

1. Provide the relocation, replacement or repair as shown on the Contract Drawings or as directed by the Engineer.
2. Coordinate all work with the respective utility company or department providing access to the site at the appropriate time to prevent any delay in the work specified to be done under these Contract Documents.
3. The actual amount to be paid under this Item to the Contractor will be the paid invoiced amount from the utility without mark-up, overhead, or profit.

4. In the event the respective utility company or department declines to perform the relocation, or does not customarily perform relocation work on utilities under their jurisdiction, the Contractor shall perform all necessary work with his own forces experienced in the relocation work required. Relocation work performed by the Contractor shall be considered “Extra Work” and shall be paid under the conditions of Specification Section 00500, Part 1.25.

1.03 PAYMENT PROCEDURES

- A. Under these items, the Contractor shall be reimbursed for charges for the allowances required and authorized by the Owner and Engineer, as detailed in Section 01025 - Measurement and Payment.
- B. The lump-sum price for allowances is established in Section 00300 – Bid as an estimated figure to facilitate comparison of bids only. The actual amount to be paid under this item shall constitute full compensation for services rendered.
- C. The lump-sum price for this item shall NOT include any costs associated with services rendered for routine utility markings, repairing damages incurred as a result of the Contractor's operations, relocations of utilities done at the Contractor's request and/or convenience, or any other unauthorized services rendered by utility companies. The purpose of this item is strictly for the Contractor's reimbursement for those services authorized by the Owner or Engineer prior to the work being performed.
- D. The Contractor will be paid based on the actual PAID invoiced amount from the authority in question as approved by the Engineer. If the total cost for such charges is greater or less than the allowance amount stated under this item of the BID, a debit or credit of the difference in cost shall be to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials as required and ordered by the Contractor shall conform to the Contract Documents.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Installation, relocation, or repair of utilities, shall be performed in accordance with the Contract Documents.

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Measurement and payment criteria applicable to the Work performed under a unit price and/or lump sum payment method of Items listed in the BID.

B. Related Sections

1. Section 00300 - Bid
2. Section 00500 - Agreement
3. Section 01020 - Allowances

1.02 UNIT QUANTITIES SPECIFIED

- A. Quantities and measurements indicated in SECTION 00300 are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer shall determine payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit price contracted.

1.03 MEASUREMENTS OF QUANTITIES

- A. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- B. Measurement by Area: Measured by square dimension using mean length and width or radius.
- C. Linear Measurement: Measured by linear dimension, along the horizontal projection of the centerline or mean chord.
- D. At appropriate points in this text, specifications are given with respect to measuring or estimating certain quantities and the sums due for the same. Except as otherwise provided, the Engineer shall determine the appropriate method for measuring and computing each quantity, and for estimating the sums due for the various kinds of work and material, using such methods, tools and degrees of precision as are suitable for the particular measurement, Item or computation. When so requested by the Engineer, assistance in measuring or determining quantities, shall be provided by furnishing the help of unskilled laborers on the site, by furnishing copies of invoices, or by other means.

- E. For estimating quantities in which the computations of areas by analytic and geometric methods would be laborious, as determined by the Engineer, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas and may be used for this purpose.

1.04 UNIT PRICES

- A. Payment will be computed on the basis of the unit price bid in SECTION 00300 for each Item and the quantity of units completed. Unit prices are to include cost of all necessary materials, labor, equipment, overhead, profit and other applicable costs. (See Par. 1.06, this Section.)

1.05 LUMP SUM PRICES

- A. Payment will be computed on the basis of the percentage of work completed on each Item in the contract BID as determined by the Engineer. Lump sum prices are to include the cost of all necessary materials, labor, equipment, overhead, profit and other applicable costs. (See Par. 1.06, this Section.)

1.06 PRICES INCLUDE

- A. The prices stated in the Proposal include full compensation not only for furnishing all the labor, equipment and material needed for, and for performing the work and building the structures contemplated by, the Contract, but also for assuming all risks of any kind for expenses arising by reason of the nature of the soil, groundwater, or the action of the elements; for all excavation and backfilling; for the removal of and delay or damage occasioned by trees, stumps, tracks, pipes, ducts, timber, masonry or other obstacles; for removing, protecting, repairing, or restoring, without cost to the Owner, all pipes, ducts, drains, sewers, culverts, conduits, curbs, gutters, walks, fences, tracks, or other obstacles, road pavements and other ground surfacing whether shown on plans or not for draining, damming, pumping or otherwise handling and removing, without damage to the work or to other parties, and without needless nuisance, all water or sewage from whatever source which might affect the work or its progress, or be encountered in excavations made for the work; for furnishing, inserting and removing all sheeting, shoring staging, cofferdams, etc.; for all signs (up to 100 square feet), fencing, lighting, watching, guarding, temporary surfacing, bridging, snow removal, etc., necessary to maintain and protect travel on streets, walks and private ways; for making all provisions necessary to maintain and protect buildings, fences, poles, trees, structures, pipes, ducts and other public or private property affected or endangered by the work; for the repair or replacement of such things if injured by neglect of such provisions for removing all surplus or rejected materials as may be directed; for replacing, repairing and maintaining the surfaces of streets, highways, public and private lands if and where disturbed by work performed under the Contract or by negligence in the performance of work under the Contract; for furnishing the requisite filling materials in case of any deficiency or lack of suitable materials; for obtaining all permits and licenses and complying with the requirements thereof, including the cost of furnishing any security needed in connection therewith; for any and all expense on account of the use of any patented device or process; for protection against inclement or cold weather; for all expenses incurred by or on account of the suspension; interruption or

discontinuance of work; for the cost of the surety bond and adequate insurance; for all taxes, fees, union dues, etc., for which the Contractor may be or become liable, arising out of his operations incidental to the Contract; equipment on the site and away therefrom; for providing a field office and its appurtenances and for all general and incidental expenses; for tools, implements and equipment required to build and put into good working order all work contemplated by the Contract; for maintaining and guaranteeing the same as provided; and for fulfilling all obligations assumed by the Contractor under the Contract and its related documents.

- B. The Owner shall pay and the Contractor shall receive the prices stipulated in the BID made a part hereof as full compensation for everything performed and for all risks and obligations undertaken by the Contractor under and as required by the Contract.
- C. The prices for those Items which involve excavation shall include compensation for disposal of all surplus excavated material and handling water.
- D. In all Items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price, therefore, shall be in addition to the cost of excavating earth and no deduction will be made in the amount for earth excavation.
- E. The prices for all pipe Items (i.e. sewers, service connections, drains, etc.) shall constitute full compensation for furnishing, laying, jointing and testing; earth excavation, backfill and compaction; materials for bedding pipe as specified; and cleaning up.
- F. The prices for all pipe Items shall also include the removal and disposal of the existing pipe being replaced or repaired, unless otherwise specified in the Contract.
- G. Permanent Pavement Restoration City Streets
 - 1. The unit prices for permanent restoration in City Streets shall constitute full compensation for saw cutting, removal and disposal of any temporary pavement; excavation to the required depth; additional roadway bedding materials; special compaction requirements; traffic loop restoration; roadway markings; resetting curbing; casting and valve box adjustments, as directed; cutting and matching existing pavement; furnishing and applying required prime coats and emulsions; safety precautions including construction warning signs and barricades during the project; obtaining all necessary roadway permits and/or approvals from state and local agencies; and constructing the pavement complete, including sidewalks, and driveways, as specified and as indicated and not specifically included for payment under other Items.

1.07 PRICES SUBJECT TO ADJUSTMENT

A. Fuel Cost Adjustment

This adjustment will provide for either additional compensation to the Contractor or repayment to the Owner, depending on an increase or decrease in the average price of diesel fuel or gasoline. This adjustment will be based on fuel usage factors listed below. These factors will be multiplied by the quantities of work done in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price. The Base Price of Diesel Fuel and Gasoline will be the price as indicated on the

Massachusetts Department of Transportation website for the month in which the contract was bid, which includes State Tax. The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month. This adjustment will be effected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments. No adjustment will be paid for work done beyond the extended completion date of any contract. Any adjustment (increase or decrease) to estimated quantities made to each item at the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity. The fuel price adjustment will apply only to the following items of work at the fuel factors shown:

ITEMS COVERED	FUEL FACTORS	
	Diesel	Gasoline
Excavation and Borrow Work:	0.29 Gallons / CY	0.15 Gallons/CY
Paving Work: (All Items containing Hot Mix Asphalt)	2.90 Gallons/Ton	Does Not Apply

B. Price Adjustment For Hot Mix Asphalt Mixtures

The intent of this provision is to insure adequate and fair compensation for unpredictable and fluctuating costs which, from time to time, occur in the prices of Hot Mix Asphalt Mixtures. The price adjustment provisions are made to assure more realistic bidding and encourage competition. This adjustment will provide for either additional compensation to the Contractor or repayment to the Owner depending on an increase or decrease in the average price of Hot Mix Asphalt Mixtures. This provision applies to all hot mix asphalt mixtures containing Liquid Asphalt.

The Base Price of Liquid Asphalt on the project will be a fixed price and shall be based on the price on the Bid Date. The price adjustment will be based on the variance in price for the Liquid Asphalt component only from the Base Price to the Period Price. It shall not include transportation or other charges. The Price Adjustment will occur on a monthly basis.

The Period Price for Hot Mix Asphalt for each monthly period shall be as determined and published by the Massachusetts Department of Transportation (www.MassDOT.state.ma.us) in accordance with the “New Asphalt Period Price Method” using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer’s terminal.

The Contract Price of the hot asphalt mixture will be paid under the respective item in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the work has been performed, using the monthly period price for the month during which the work was performed.

The Price Adjustment shall apply only to the virgin liquid asphalt content used for Hot Mix Asphalt Mixtures, the content being fixed at 5.5% (0.055) by weight regardless of percentages established by the Job Mix Formula.

The Price Adjustment will be paid only if the variance from the Base Price is 5-percent or more for a monthly period. The complete adjustment shall be paid in all cases with no deduction of the 5-percent from either upward or downward adjustments.

No price adjustment will be allowed beyond the completion date of the Contract, unless there is an approved extension of time by the municipality.

C. Price Adjustment for Portland Cement Concrete

This provision applies to all projects using greater than 100 Cubic Yards of Portland cement concrete. This Price Adjustment will occur on a monthly basis. The Price Adjustment will be based on the variance in price for the Portland cement component only from the Base Price to the Period Price. It shall not include transportation or other charges. The Base Price of Portland cement on this project shall be the Period Price at the time of bid as published by the Massachusetts Department of Transportation (see below).

The Period Price of Portland cement will be determined by using the latest published price, in dollars per ton (U.S.), for Portland cement (Type I) quoted for Boston, U.S.A. in the Construction Economics section of ENR Engineering News-Record magazine. The Contract Price of the Portland cement concrete mix will be paid under the respective item in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the work has been performed, using the monthly period price for the month during which the work was performed. The price adjustment applies only to the actual Portland cement content in the mix placed on the job. No adjustments will be made for any cement replacement materials such as fly ash or ground granulated blast furnace slag. The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of cubic yards of Portland cement concrete placed during each monthly period times the Portland cement content percentage times the variance in price between the Base Price and Period Price of Portland cement. This Price Adjustment will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments. No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is an approved extension of time.

1.08 PAYMENT

- A. In general, payment will be made for all Contract work satisfactorily completed through the end of the previous month. The payment will include any additional work which has been completed and approved and change order work agreed upon by the Owner and Contractor which has been completed and approved (See SECTION 00500).
- B. Each application for payment will indicate the total of a minimum five percent (5%) retainage held by the Owner on the total of all work completed under the contract and approved for payment to-date.

- C. Monthly applications for payment may also indicate reduction or increase of the total Contract price when an approved change order results in a net reduction or net increase in the cost and quantity of work to be performed under the Contract.
- D. Special billings and charges against the Contract as credit or payment to the Owner, that are not for change order work, may be subtracted from monies due on any monthly application for payment but shall not serve to reduce the total Contract price.
- E. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by the unit price for work which is incorporated in or made necessary by the Work.

1.09 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

SEWER PIPE REHABILITATION

BID ITEM NO. 1A THROUGH 1XXX CURED-IN-PLACE PIPE OR SPRAY-IN-PLACE PIPE REHABILITATION

1. The length of Cured-in-Place Pipe (CIPP) liner to be paid for under Items 1A through 1XXX shall be by the linear foot along the horizontal projection of the completed liner as measured from centerline to centerline of manholes, the lengths of manhole inverts (as measured between the inside walls of the manholes) being deducted.
2. The unit prices for Items 1A through 1XXX shall constitute full compensation for pipe cleaning, root removal, cutting protruding services flush with the main pipe and grouting to ensure proper seal with sewer main and service connection, installing pipe liner in those pipes identified on the Drawings and as specified including sewer main bypass pumping, reconnecting service laterals and grouting each connection after cutting, cutting of liner in manholes, mobilization and demobilization, resident notification requirements, bypassing individual service connections if required due to high service flows as approved by Engineer, traffic control requirements (excluding police), pre- and post-installation CCTV inspection, dye testing to confirm that all laterals have been re-connected, and all other work incidental thereto and not specifically included for payment under other Items.
3. The unit price for Item 1XXX shall constitute full compensation for pipe cleaning, root removal, installing CIPP or SIPP pipe liner in those service laterals identified on the Drawings and as specified including sewer main bypass pumping, mobilization and demobilization, coordinating access to properties and scheduling to minimize business disruption, traffic control requirements (excluding police), pre- and post-installation CCTV inspection, and all other work incidental thereto and not specifically included for payment under other items.

SEWER AND DRAIN PIPES

BID ITEM NO. 2A THROUGH 2XXX DRAIN PIPE REPLACEMENT AND INSTALLATION

1. The lengths of pipes to be paid for under Items 2XXX shall be measured by the linear foot along the horizontal projection of the centerline of the completed pipe excluding

the length of manholes measured to the limits of the manhole inside diameter. The unit price for these Items shall constitute full compensation for constructing sewers and drains, complete, as indicated on the Drawings and as specified, including all incidental work not specifically included for payment under other Items. The unit price for these Items shall constitute full compensation for removal and disposal of existing pipes, maintaining existing flow (including bypass pumping where necessary), excavation, locating and cutting existing service connections, reestablishing services each day, dewatering, excavation support, utility marking tape, and constructing new pipe, complete, as indicated on the Drawings and as specified, including all incidental work not specifically included for payment under other Items.

2. The quantity of Curb Stops and check valves to be paid for under Item 2XXX shall be equal to the actual number of Curb Stop and check valve assemblies furnished and installed. The unit price shall include excavation, including removal and disposal of bituminous concrete, bedding, backfill and restoration of property to include loaming, seeding, and curbing (granite or concrete reset in concrete). The unit price for curb stops with boxes for all sizes up to 2-inch diameter shall constitute full compensation for furnishing and installing curb stops, curb stop boxes, and all necessary restraint devices, as required, and directed by the Engineer to complete the work, and all work not specifically included for payment under other items.
3. The quantity of pipe cap and marker posts to be paid for under Item 2XXX shall be equal to the actual number of pipe cap and marker posts installed at the termination of gravity drain connections. The unit price shall include excavation, including removal and disposal of bituminous concrete, bedding, backfill and restoration of property to include loaming, seeding, and curbing (granite or concrete reset in concrete), bituminous berm and in kind sidewalk restoration.
4. The unit price for these items shall also include full compensation for removal, stockpiling, and disposal of all surplus or unsuitable fill materials [including all natural and “anti-degradation” soils as defined by MassDEP at 310 CMR 40.0032(3)] EXCEPT those specifically identified and paid for under Bid Item XXX – Transport and Disposal of Contaminated Soils (Category RCS-1 and above).
5. The unit price for these Items shall also constitute full compensation for public notification and coordination of service interruptions with private and public users, bypassing individual service connections if required, traffic control requirements (excluding police) and all other work incidental thereto and not specifically included for payment under other items.
6. The unit price for these Items 2XXX through 2XXX shall also constitute full compensation for performing post-installation CCTV inspection of new mainline pipes, and dye testing where necessary for service pipes, and for providing records of such inspection to the Engineer.

**BID ITEM NO. 2XXX CONSTRUCT 6-INCH POLYVINYL CHLORIDE PIPE SEWER
SERVICE CONNECTIONS**

1. The length of sewer service connections to be paid for under this Item shall be measured by the linear foot along the top of the completed pipeline over its centerline within the limits indicated.

2. The unit price shall constitute full compensation for constructing the new service connections, complete, as indicated on the Drawings and as specified, including maintaining existing service, removal and disposal of existing service pipe (if applicable) and surplus material, dewatering, excavation support, the removal of pavement, replacement and/or resetting of curbs, bushes, plantings, sod, and all necessary grading and reseeding of grassed areas disturbed by the Contractor's operations, and all other work incidental to construction of the service connection and not specifically included for payment under other Items.
3. The unit price shall also include costs for stakes and utility marking tape.
4. **The unit price shall include everything required for the service connection**, as indicated on the Drawings and as specified, EXCEPT the following:
 - a. Removal and disposal of all surplus or unsuitable fill materials specifically identified and paid for under Bid Item XXX – Transport and Disposal of Contaminated Soils (Category RCS-1 and above).
 - b. Backfill of service pipe with Controlled Density Fill, where directed by Engineer, shall not be paid for under this Item but shall be paid under Item XXX.
 - c. Restoration of driveway aprons and sidewalks shall be paid for under Item XXX as appropriate.
 - d. Connection of new services to existing service pipes shall be paid for under Item XXX.
 - e. Connection of new services to existing mainline stubs shall be paid for under Item XXX.
 - f. Rock excavation and disposal if encountered, will be paid for under Bid Item XXX.

BID ITEM NO. 2XXX CONNECTING EXISTING MAINLINE OR UNDERDRAIN PIPE TO NEW STRUCTURES OR PIPES (LESS THAN 24" DIAMETER)

1. The number of re-connections of mainline or underdrain pipes less than 24" in diameter to new structures or pipes of any size, to be included for payment under this Item shall be equal to the actual number of connections made, as indicated on the Drawings.
2. The unit price for this Item shall constitute full compensation for making the connection to the new structures or pipes, including any cutting, modifications, and extensions or replacements of up to 10 feet in length to existing pipes to accommodate new connection, couplings, fittings, seals, concrete encasement (if used), complete, as indicated on the Drawings and as specified, and not paid for under other Items. Replacements or extensions in excess of 10 feet, if deemed necessary by the Engineer, shall be paid for under the appropriate Bid Item for the size, type and material of pipe replaced.
3. Connection of low pressure pipes to new gravity sewer manholes shall be paid under this item.
4. Connecting new sewer service pipes to existing service pipes shall NOT be paid under this item, but shall be paid under Item 2XXX.
5. Connecting new sewer service pipes to existing sewer main stubs shall NOT be paid under this item, but shall be paid under item 2XXX.

6. Connecting new drain pipe on Chestnut St to new drain manhole shall NOT be paid under this item.
7. Re-connecting new RCP culvert on Chestnut St to existing stone culvert shall NOT be paid under this item, but shall be included as part of Item 2XXX.

BID ITEM NO. 2XXX CONNECT NEW 6" SERVICE PIPE TO EXISTING 6-INCH SEWER SERVICE PIPE

1. The number of sewer service re-connections to be paid for under this Item shall be equal to the actual number of permanent sewer service re-connections made from the new sewer to the existing sewer service connection at the property line or as directed. Temporary connections made during installation of main sewer shall not be paid under this item, but shall be included in the applicable main pipe Item.
2. The unit price shall constitute full compensation for locating the existing service, cutting the existing pipe, furnishing fittings and related materials (including concrete, if needed), connecting the new service with the existing service, **and conducting a dye test upon completion to confirm service connection**, complete, as specified and/or directed, and all other work incidental to construction of the service connection and not specifically included for payment under other Items.

BID ITEM NO. 2XXX CONNECT NEW 6" SERVICE PIPE TO EXISTING 6-INCH AC SEWER MAIN

1. The number of sewer service re-connections to be paid for under this Item shall be equal to the actual number of permanent sewer service re-connections made from the new sewer service to the existing Asbestos Cement (AC) sewer service stub at the sewer main or as directed.
2. The unit price shall constitute full compensation for locating the existing service, installing new wye service connections, furnishing fittings and related materials (including concrete, if needed), connecting the new service with new wye connection, **and conducting a dye test upon completion to confirm service connection**, complete, as specified and/or directed, and all other work incidental to construction of the service connection and not specifically included for payment under other Items.
3. The unit price shall constitute full payment for all special procedures, tools, protective equipment, and other materials necessary for safe removal of Asbestos Cement (AC) pipe to facilitate the installation of the sewer service.
4. Transport and disposal of Asbestos-Containing Material shall NOT be paid under this item, but shall be paid for under Item XXX.

BID ITEM NO. 2XXX CUT, CAP, AND/OR PLUG EXISTING PIPES, ALL SIZES

1. The number of plugs or caps to be paid for under this Item shall be measured by the actual number of plugs or caps installed, complete as specified and/or directed.
2. The unit price for this Item shall constitute full compensation for all necessary labor and materials for abandoning sewer or drain pipes, by cutting, capping and/or plugging watertight with mechanical or masonry plug, complete, as indicated on the Drawings and as specified, including all incidental work not specifically included for payment under other Items.

3. The unit price shall include all necessary materials and labor required for the cutting, capping, and plugging existing pipes, complete, as indicated on the Drawings or as directed.
4. The unit price shall include any CCTV investigating required to confirm the status of pipes to be abandoned.

BID ITEM NO. 2XXX ABANDON EXISTING SEWER AND DRAIN PIPE IN PLACE

1. The length of abandon existing sewer and drain pipe to be paid for under this Item shall be measured by the linear foot of existing sewer and drain pipe and structures abandoned, complete as specified.
2. The unit price for this Item shall constitute full compensation for all necessary labor and materials for abandoning sewer or drain pipe and structures, including excavation to expose pipe, plugging all pipe penetrations (if applicable) and filling pipe and structures with controlled density fill complete, including excavation, cutting, backfilling as indicated on the Drawings and as specified, including all incidental work not specifically included for payment under other Items.
3. At the contractor's option, he may excavate and remove pipes indicated for abandonment rather than filling them with controlled density fill. If the contractor opts to remove pipes, he shall be paid ONLY the unit price for this Item, and shall not be entitled to any additional compensation for excess excavation, backfill, or pavement restoration incurred as a result of his decision to remove pipes.
4. **The unit price shall include everything required for the abandonment including the controlled density fill**, as indicated on the Drawings and as specified, EXCEPT the following:
 - a. Cutting, capping, and/or plugging ends of pipes to be abandoned shall be paid for under Item 2XXX.
 - b. Pavement shall be paid for under the appropriate sections of Bid Item XXX.

SEWER AND DRAIN STRUCTURES

BID ITEM NO. 3A THROUGH 3XXX SEWER AND DRAIN STRUCTURES

1. The quantity of standard sewer and drain structure bases to be paid for under Items 3XXX through 3XXX shall be the actual number of bases furnished and installed complete as indicated on the Drawings or as otherwise directed by the Engineer.
2. The unit price for Item 3XXX shall constitute full compensation for furnishing and installing doghouse bases for stacked pipes (including both sewer pipes with underdrains below them, and sewer pipes with stormwater drains above them), including extended bases on sewer structures and including underdrain pipe through doghouse structures, complete as indicated on the Drawings and as specified.
3. The quantity of walls and cones to be paid for under Items 3XXX through 3XXX shall be measured by the vertical foot from the center of the invert constructed at the structure base as detailed on the Drawings, to the bottom of the structure frame.
4. The unit price for Items 3XXX through 3XXX shall constitute full compensation for furnishing and installing structure walls and cones, complete as indicated on the Drawings, **including all excavation support as necessary**.

4. The quantity of manhole frames and covers to be paid for under Item 3XXX shall be the actual number of frames and covers furnished and installed on new structures, complete as specified and indicated on the Drawings or as otherwise directed by the Engineer.

The unit price for Item 3XXX shall constitute full compensation for furnishing and installing frames and covers on new structures, complete as indicated on the Drawings. Work shall include installation of brick grading rings and adjustment of the frame and cover to grade, flush and true to existing road or ground surface, installing concrete collar, brick, mortar, and all other work incidental thereto and not specifically included for payment under other Items.

5. The quantity of catch basin frames and grates to be paid for Item 3XXX shall be the actual number of standard or high-capacity frames and grates furnished and installed on new structures, complete as specified and indicated on the Drawings or as otherwise directed by the Engineer. Units shall be counted per grate, such that a double grate shall be counted as two units.

The unit price for Item 3XXX shall constitute full compensation for furnishing and installing standard structure frames and grates on new structures, complete as indicated on the Drawings. Work shall include installation of brick grading rings and adjustment of the frame and grate to grade, flush and true to existing road or ground surface, brick, mortar, and all other work incidental thereto and not specifically included for payment under other Items.

5. The unit price for Item 3XXX shall constitute full compensation for removing and disposing of existing manholes and catch basins, or portions thereof as identified on the Drawings, regardless of whether the removed structure is being replaced. Work shall include but shall not be limited to excavation, removal, and disposal of all manhole components, including bases, walls, steps, frames and covers, and brickwork. Work shall also include all backfill and compaction in locations where removed manhole is not to be replaced. All work associated with new manholes replacing manholes removed under this item shall be paid for under the appropriate new manhole item. Controlled Density Fill for backfill shall NOT be paid under this item, but shall be paid under Item 5A.

BID ITEM 3XXX ABANDON EXISTING MANHOLE IN PLACE

1. The unit price for Item 3XXX shall constitute full compensation for abandoning existing manholes in place, in accordance with the Detail on Sheet XXX, regardless of whether the abandoned structure is being replaced. Work shall include but shall not be limited to excavation, removal, and disposal of all manhole components shown, pipe within manhole, waterstop, rebar, concrete, **controlled density fill**, and excavation backfill. All work associated with new manholes replacing manholes removed under this item shall be paid for under the appropriate new manhole item.

The lump sum price for Item 3XXX shall include everything required for the Manhole Abandonment as detailed on Sheet XXX and as specified, EXCEPT the following:

- a. Disposal of Contaminated Soil will be paid under Bid Item XXX.
- b. Rock excavation and disposal if encountered, will be paid for under Bid Item XXX.

- c. Pavement restoration will be paid for under the appropriate sections of Bid Item XXX.

BID ITEM 3XXX FURNISH AND INSTALL NEW PRECAST CONCRETE DROP INLETS

1. The quantity of drop inlet structures to be paid for under Item 3XXX shall be the actual number of structures installed, complete as specified and indicated on the drawings or as otherwise directed by the engineer.
The unit price for Item 3XXX shall constitute full compensation for furnishing and installing the drop inlet structures, complete, EXCEPT:
 - a. Frames and grates installed on drop inlet structures shall be paid for under Item XXX.
 - b. Controlled Density Fill for backfilling drop inlets shall be paid under Item XXX.

EARTH AND ROCK EXCAVATION

BID ITEM NO. 4XXX EARTH EXCAVATION BELOW NORMAL DEPTH

1. The quantity of earth excavation below normal depth (limit of normal excavation) to be included for payment under this Item shall be the number of cubic yards of unsuitable material excavated, measured to the depths and lengths ordered by the Engineer, and to the width between payment limits for normal excavation, as indicated on the Drawings.
2. The unit price shall constitute full compensation for excavation below normal depth and proper disposal of unsuitable material.
3. Backfill for excavations paid under this Item shall be paid for under the applicable portion of Item 5 (Miscellaneous Fill Materials).

BID ITEM NO. 4XXX ROCK EXCAVATION AND DISPOSAL

1. Where rock is encountered, it shall be uncovered but not excavated until measurements have been made by the Engineer, unless in the opinion of the Engineer, satisfactory measurements can be made in some other manner.
2. The quantity of rock to be paid for under this Item shall be the number of cubic yards of rock, measured in place before excavation, within the payment limits indicated on the Drawings and as defined in the SPECIFICATIONS, unless excavation beyond such limits has been authorized in writing by the Engineer, in which case, measurements shall be made to the authorized limits. For this purpose, the definition and payment limits for rock shall be as defined in MassDEP Policy Memorandum CG-14, included as part of Attachment C to Specification Section 01067.
3. Excavated rock which has not been disposed of shall not be included for payment.
4. The bidder shall include in his bid for Items involving excavation, the cost of doing the entire excavation as earth, the price for this Item being intended to cover the difference between the cost of rock excavation and the cost of earth excavation. The unit price for this Item shall be paid in addition to any payment made for earth excavation.

5. The unit price for this Item shall constitute full compensation for rock excavation and disposal, for all necessary backfilling, and for furnishing all additional material needed for backfilling.

BID ITEM NO. 4XXX EARTH EXCAVATION AND BACKFILL FOR TEST PITS

1. The quantity of earth excavation and backfill to be paid for under this Item shall be the number of cubic yards excavated and backfilled, measured to the extent of the work done as ordered by the Engineer or as indicated on the Drawings for test pits.
2. The unit price shall constitute full compensation for excavation, backfill and compaction for test pits.
3. The unit price shall also constitute full compensation for the placing and maintaining of temporary pavement over all test pits excavated in paved areas.
4. The unit price for Item 4XXX shall include everything required for the excavation of test pits EXCEPT the following:
 - a. Removal and disposal of all surplus or unsuitable fill materials specifically identified and paid for under Bid Item XXX – Transport and Disposal of Contaminated Soils (Category RCS-1 and above).
 - b. Rock excavation shall be paid for under Item XXX.

MISCELLANEOUS FILL MATERIALS

BID ITEM NO. 5XXX CONTROLLED DENSITY FILL

1. The quantity of controlled density fill (CDF) used as backfill for trenches and excavations shall be measured by the cubic yard to the payment limits indicated on the Drawings or as ordered by the Engineer only to the pay width limits. Material used beyond the pay width limits shall be at the Contractor's expense.
2. It is the intent of this contract that all manholes installed within paved areas shall be backfilled with controlled density fill. In the case of a manhole installation or replacement:
 - a. CDF backfill for manholes shall be measured at three (3) cubic yards of CDF per vertical foot of manhole, measured from the bottom of the manhole base to the bottom of the pavement gravel base.
3. The unit price shall constitute full compensation for furnishing and installing the controlled density fill, including protection while curing, complete as specified and/or directed by the Engineer.
4. Controlled density fill used in the abandonment of pipes and structures shall NOT be paid under this Item, but shall be paid under Item XXX.

BID ITEM NO. 5XXX ADDITIONAL GRAVEL BORROW

1. Gravel borrow backfill below normal depth shall be paid for under this Item. The quantity of gravel borrow backfill below normal depth to be paid for shall be the same as the number of cubic yards of earth excavation below normal depth measured for payment under the Item "Earth Excavation Below Normal Depth", which said gravel borrow replaces.

2. Gravel borrow ordered by the Engineer for backfill of trenches above normal depth shall be paid for under this Item. The quantity of gravel borrow used as backfill for trenches above normal depth shall be measured by the cubic yards to the depth and length ordered by the Engineer and to the width between payment limits for normal excavation as indicated on the Drawings. Gravel borrow outside the limits of normal excavation shall be furnished, placed, and compacted at the Contractor's expense, and no measurement will be made for such gravel.
3. Gravel borrow ordered to be used at other locations shall be measured after compaction and paid for under this Item as the number of cubic yards of gravel actually placed and compacted as directed.
4. Gravel borrow used to backfill rock excavations will not be measured for payment under this Item but shall be included as part of the unit price for "Rock Excavation and Disposal".
5. Gravel borrow used to backfill and/or fill around and/or beneath structures will not be measured for payment under this Item but shall be included as part of the appropriate lump sum price for the structures.
6. The unit price shall constitute full compensation for furnishing, placing, and compacting gravel borrow, as specified.

BID ITEM NO. 5XXX ADDITIONAL CRUSHED STONE

1. Crushed stone backfill below normal depth shall be paid for under this Item. The quantity of crushed stone backfill below normal depth to be paid for shall be the same as that number of cubic yards of earth excavation below normal depth measured for payment under the Item "Earth Excavation Below Normal Depth", which said stone replaces.
2. Additional crushed stone used for support of existing utilities or ordered by the Engineer to be used at other locations shall be paid for under this Item. The quantity to be paid for shall be the number of cubic yards measured in place after compaction, of additional crushed stone within the limits directed by the Engineer.
3. Crushed stone used for bedding pipe, to backfill authorized excavations, for any drainage purpose, or as indicated on the Drawings for work for which appropriate payment Items have been provided shall not be measured for payment under this Item.
4. Crushed stone used to backfill rock excavations will not be measured for payment under this Item but shall be included as part of the unit price for "Rock Excavation and Disposal".
5. Crushed stone used to backfill and/or fill around and/or beneath the structures will not be measured for payment under this Item, but shall be included as part of the appropriate lump sum price for the structures.
6. The unit price shall constitute full compensation for furnishing, placing, and compacting crushed stone, as specified.

BID ITEM NO. 5XXX ADDITIONAL SELECT BORROW

1. Additional select borrow ordered by the Engineer for backfill of trenches above normal depth shall be paid for under this Item. The quantity of select borrow used as backfill for trenches above normal depth shall be measured by the cubic yard to the depth and length ordered by the Engineer and to the width between payment limits for normal excavation as indicated on the Drawings. Select borrow outside the limits of normal excavation shall be furnished, placed and compacted at the Contractor's expense, and no measurement will be made for such select borrow.
2. Select borrow ordered to be used at other locations shall be measured after compaction and paid for under this Item as number of cubic yards of select borrow actually placed and compacted as directed.
3. Select borrow used to backfill rock excavations will not be measured for payment under this Item but shall be included as part of the unit price for "Rock Excavation and Disposal".
4. The unit price shall constitute full compensation for furnishing; placing and compacting select borrow, as specified.

BID ITEM NO. 5XXX ADDITIONAL CONCRETE (ALL CLASSES)

1. The quantity of additional concrete to be measured for payment under this Item shall be the number of cubic yards placed as directed by the Engineer.
2. No measurement shall be made under this Item for concrete used as indicated on the Drawings for work for which appropriate payment Items have been provided or for concrete used to backfill unauthorized excavations.
3. The unit price shall constitute full compensation for furnishing and placing additional concrete regardless of class or strength, as directed by the Engineer and as specified.
4. Concrete collars installed around structure covers as shown on the Drawings shall NOT be paid for under this item, but shall be included as part of the relevant structure item.
5. Concrete used in making connections under Items XXX, XXX shall not be included under this item but shall be part of that Item.

BID ITEM NO. 5XXX CONCRETE ENCASEMENT

1. The length of concrete encasement to be paid for under this Item shall be as indicated on the Drawings, or as otherwise directed by the Engineer, and measured by the linear foot along the horizontal centerline of the pipe (all diameters), which the concrete encasement is placed.
2. The unit price shall constitute full compensation for constructing the concrete encasement, complete as indicated on the Drawings, or as otherwise directed by the Engineer.
3. Concrete used in making connections under any part of Item 2 shall not be included under this item but shall be part of that Item.

PAVEMENT RESTORATIONS

1. The unit prices for pavement restoration shall constitute full compensation for saw cutting, removal and disposal of all existing pavement including any existing bituminous base, excavation to the required depth; special compaction requirements;

removal and disposal of any temporary pavement; casting and valve box adjustments, as directed; cutting and matching existing pavement (including all driveways); furnishing and applying required prime coats and emulsions; safety precautions including all traffic control and management, construction warning signs and barricades during the project; trench closing and openings ordered by the Engineer; obtaining all necessary roadway permits and/or approvals from state and local agencies; and constructing the pavement complete, including sidewalks and driveways, all compaction as specified and as indicated and not specifically included for payment under other Items.

2. The unit prices for pavement restoration shall also include the costs to remove and replace inductance loop vehicle detector wiring (traffic loops), and the cost to replace pavement markings which existed prior to construction.
3. A Price Adjustment for Hot Mix Asphalt Mixtures will be applied to all unit prices involving bituminous pavement (see Specification Section 02500, Part 1.04). The Base Price of Liquid Asphalt for the project is the January 2022 price per liquid ton.

**BID ITEM NO. 6XXX TRENCH-WIDTH GRAVEL BASE COURSE IN CITY STREETS
AND PARKING AREAS, 12-INCH THICKNESS**

1. The quantity of gravel base to be paid for under this Item shall be equal to the total linear feet of trench in which gravel base is installed, to the payment limits indicated on the Drawings.
2. The unit price shall constitute full compensation for furnishing and installing the gravel base, and compaction, complete as specified and/or detailed on the Drawings.
3. Material taken from excavations deemed suitable by the Engineer, for use as gravel base shall not be included for payment under this Item.
4. Gravel base course placed above sewer service pipes shall be paid under this item.

**BID ITEM NO. 6XXX TEMPORARY TRENCH-WIDTH PAVEMENT IN ALL CITY
STREETS AND PARKING AREAS, 4-INCH THICKNESS**

1. The quantity of temporary pavement to be paid for under this Item shall be equal to the total linear feet of trench in which temporary bituminous binder is installed, to the payment limits as indicated on the Drawings.
2. The unit price shall constitute full compensation for furnishing and installing the temporary pavement, complete as specified and/or detailed on the Drawings.
3. Temporary pavement for sewer service connections shall be paid under this Item.

**BID ITEM NO. 6XXX PERMANENT BITUMINOUS BINDER COURSE, TO LIMITS
SHOWN, ON CITY STREETS AND PARKING AREAS, 2.5-INCH
THICKNESS**

1. The quantity of bituminous binder course to be paid for under this Item shall be equal to the actual amount of bituminous concrete, installed, and measured by the ton to the limits of pavement shown on the Drawings.

2. The unit price shall constitute full compensation for installing the bituminous binder course, complete as specified and/or detailed on the Drawings.
3. The bituminous binder pavement for sewer service connections and utility work to be paid under this Item.

BID ITEM NO. 6XXX PERMANENT BITUMINOUS SURFACE COURSE, TO LIMITS SHOWN, IN CITY STREETS AND PARKING AREAS, 1.5-INCH THICKNESS

1. The quantity of bituminous surface course to be paid for under this Item shall be equal to the actual amount of bituminous concrete, installed, and measured by the ton to the limits shown on the Drawings.
2. The unit price shall constitute full compensation for furnishing and installing the bituminous surface course complete as specified and/or detailed on the Drawings.
3. There will be no separate payment for the work of removing bituminous concrete and for the work of cleaning and sealing cracks and joints and applying tack coat over existing concrete curbs and gutters. The cost of this work shall be included in this bid Item.

BID ITEM NO. 6XXX DRIVEWAY APRON AND BITUMINOUS SIDEWALK RESTORATIONS, 3" THICKNESS

1. The quantity of driveway apron and bituminous sidewalk restoration, (3-inch thickness) to be paid for under this Item shall be measured by the ton and shall be equal to the actual amount of surface course pavement furnished and installed for driveway apron areas and bituminous sidewalks within the established payment limits of the Contract, complete as directed by the Engineer, inclusive of the specified gravel sub-base.
2. The unit price for this Item shall include excavation to remove existing sidewalk and underlying soils, placement and compaction of 8 inches of gravel base, and installation of portland cement concrete sidewalk/ramp in accordance with MassDOT Standard Details. Payment for this Item shall constitute full compensation for sawcutting existing sidewalks/ramps, excavation, removal, and disposal of existing sidewalk and soils, removal and re-setting of granite curbs, removal and disposal of all other curbs, and furnishing and installing new gravel base and concrete.
3. Driveway areas and sidewalks disturbed by the Contractor's operations and/or activities and determined by the Engineer to be outside the established payment limits of the Contract shall not be paid for under this Item but shall be fully restored by the Contractor at no additional cost to the Owner.

BID ITEM NO. 6XXX LEVELING COURSE

1. The quantity of leveling course placed shall be measured by the ton using plant provided batching slips deemed acceptable by the Engineer.
2. Only leveling course ordered by the Engineer shall be measured for payment.
3. The unit price for this Item shall constitute full compensation for constructing the leveling course complete, as specified.

**BID ITEM NO. 6XXX EXCAVATION OF PAVEMENT BY MILLING MACHINE,
FULL DEPTH**

1. The quantity of pavement excavation to be paid for under this Item shall be equal to the actual amount of pavement removed, measured by the square yard, to the limits indicated by the Owner.
2. The unit price for this Item shall constitute full compensation for saw-cutting existing pavement, removing all existing pavement via milling machine, and removal, transport, and stockpile of the millings.
3. The unit price for this Item shall also include full compensation for trimming and fine grading of the existing sub-grade, and all other preparation work necessary for the installation of new pavement.
4. All milled pavement removed as a result of milling operations shall be the property of the Owner, and shall be transported and stockpiled at a location to be designated by the Owner.
5. Raising and lowering of utility structures (manholes, catch basins, gate valves, etc.) shall be included under this item.

CONTAMINATED SOILS

**BID ITEM NO. 7XXX CONTRACTOR'S SITE-SPECIFIC HEALTH AND SAFETY PLAN
(HASP)**

1. The lump sum price for this Item shall constitute full compensation for drafting and submitting a Contractor's Site-Specific Health and Safety Plan pursuant to OSHA 1910.120 requirements, and as specified in Specification Section 02080.
2. No payment shall be made on this item until the Plan has been submitted by the contractor and reviewed and accepted by the Engineer.

**BID ITEM NO. 7XXX TRANSPORT AND DISPOSAL OF CONTAMINATED SOIL
(CATEGORY RCS-1 OR ABOVE) AND GROUNDWATER
ALLOWANCE**

1. The lump sum allowance for this item established for the Bid is an estimated figure to facilitate comparison of bids only. The actual amount to be paid under this Item to the Contractor will be the paid costs associated with:
 - a. transporting and disposing of designated contaminated soils, per Specification Section 02080
 - b. transporting and disposing of designated asbestos containing material, per Specification Section 02076
 - c. or of treating and disposing of contaminated groundwater.

Contaminated soils shall be defined as those soils containing concentrations of contaminants above MassDEP's RCS-1 reportable concentrations based on the Engineer's laboratory analytical results. Contaminated groundwater shall be defined as groundwater containing concentrations of contaminants exceeding the "Wastewater

- Discharge Limits” included as Attachment A to Specification Section 02140 – i.e., groundwater that cannot be discharged to the City’s sewer system without pretreatment.
2. Prices to be paid for under this Item shall constitute full compensation as detailed in Section 01020 – Allowances, and not specifically paid for under other Items, as directed by the Engineer.
 3. Compensation for providing and obtaining approval for the submittals required in Specification Section 02080 Article 1.03 shall be paid from this allowance.
 4. The quantity of contaminated material excavated, handled, transported, and disposed to be paid for under this Item shall be the number of tons, measured by the documented scale weights at the disposal facility.
 5. The bidder shall include in his bid for Items involving excavation, the cost of doing the entire excavation in non-contaminated earth, the price for this Item being intended to cover the difference between the cost of contaminated material excavation and the cost of non-contaminated earth excavation. The unit price for this Item shall be paid in addition to any payment made for earth excavation. The cost of earth excavation includes disposal of excess soils not determined to be contaminated soils.
 6. The allowance for this item shall include all work covered under Specification Section 02080 including, but not limited to mobilization/demobilization, preparation, excavation, handling, transportation, disposal at a licensed Landfill (including any landfill fees), decontamination and site cleanup.
 7. Environmental testing performed by the Contractor or his representative shall NOT be paid. The Engineer shall be responsible for all sampling and testing.
 8. No compensation shall be provided under this item for removal or disposal of surplus or unsuitable fill materials [including all natural and “anti-degradation” soils as defined by MassDEP at 310 CMR 40.0032(3)] EXCEPT those specifically identified as Contaminated Soils (Category RCS-1 and above).

MISCELLANEOUS

BID ITEM NO. 8XXX EROSION CONTROL (SILT FENCE/STRAW WATTLES)

1. The quantity of straw wattles or staked hay bales and silt fencing to be paid for under this Item shall be equal to the actual amount of wattles and silt fencing installed, measured by the linear foot along a horizontal projection of the centerline, complete, as indicated on the Drawings or as otherwise directed by the Engineer.
2. The quantity of wattles and silt fencing required and/or used for sedimentation and erosion controls relating to any drainage or dewatering operations by the Contractor, as determined by the Engineer, shall not be measured for payment under this Item, but shall be furnished, placed, staked and maintained throughout the duration of this Contract and, if required, removed and disposed of, at the Contractor's expense.
3. The unit price for this Item shall constitute full compensation for furnishing, placing, staking and maintaining the straw wattles and silt fencing, and, upon completion of work, removal and disposal thereof, complete, as indicated and specified, or as otherwise ordered by the Engineer, throughout the duration of this Contract.

BID ITEM NO. 8XXX CALCIUM CHLORIDE

1. The quantity of calcium chloride to be paid for under this Item shall be equal to the number of pounds furnished and spread to the extent ordered by the Engineer.
2. The unit price shall constitute full compensation for furnishing and spreading calcium chloride as directed.

BID ITEM NO. 8XXX MISCELLANEOUS UTILITY RELOCATION ALLOWANCE

1. Compensation to be paid under this Item shall be as detailed in Section 01020 - Allowances, and not specifically paid for under other Items, as directed by the Engineer. The lump sum allowance for this Item established in the Bid is an estimated figure to facilitate comparison of bids only.
2. For work performed by utility companies, the actual amount to be paid under this Item to the Contractor will be the paid invoiced amount from the utility without mark-up, overhead, or profit.
3. Work performed by the Contractor under this Item shall be considered Extra Work and subject to the conditions of Specification Section 00500, Part 1.25.
4. The lump sum price allowance for this Item shall NOT include any costs associated with Items and/or services for which specific payment Items are provided for under the Bid.
5. If the total cost for such charges is greater or less than the allowance amount stated under this Item of the Bid, a debit or credit of the difference in such cost shall be to the Owner.

BID ITEM NO. 8XXX ADDITIONAL WORK IN EASEMENTS AND RIGHT OF WAY

1. The lump-sum price to be paid under this Item shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary, and for doing all preparation and restoration work in easements and rights-of-way, complete, including but not limited to required property and easement surveys and layout; site preparation; clearing and grubbing; access roadways; finish grading; loaming and seeding (including any disturbance of private property; for example, during installation of water service curb stop boxes); slope support as directed, wood chips; removing and replacing bushes, shrubs and trees; removal and replacement of guardrails, fences, barriers, installation and maintenance of tree protection, and all other work incidental thereto as indicated on the Drawings and specified, or as directed and not specifically paid for under other Items.

BID ITEM 8XXX MOBILIZATION AND DEMOBILIZATION

1. The lump sum price for this Item shall constitute full compensation for initiating the contract, exclusive of the cost of materials, for mobilizing all machinery, plant, tools, and other equipment necessary to carry on and complete the work.
2. The lump sum shall also include full compensation for furnishing the performance or surety bond and other securities required, all preliminary bidding and organizational expenses, necessary permits, construction of temporary roads, etc., and for all other

materials, supplies, tools, equipment, labor financing, supervision, temporary structures, field offices, sanitary conveniences, and any and all other expenses incurred in carrying out the work and furnishing the material, keeping records and making reports required, and assuming risks, which have not been included in the prices in other Items of the Proposal.

4. The lump sum price shall also include the cost of demobilization once the work, as detailed in the Drawings and Documents, is complete.
5. The lump sum price for this Item shall not exceed five percent (5%) of the total amount of this bid, with payment as follows:
 - a. 50% when the Contractor has commenced Work on the Site in a diligent and continuous manner as determined by the Engineer.
 - b. 50% when the Contractor has completed all Work, removed all equipment and satisfied all requirements as detailed in the contract documents.

END OF SECTION

SECTION 01040

COORDINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for coordinating the various parts of Work under this Contract.

1.02 REQUIREMENTS

- A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of mechanical, instrumentation and electrical work, which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and cleanup of Work of separate Sections in preparation for Substantial Completion.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- G. Coordinate work with all utility companies necessary for completion of work under this contract.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION NOT USED

END OF SECTION

SECTION 01045

CUTTING AND PATCHING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements and limitations for cutting, coring and patching of Work.

B. Related Sections

1. Section 01300-Submittals

1.02 SUBMITTALS

A. In accordance with Section 01300 submit written request in advance of cutting or alteration which affects the following:

1. Structural integrity of any element of Project.
2. Integrity of weather-exposed or moisture-resistant element.
3. Efficiency, maintenance, or safety of any operational element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate contractor.

B. Include in request:

1. Identification of Project.
2. Location and description of affected work.
3. Necessity for cutting or alteration.
4. Description of proposed work, and products to be used.
5. Alternatives to cutting and patching.
6. Effect on work of Owner or separate contractor.
7. Written permission of affected separate contractor.
8. Date and time work will be executed.

C. Should conditions of the Work, or schedule, indicate a required change of materials or methods for cutting and patching, notify the Engineer and secure his written permission and the required Change Order prior to proceeding.

1.03 RELATED SECTIONS

PART 2 PRODUCTS

2.01 MATERIALS

- A. For replacement of items removed, use materials complying with pertinent sections of these specifications.
- B. Sealing materials to be used to seal annular space between cored hole in walls and related pipes to be in accordance with
- C. Sealing cored holes in sewer manholes to be with a resilient seal similar to Kor-N-Seal made by National Pollution Control Systems, Inc., Nashua, NH or similar product, as indicated on the Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Site Verification of Conditions
 - 1. Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, patching, and backfilling.
 - 2. After uncovering the work, inspect conditions affecting installation of new work.
 - 3. If uncovered conditions are not as anticipated, immediately notify the Engineer.
 - 4. Do not proceed until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Protection
 - 1. Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the Work.
 - 2. Perform cutting and demolition by methods which will prevent damage to portions of the Work.
- B. Surface Preparation
 - 1. Provide proper surfaces to receive installation of repair and new work.

3.03 INSTALLATION

- A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods needed for proper performance of the Work.
- B. Execute cutting, fitting, and patching (including excavation and fill) to complete work.

- C. Installation of materials shall be in accordance with manufacturers instructions.
- D. Installations, repair or replacement of items provided under this Contract shall be in accordance with the Contract Documents.

3.04 FIELD QUALITY CONTROL

- A. In addition to other requirements specified, upon the Engineer's request uncover work to provide for inspection by the Engineer of covered work, and remove samples of installed materials for testing.
- B. Do not cut or alter work performed under separate contracts without the Engineer's written permission.

3.05 ADJUSTING

- A. Perform fitting and adjusting of products to provide finished installation complying with the specified tolerances and finishes.

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Survey work and other field engineering responsibilities of the Contractor.

1.02 REQUIREMENTS

- A. The Contractor shall be responsible for layout of the work and the establishing of lines and grades.
- B. Establish elevations, lines, levels, reference marks, etc., required during the progress of the Work. Verify such marks by instrument to confirm accuracy.
- C. Locate and protect survey control and reference points.
- D. Make, check, and be responsible for all measurements and dimensions necessary for the proper construction of the Work.
- E. The Engineer will be permitted to check the lines, elevations, reference marks, etc., set by the Contractor. The Contractor shall correct any errors found in lines, elevations, reference marks, etc.. Such a check shall not be construed as approval of the Contractor's work and shall not relieve or diminish the responsibility of the Contractor for the accurate construction and completion of the Work.
- F. Control datum for survey as shown on Drawings.

1.03 QUALITY ASSURANCE

A. Qualifications

- 1. Employ a Civil Engineer or Land Surveyor registered within the Commonwealth of Massachusetts, acceptable to the Engineer.

B. Certifications

- 1. Submit certificate signed by the Contractor's Engineer or Land Surveyor stating elevations and locations of the Work are in conformance with the Contract Documents.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01060

REGULATORY REQUIREMENTS AND PERMITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building codes, Mechanical codes, and Electrical codes, Regulations, Permits and Fees applicable to the project.

1.02 PERMITS BY OWNER

- A. The Owner has obtained or will obtain and pay all fees for the permits listed here (if required):
 - 1. Utility Related Abatement Measure (URAM)
 - 2. Asbestos Notification Form (ANF)

1.03 PERMITS BY CONTRACTOR

- A. The Contractor shall secure all necessary permits from the state, city or town authorities having jurisdiction, for digging of trenches in the streets or highways and all other building and construction operations requiring permits.
- B. As a minimum the following permits are required:
 - 1. City of Taunton Contractor's License
 - a. Contractor's License Requirements and Application is attached to this specification section.
 - 2. Trench Permit (Jackie's Law) – City of Taunton Dept. of Public Works
 - a. The Permit Application Form is attached to this Specification Section
- C. The following permits MAY be required:
 - 1. Industrial User Permit – Veolia Water
 - a. This permit may be required if treated groundwater is to be discharged to the City sewer system.

1.04 CODES

- A. The Contractor shall conform to the requirements of and pay all fees imposed by local and State Building Authorities having jurisdiction over the Work. The Contractor is responsible to conform to all building, mechanical, electrical and plumbing code requirements.
- B. The Contractor shall conform to the latest requirements of the following codes:

1. Federal, State and Municipal Laws
2. Any prevailing rules and regulations pertaining to adequate protection and/or guarding of any moving parts or otherwise hazardous locations.

1.05 FEES

- A. The cost of all permits not issued by the City of Taunton shall be borne by him and shall be considered as having been included in the price or prices stated in the Bid. Copies of all required permits shall be filed with the Engineer prior to starting work for which a permit is required.
- B. Fees for all permits issued by the City of Taunton shall be waived by the City.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION



City of Taunton

Permit issued by: Department of Public Works
90 Ingell Street
Taunton, Massachusetts 02780
Phone (508) 821-1431
FAX (508) 821-1437

Permit Number _____

Date Issued _____

Expiration Date _____

TRENCH PERMIT APPLICATION

Pursuant to G.L. c. 82A §1 and 520 CMR 7.00 et seq.(as amended)

THIS PERMIT MUST BE FULLY COMPLETED PRIOR TO CONSIDERATION

Name of Applicant			Phone	Cell
Street Address				
City/Town	MA	ZIP		
Name of Excavator (if different from applicant)			Phone	Cell
Street Address				
City/Town	MA	ZIP		
Name of Owner(s) of Property			Phone	Cell
Street Address				
City/Town	MA	ZIP		
Other Contact			Permit Fee Received No () Yes ()	
Description, location and purpose of proposed trench: Please describe the exact location of the proposed trench and its purpose (include a description of what is (or is intended) to be laid in proposed trench (eg; pipes/cable lines etc..) Please use reverse side if additional space is needed.				
Insurance Certificate #:				
Name and Contact Information of Insurer:				
Policy Expiration Date:				
Dig Safe #:				
Name of Competent Person (as defined by 520 CMR 7.02):				
Massachusetts Hoisting License #				
License Grade:			Expiration Date:	

BY SIGNING THIS FORM, THE APPLICANT, OWNER, AND EXCAVATOR ALL ACKNOWLEDGE AND CERTIFY THAT THEY ARE FAMILIAR WITH, OR, BEFORE COMMENCEMENT OF THE WORK, WILL BECOME FAMILIAR WITH, ALL LAWS AND REGULATIONS APPLICABLE TO WORK PROPOSED, INCLUDING OSHA REGULATIONS, G.L. c. 82A, 520 CMR 7.00 et seq., AND ANY APPLICABLE MUNICIPAL ORDINANCES, BY-LAWS AND REGULATIONS AND THEY COVENANT AND AGREE THAT ALL WORK DONE UNDER THE PERMIT ISSUED FOR SUCH WORK WILL COMPLY THEREWITH IN ALL RESPECTS AND WITH THE CONDITIONS SET FORTH BELOW.

THE UNDERSIGNED OWNER AUTHORIZES THE APPLICANT TO APPLY FOR THE PERMIT AND THE EXCAVATOR TO UNDERTAKE SUCH WORK ON THE PROPERTY OF THE OWNER, AND ALSO, FOR THE DURATION OF CONSTRUCTION, AUTHORIZES PERSONS DULY APPOINTED BY THE MUNICIPALITY TO ENTER UPON THE PROPERTY TO MONITOR AND INSPECT THE WORK FOR CONFORMITY WITH THE CONDITIONS ATTACHED HERETO AND THE LAWS AND REGULATIONS GOVERING SUCH WORK.

THE UNDERSIGNED APPLICANT, OWNER AND EXCAVATOR AGREE JOINTLY AND SEVERALLY TO REIMBURSE THE MUNICIPALITY FOR ANY AND ALL COSTS AND EXPENSES INCURRED BY THE MUNICIPALITY IN CONNECTION WITH THIS PERMIT AND THE WORK CONDUCTED THEREUNDER, INCLUDING BUT NOT LIMITED TO ENFORCING THE REQUIREMENTS OF STATE LAW AND CONDITIONS OF THIS PERMIT, INSPECTIONS MADE TO ASSURE COMPLIANCE THEREWITH, AND MEASURES TAKEN BY THE MUNICIPALITY TO PROTECT THE PUBLIC WHERE THE APPLICANT OWNER OR EXCAVATOR HAS FAILED TO COMPLY THEREWITH INCLUDING POLICE DETAILS AND OTHER REMEDIAL MEASURES DEEMED NECESSARY BY THE MUNICIPALITY.

THE UNDERSIGNED APPLICANT, OWNER AND EXCAVATOR AGREE JOINTLY AND SEVERALLY TO DEFEND, INDEMNIFY, AND HOLD HARMLESS THE MUNICIPALITY AND ALL OF ITS AGENTS AND EMPLOYEES FROM ANY AND ALL LIABILITY, CAUSES OR ACTION, COSTS, AND EXPENSES RESULTING FROM OR ARISING OUT OF ANY INJURY, DEATH, LOSS, OR DAMAGE TO ANY PERSON OR PROPERTY DURING THE WORK CONDUCTED UNDER THIS PERMIT.

APPLICANT SIGNATURE

_____ **DATE** _____

EXCAVATOR SIGNATURE (IF DIFFERENT)

_____ **DATE** _____

OWNER'S SIGNATURE (IF DIFFERENT)

_____ **DATE:** _____

For City/Town use -- Do not write in this section	
PERMIT APPROVED BY	\$ _____ Application Fee
PERMITTING AUTHORITY	
CONDITIONS OF APPROVAL	

CONDITIONS AND REQUIREMENTS PURSUANT TO G.L.C.82A AND 520 CMR 7.00 et seq. (as amended)

By signing the application, the applicant understands and agrees to comply with the following:

- i. No trench may be excavated unless the requirements of sections 40 through 40D of chapter 82, and any accompanying regulations, have been met and this permit is invalid unless and until said requirements have been complied with by the excavator applying for the permit including, but not limited to, the establishment of a valid excavation number with the underground plant damage prevention system as said system is defined in section 76D of chapter 164 (DIG SAFE);
- ii. Trenches may pose a significant health and safety hazard. Pursuant to Section 1 of Chapter 82 of the General Laws, an excavator shall not leave any open trench unattended without first making every reasonable effort to eliminate any recognized safety hazard that may exist as a result of leaving said open trench unattended. Excavators should consult regulations promulgated by the Department of Public Safety in order to familiarize themselves with the recognized safety hazards associated with excavations and open trenches and the procedures required or recommended by said department in order to make every reasonable effort to eliminate said safety hazards which may include covering, barricading or otherwise protecting open trenches from accidental entry.
- iii. Persons engaging in any in any trenching operation shall familiarize themselves with the federal safety standards promulgated by the Occupational Safety and Health Administration on excavations: 29 CFR 1926.650 et.seq., entitled Subpart P "Excavations".
- iv. Excavators engaging in any trenching operation who utilize hoisting or other mechanical equipment subject to chapter 146 shall only employ individuals licensed to operate said equipment by the Department of Public Safety pursuant to said chapter and this permit must be presented to said licensed operator before any excavation is commenced;
- v. By applying for, accepting and signing this permit, the applicant hereby attests to the following: (1) that they have read and understands the regulations promulgated by the Department of Public Safety with regard to construction related excavations and trench safety; (2) that he has read and understands the federal safety standards promulgated by the Occupational Safety and Health Administration on excavations: 29 CMR 1926.650 et.seq., entitled Subpart P "Excavations" as well as any other excavation requirements established by this municipality; and (3) that he is aware of and has, with regard to the proposed trench excavation on private property or proposed excavation of a city or town public way that forms the basis of the permit application, complied with the requirements of sections 40-40D of chapter 82A.
- vi. This permit shall be posted in plain view on the site of the trench.

For additional information please visit the Department of Public Safety's website at www.mass.gov/dps

Summary of Excavation and Trench Safety Regulation (520 CMR 14.00 et seq.)

This summary was prepared by the Massachusetts Department of Public Safety pursuant to G.L.c.82A and does not include all requirements of the 520 CMR 14.00. To view the full regulation and G.L.c.82A, go to [www/mass.gov/dps](http://www.mass.gov/dps). Pursuant to M.G.L. c. 82, § 1, the Department of Public Safety, jointly with the Division of Occupational Safety, drafted regulations relative to trench safety. The regulation is codified in section 14.00 of title 520 of the Code of Massachusetts Regulations. The regulation requires all excavators to obtain a permit prior to the excavation of a trench made for a construction-related purpose on public or private land or rights-of-way. All municipalities must establish a local permitting authority for the purpose of issuing permits for trenches within their municipality. Trenches on land owned or controlled by a public (state) agency requires a permit to be issued by that public agency unless otherwise designated.

In addition to the permitting requirements mandated by statute, the trench safety regulations require that all excavators, whether public or private, take specific precautions to protect the general public and prevent unauthorized access to unattended trenches. Accordingly, unattended trenches must be covered, barricaded or backfilled. Covers must be road plates at least ¾" thick or equivalent; barricades must be fences at least 6' high with no openings greater than 4" between vertical supports; backfilling must be sufficient to eliminate the trench. Alternatively, excavators may choose to attend trenches at all times, for instance by hiring a police detail, security guard or other attendant who will be present during times when the trench will be unattended by the excavator.

The regulations further provide that local permitting authorities, the Department of Public Safety, or the Division of Occupational Safety may order an immediate shutdown of a trench in the event of a death or serious injury; the failure to obtain a permit; or the failure to implement or effectively use adequate protections for the general public. The trench shall remain shutdown until re-inspected and authorized to re-open provided, however, that excavators shall have the right to appeal an immediate shutdown. Permitting authorities are further authorized to suspend or revoke a permit following a hearing. Excavators may also be subject to administrative fines issued by the Department of Public Safety for identified violations.

Summary of 1926 CFR Subpart P -OSHA Excavation Standard

This is a worker protection standard, and is designed to protect employees who are working inside a trench. This summary was prepared by the Massachusetts Division of Occupational Safety and not OSHA for informational purposes only and does not constitute an official interpretation by OSHA of their regulations, and may not include all aspects of the standard. For further information or a full copy of the standard go to www.osha.gov.

- **Trench Definition per the OSHA standard:**
 - An excavation made below the surface of the ground, narrow in relation to its length.
 - In general, the depth is greater than the width, but the width of the trench is not greater than fifteen feet.
- **Protective Systems** to prevent soil wall collapse are always required in trenches deeper than 5', and are also required in trenches less than 5' deep when the competent person determines that a hazard exists. Protection options include:
 - Shoring. Shoring must be used in accordance with the OSHA Excavation standard appendices, the equipment manufacturer's tabulated data, or designed by a registered professional engineer.
 - Shielding (Trench Boxes). Trench boxes must be used in accordance with the equipment manufacturer's tabulated data, or a registered professional engineer.
 - Sloping or Benching. In Type C soils (what is most typically encountered) the excavation must extend horizontally 1 ½ feet for every foot of trench depth on both sides, 1 foot for Type B soils, and ¾ foot for Type A soils.
 - A registered professional engineer must design protective systems for all excavations greater than 20' in depth.
- **Ladders** must be used in trenches deeper than 4'.
 - Ladders must be inside the trench with workers at all times, and located within 25' of unobstructed lateral travel for every worker in the trench.
 - Ladders must extend 3' above the top of the trench so workers can safely get onto and off of the ladder.
- **Inspections** of every trench worksite are required:
 - Prior to the start of each shift, and again when there is a change in conditions such as a rainstorm.
 - Inspections must be conducted by the competent person (see below).
- **Competent Person(s) is:**
 - Capable (i.e., trained and knowledgeable) in identifying existing and predictable hazards in the trench, and other working conditions which may pose a hazard to workers, and
 - Authorized by management to take necessary corrective action to eliminate the hazards. Employees must be removed from hazardous areas until the hazard has been corrected.
- **Underground Utilities** must be:
 - Identified prior to opening the excavation (e.g., contact Digsafe).
 - Located by safe and acceptable means while excavating.
 - Protected, supported, or removed once exposed.
- **Spoils** must be kept back a minimum of 2' from the edge of the trench.
- **Surface Encumbrances** creating a hazard must be removed or supported to safeguard employees. Keep heavy equipment and heavy material as far back from the edge of the trench as possible.
- **Stability of Adjacent Structures:**
 - Where the stability of adjacent structures is endangered by creation of the trench, they must be underpinned, braced, or otherwise supported.
 - Sidewalks, pavements, etc. shall not be undermined unless a support system or other method of protection is provided.
- **Protection from water accumulation hazards:**
 - It is not allowable for employees to work in trenches with accumulated water. If water control such as pumping is used to prevent water accumulation, this must be monitored by the competent person.
 - If the trench interrupts natural drainage of surface water, ditches, dikes or other means must be used to prevent this water from entering the excavation.
- **Additional Requirements:**
 - For mobile equipment operated near the edge of the trench, a warning system such as barricades or stop logs must be used.
 - Employees are not permitted to work underneath loads. Operators may not remain in vehicles being loaded unless vehicles are equipped with adequate protection as per 1926.601(b)(6).
 - Employees must wear high-visibility clothing in traffic work zones.
 - Air monitoring must be conducted in trenches deeper than 4' if the potential for a hazardous atmosphere exists. If a hazardous atmosphere is found to exist (e.g., O₂ <19.5% or >23.5%, 20% LEL, specific chemical hazard), adequate protections shall be taken such as ventilation of the space.
 - Walkways are required where employees must cross over the trench. Walkways with guardrails must be provided for crossing over trenches > 6' deep.
 - Employees must be protected from loose rock or soil through protections such as scaling or protective barricades.

SECTION 01067

COMMONWEALTH OF MASSACHUSETTS AND FEDERAL REQUIREMENTS

PART 1 - GENERAL

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1.01 AMERICAN IRON AND STEEL

A. The Contractor acknowledges to and for the benefit of the City of Taunton (“Owner”) and the Commonwealth of Massachusetts (the “State”) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor

shall permit the Owner or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Owner or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Owner). While the Contractor has no direct contractual privity with the State, as a lender to the Owner for the funding of its project, the Owner and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

1.02 SUSPENSION AND DEBARMENT

The Contractor agrees that it will fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled "Responsibilities of Participants Regarding Transactions (Doing Business with Other Persons)". The Contractor shall not award any subcontracts or purchase any materials from suppliers that appear on the Excluded Parties List System. The Contractor shall include this requirement in each subcontract and require it to be included in all subcontracts regardless of tier. The Contractor shall maintain reasonable records to demonstrate compliance with these requirements.

1.03 EXCERPTS FROM MASSACHUSETTS STATUTES

A. In addition to the requirements as set forth under "Compliance with Laws" in the AGREEMENT, particular attention is directed to certain stipulations of Chapter 149 of the General Laws of Massachusetts, as amended to date as follows:

Section 25. "Every employee in public work shall lodge, board, and trade where and with whom he elects; and no person or his agents or employees under contract with the commonwealth, a county, city or town, or with a department, board, commission or officer acting therefore, for the doing of public work shall directly or indirectly require, as a condition of employment therein, that the employee shall lodge, board or trade at a particular place or with a particular person. This section shall be made a part of the contract for such employment."

Section 26. "In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works by the commonwealth, or by a county, town, authority or district, or by persons contracting or subcontracting for such works, preference shall first be given to citizens of the commonwealth who have been residents of the commonwealth for at least six months at the commencement of their employment who are male veterans as defined in clause Forty-third of section seven of chapter four, and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the commonwealth generally who have been residents of the commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, and every contract for such work shall contain a provision to this effect.

Section 34. "Every contract, except for the purchase of, material or supplies, involving the employment of laborers, workmen, mechanics, foremen, or inspectors, to which the commonwealth or any county or any town, subject to section thirty, is a party, shall contain a stipulation that no laborer, workman, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than 48 hours in any one week, or more than six days in any one week, except in cases of emergency, or in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid..."

Section 34A. "Every contract for the construction, alteration, maintenance, repair or demolition of or addition to, any public building or other public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall, before commencing performance of such contract, provide by insurance for the payment of compensation and the furnishing of other benefits under chapter one hundred and fifty-two to all persons to be employed under the contract, and that the contractor shall continue such insurance in full force and effect during the term of the contract. No officer or agent contracting in behalf of the commonwealth or any political subdivision thereof shall award such a contract until he has been furnished with sufficient proof of compliance with the aforesaid stipulations. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of contract and shall operate as an immediate termination thereof. No cancellation of such insurance, whether by the insurer or by the insured, shall be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the officer or agent who awarded the contract at least fifteen days prior to the intended effective date thereof, which date shall be expressed in said notice. Notice of cancellation sent by the party proposing receipt of the addressee requested, shall be a sufficient notice..."

Section 34B. "Every contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall pay to any reserve police officer employed by him in any city or town the prevailing rate of wage paid to regular police officers employed by him in such city or town."

Attention is directed to Chapter 774 of the Acts of 1972 amending Section 39F of Chapter 30 to read as follows:

Section 39F. "(1) Every contract awarded shall contain the following subparagraphs and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to sub-paragraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontractor work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra and materials furnished to the general

contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment for a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor."

Attention is also directed to Chapter 774 of the Acts of 1972 further amending Chapter 30 by adding after Section 39M the following section:

Section 39M. (b) Specifications for such contracts, and specification for contracts awarded pursuant to the provisions of said sections forty-four A to forty-four L of said chapter one hundred and forty-nine, shall be written to provide for full competition for each item of material to be furnished under the contract; except, however, that said specifications may be otherwise written for sound reasons in the public interest stated in writing in the public records of the awarding authority or promptly given in writing by the awarding authority to anyone making a written request therefore, in either instance such writing to be prepared after reasonable investigation. Every such contract shall provide that an item equal to that

named or described in the said specifications may be furnished; and an item shall be considered equal to the item so named or described if (1) it is at least equal in quality, durability, appearance, strength and design, (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the said specifications. For each item of material the specifications shall provide for either a minimum of three named brands of material or a description of material which can be met by a minimum of three manufacturers or producers, and for the equal of any one of said named or described materials.

Section 39N. "Every contract subject to section forty-four A of chapter one hundred forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly."

Attention is also directed to Chapter 1164 of the Acts of 1973 further amending Chapter 30 by adding after Section 39N the following two sections:

Section 39O. "Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety...

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more due to a failure of the awarding authority shall make an adjustment in the contract but shall not include any profit

to the general contractor on such increase; and provide further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than 20 days before the general contractor notified the awarding authority of the act or failure to act involved in the claim."

Section 39P. "Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event no later than thirty days after the written submission for decision; but if such decision required extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made."

Attention is also directed to Chapter 30, Section 39R of the General Laws of Massachusetts as amended to date as follows:

Section 39R. (a) The words defined herein shall have the meaning stated below whenever they appear in this section:

(1) "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to section thirty-nine M of chapter thirty, sections forty-four A through forty-four H, inclusive, of chapter one hundred forty-nine and sections thirty B through thirty P, inclusive, of chapter seven.

(2) "Contract" means any contract awarded or executed pursuant to sections thirty B through thirty P, inclusive, of chapter seven and any contract awarded or executed pursuant to section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.

(3) "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memorandum invoices, computer printouts, tapes, discs, papers and other documents transcribed information of any type, whether expressed in ordinary or machine language.

(4) "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his/her residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.

(5) "Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the alternative, a qualified opinion or a delineation to express an opinion for stated reasons.

(6) "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which she/he has made and sets forth his/her opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of a financial condition of the contractor.

(7) "Management", when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the contractor.

(8) Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principals and auditing standards.

(b) Subsection (a) (2) hereof notwithstanding, every agreement or contract awarded or executed pursuant to sections 30B through 30P, inclusive, of chapter seven, and pursuant to section 39M of chapter 30 or to section 44A through 44H, inclusive, of chapter 149, shall provide that:

(1) The contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the contractor, and

(2) until the expiration of six years after final payment, the awarding authority, office of inspector general, and the deputy commissioner of capital planning and operations shall have the right to examine any books, documents, papers or records of the contractor or of

his/her subcontractors that directly pertain to, and involve transactions relating to, the contractor or his/her subcontractors, and

(3) if the agreement is a contract as defined herein, the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the awarding authority, including in his/her description the date of the change and reasons therefore, and shall accompany said description with a letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(4) if the agreement is a contract as defined herein, the contractor has filed a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and

(5) if the agreement is a contract as defined herein, the contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

(c) Every contractor awarded a contract shall file with the awarding authority a statement of management as to whether the system of internal accounting controls of the contractor and its subsidiaries reasonably assures that:

(1) transactions are executed in accordance with management's general and specific authorization;

(2) transactions are recorded as necessary:

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. To maintain accountability for assets;

(3) access to assets is permitted only in accordance with management's general or specific authorization; and

(4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Every contractor awarded a contract shall also file with the awarding authority a statement prepared and signed by an independent certified public accountant, stating that she/he has examined the statement of management on internal accounting controls, and expressing an opinion as to

(1) whether the representations of management in response to this paragraph and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and

(2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

(d) Every contractor awarded a contract by the commonwealth or by any political subdivision thereof shall annually file with the awarding authority during the term of the contract a financial statement prepared by an independent certified public accountant on

the basis of an audit by sub accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report.

(e) The office of inspector general, the deputy commissioner for capital planning and operations and any other awarding authority shall enforce the provisions of this section. The deputy commissioner of capital planning and operations may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of chapter thirty A such rules, regulations and guidelines as are necessary to effectuate the purposes of this section. Such rules, regulations and guidelines may be applicable to all awarding authorities. A contractor's failure to satisfy any of the requirements of this section may be grounds for disqualification pursuant to section forty-four C of Chapter one hundred forty-nine.

1.04 MINIMUM WAGE RATES

- A. Minimum Wage Rates as determined by the Commissioner of Department of Labor and Industries under the provision of the Massachusetts General Laws, Chapter 149, Sections 26 to 27D, as amended, apply to this project. It is the responsibility of the contractor, before bid opening, to request if necessary, any additional information of Minimum Wage Rates for those trades-people who may be employed for the proposed work under this contract. Minimum wage rates are included at the end of this section.
- B. Minimum Wage Rates as determined by the United States Department of Labor under the Davis-Bacon Act also apply to this project.

1.05 SAFETY AND HEALTH

- A. This project is subject to the Safety and Health regulation of the U.S. Department of Labor set forth in 29 CFR Part 1926, Commonwealth of Massachusetts Regulations CMR 454, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety "Rules and Regulations for the Prevention of Accidents in Construction operations (Chapter 454 CMR 10.00 et. seq.)". Contractors shall be familiar with the requirements of these regulations.

1.06 MODIFIED SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY NON-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

- A. See Attached pages EEO-AAO-MS Page 1 through EEO-AAO-MS Page 7.

1.07 SPECIAL PROVISIONS FOR DISADVANTAGED BUSINESS ENTERPRISES

- A. See Attached pages EEO-DEP-SP Page 1 through EEO-DEP-SP Page 9 AND EEO-DEP Forms.

1.08 STATUTES REGULATING CONSTRUCTION CONTRACTS FOR PUBLIC BUILDINGS AND PUBLIC WORKS PROJECTS

- A. The following statutes regulating construction contracts for public buildings and public works projects are incorporated into the specifications. Where indicated, statutory references are included as attachments.

1. M.G.L c.30 s 39F Payment to Subcontractor (attached)
2. M.G.L c.30 s 39I Deviation from Plans and Specifications
3. M.G.L c.30 s 39J No Arbitrary Decisions are Final
4. M.G.L c.30 s 39L Construction Work by Foreign Corporations
5. M.G.L c.30 s 39M(b) Substitution of Equal Products
6. M.G.L c.30 s 39N Differing Site Conditions (attached)
7. M.G.L c.30 s 39O Equitable Adjustments for Delays (attached)
8. M.G.L c.30 s 39P Decision on Interpretation of Specifications
9. M.G.L c.30 s 39R Contractor's Records
10. M.G.L c.149 s 34 Limitations on Hours of Work
11. M.G.L c.149 s 44J Advertising Invitations to Bid
12. M.G.L c.82 s 40 Excavations; Notice; Penalties
13. M.G.L c.30 s 39K Prompt Payment
14. M.G.L c.149 ss44F and 44G

END OF SECTION

ATTACHMENT A

Excerpts from the Massachusetts General Laws

**GENERAL LAWS OF MASSACHUSETTS
PART I.
ADMINISTRATION OF THE GOVERNMENT.**

**TITLE III.
LAWS RELATING TO STATE OFFICERS.**

CHAPTER 30. GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES.

Chapter 30: Section 39F. Construction contracts; assignment and subrogation; subcontractor defined; enforcement of claim for direct payment; deposit, reduction of disputed amounts.

Section 39F. (1) Every contract awarded pursuant to sections forty-four A to L, inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority.

The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f),

are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to subparagraph (f) of paragraph (1) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "Subcontractor" as used in this section (i) for contracts awarded as provided in sections forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (a) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy

trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1) any amount held under a trustee writ or pursuant to a restraining order or injunction.

**GENERAL LAWS OF MASSACHUSETTS
PART I.
ADMINISTRATION OF THE GOVERNMENT.**

**TITLE III.
LAWS RELATING TO STATE OFFICERS.**

CHAPTER 30. GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES.

Chapter 30: Section 39N. Construction contracts; equitable adjustment in contract price for differing subsurface or latent physical conditions.

Section 39N. Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

**GENERAL LAWS OF MASSACHUSETTS
PART I.
ADMINISTRATION OF THE GOVERNMENT.**

**TITLE III.
LAWS RELATING TO STATE OFFICERS.**

CHAPTER 30. GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES.

Chapter 30: Section 39O. Contracts for construction and materials; suspension, delay or interruption due to order of awarding authority; adjustment in contract price; required provisions.

Section 39O. Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.

ATTACHMENT B

Massachusetts Prevailing Wage Rates

And

Federal Davis-Bacon Wage Rates



**THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS**

Prevailing Wage Rates

**As determined by the Director under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H**

CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

ROSALIN ACOSTA
Secretary
MICHAEL FLANAGAN
Director

Awarding Authority: City of Taunton DPW
Contract Number: S-2022-2 **City/Town:** TAUNTON
Description of Work: Improvements to the wastewater and stormwater collection systems for I/I reduction
Job Location: various

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the “Wage Request Number” on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule from the Department of Labor Standards (“DLS”) if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.**
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F “rental of equipment” contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2021	\$35.95	\$13.41	\$14.82	\$0.00	\$64.18
	12/01/2021	\$35.95	\$13.41	\$16.01	\$0.00	\$65.37
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2021	\$36.02	\$13.41	\$14.82	\$0.00	\$64.25
	12/01/2021	\$36.02	\$13.41	\$16.01	\$0.00	\$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2021	\$36.14	\$13.41	\$14.82	\$0.00	\$64.37
	12/01/2021	\$36.14	\$13.41	\$16.01	\$0.00	\$65.56
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.56	\$8.60	\$16.64	\$0.00	\$62.80
	12/01/2022	\$38.41	\$8.60	\$16.64	\$0.00	\$63.65
	06/01/2023	\$39.31	\$8.60	\$16.64	\$0.00	\$64.55
	12/01/2023	\$40.21	\$8.60	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</i>	12/01/2020	\$38.10	\$12.80	\$9.45	\$0.00	\$60.35
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.56	\$8.60	\$16.64	\$0.00	\$62.80
	12/01/2022	\$38.41	\$8.60	\$16.64	\$0.00	\$63.65
	06/01/2023	\$39.31	\$8.60	\$16.64	\$0.00	\$64.55
	12/01/2023	\$40.21	\$8.60	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2020	\$46.10	\$7.07	\$17.98	\$0.00	\$71.15

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
2	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
3	70	\$32.27	\$7.07	\$12.59	\$0.00	\$51.93
4	75	\$34.58	\$7.07	\$13.49	\$0.00	\$55.14
5	80	\$36.88	\$7.07	\$14.38	\$0.00	\$58.33
6	85	\$39.19	\$7.07	\$15.29	\$0.00	\$61.55
7	90	\$41.49	\$7.07	\$16.18	\$0.00	\$64.74
8	95	\$43.80	\$7.07	\$17.09	\$0.00	\$67.96

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (FOXBORO)</i>	08/01/2021	\$55.01	\$11.39	\$21.57	\$0.00	\$87.97
	02/01/2022	\$55.59	\$11.39	\$21.57	\$0.00	\$88.55

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Foxboro

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.51	\$11.39	\$21.57	\$0.00	\$60.47
2	60	\$33.01	\$11.39	\$21.57	\$0.00	\$65.97
3	70	\$38.51	\$11.39	\$21.57	\$0.00	\$71.47
4	80	\$44.01	\$11.39	\$21.57	\$0.00	\$76.97
5	90	\$49.51	\$11.39	\$21.57	\$0.00	\$82.47

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.80	\$11.39	\$21.57	\$0.00	\$60.76
2	60	\$33.35	\$11.39	\$21.57	\$0.00	\$66.31
3	70	\$38.91	\$11.39	\$21.57	\$0.00	\$71.87
4	80	\$44.47	\$11.39	\$21.57	\$0.00	\$77.43
5	90	\$50.03	\$11.39	\$21.57	\$0.00	\$82.99

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$41.82	\$8.60	\$17.72	\$0.00	\$68.14
	12/01/2021	\$42.83	\$8.60	\$17.72	\$0.00	\$69.15
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$40.67	\$8.60	\$17.72	\$0.00	\$66.99
	12/01/2021	\$41.68	\$8.60	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$40.67	\$8.60	\$17.72	\$0.00	\$66.99
	12/01/2021	\$41.68	\$8.60	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	09/01/2021	\$44.18	\$8.58	\$19.82	\$0.00	\$72.58
	03/01/2022	\$44.78	\$8.58	\$19.82	\$0.00	\$73.18
	09/01/2022	\$45.43	\$8.58	\$19.82	\$0.00	\$73.83
	03/01/2023	\$46.03	\$8.58	\$19.82	\$0.00	\$74.43

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.09	\$8.58	\$1.73	\$0.00	\$32.40
2	60	\$26.51	\$8.58	\$1.73	\$0.00	\$36.82
3	70	\$30.93	\$8.58	\$14.63	\$0.00	\$54.14
4	75	\$33.14	\$8.58	\$14.63	\$0.00	\$56.35
5	80	\$35.34	\$8.58	\$16.36	\$0.00	\$60.28
6	80	\$35.34	\$8.58	\$16.36	\$0.00	\$60.28
7	90	\$39.76	\$8.58	\$18.09	\$0.00	\$66.43
8	90	\$39.76	\$8.58	\$18.09	\$0.00	\$66.43

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.39	\$8.58	\$1.73	\$0.00	\$32.70
2	60	\$26.87	\$8.58	\$1.73	\$0.00	\$37.18
3	70	\$31.35	\$8.58	\$14.63	\$0.00	\$54.56
4	75	\$33.59	\$8.58	\$14.63	\$0.00	\$56.80
5	80	\$35.82	\$8.58	\$16.36	\$0.00	\$60.76
6	80	\$35.82	\$8.58	\$16.36	\$0.00	\$60.76
7	90	\$40.30	\$8.58	\$18.09	\$0.00	\$66.97
8	90	\$40.30	\$8.58	\$18.09	\$0.00	\$66.97

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$30.19/ 3&4 \$36.28/ 5&6 \$55.87/ 7&8 \$62.01

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME	04/01/2021	\$23.16	\$7.21	\$4.80	\$0.00	\$35.17
CARPENTERS-ZONE 3 (Wood Frame)	04/01/2022	\$23.66	\$7.21	\$4.80	\$0.00	\$35.67
	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17

All Aspects of New Wood Frame Work

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Wood Frame) - Zone 3

Effective Date - 04/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$13.90	\$7.21	\$0.00	\$0.00	\$21.11
2	60	\$13.90	\$7.21	\$0.00	\$0.00	\$21.11
3	65	\$15.05	\$7.21	\$0.00	\$0.00	\$22.26
4	70	\$16.21	\$7.21	\$0.00	\$0.00	\$23.42
5	75	\$17.37	\$7.21	\$3.80	\$0.00	\$28.38
6	80	\$18.53	\$7.21	\$3.80	\$0.00	\$29.54
7	85	\$19.69	\$7.21	\$3.80	\$0.00	\$30.70
8	90	\$20.84	\$7.21	\$3.80	\$0.00	\$31.85

Effective Date - 04/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
2	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
3	65	\$15.38	\$7.21	\$0.00	\$0.00	\$22.59
4	70	\$16.56	\$7.21	\$0.00	\$0.00	\$23.77
5	75	\$17.75	\$7.21	\$3.80	\$0.00	\$28.76
6	80	\$18.93	\$7.21	\$3.80	\$0.00	\$29.94
7	85	\$20.11	\$7.21	\$3.80	\$0.00	\$31.12
8	90	\$21.29	\$7.21	\$3.80	\$0.00	\$32.30

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$17.63/ 3&4 \$19.95/ 5&6 \$27.22/ 7&8 \$29.54

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (FOXBORO)	01/01/2020	\$44.67	\$12.75	\$22.41	\$0.62	\$80.45
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Apprentice - CEMENT MASONRY/PLASTERING - Foxboro

Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.34	\$12.75	\$15.41	\$0.00	\$50.50
2	60	\$26.80	\$12.75	\$17.41	\$0.62	\$57.58
3	65	\$29.04	\$12.75	\$18.41	\$0.62	\$60.82
4	70	\$31.27	\$12.75	\$19.41	\$0.62	\$64.05
5	75	\$33.50	\$12.75	\$20.41	\$0.62	\$67.28
6	80	\$35.74	\$12.75	\$21.41	\$0.62	\$70.52
7	90	\$40.20	\$12.75	\$22.41	\$0.62	\$75.98

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$51.73	\$13.75	\$15.80	\$0.00	\$81.28
	12/01/2021	\$52.88	\$13.75	\$15.80	\$0.00	\$82.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$33.40	\$13.75	\$15.80	\$0.00	\$62.95
	12/01/2021	\$34.19	\$13.75	\$15.80	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2021	\$52.06	\$8.25	\$22.75	\$0.00	\$83.06

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$8.25	\$0.00	\$0.00	\$34.28
2	55	\$28.63	\$8.25	\$6.16	\$0.00	\$43.04
3	60	\$31.24	\$8.25	\$6.72	\$0.00	\$46.21
4	65	\$33.84	\$8.25	\$7.28	\$0.00	\$49.37
5	70	\$36.44	\$8.25	\$19.39	\$0.00	\$64.08
6	75	\$39.05	\$8.25	\$19.95	\$0.00	\$67.25
7	80	\$41.65	\$8.25	\$20.51	\$0.00	\$70.41
8	90	\$46.85	\$8.25	\$21.63	\$0.00	\$76.73

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN <i>LABORERS - ZONE 2</i>	06/01/2021	\$40.82	\$8.60	\$17.57	\$0.00	\$66.99
	12/01/2021	\$41.83	\$8.60	\$17.57	\$0.00	\$68.00
	06/01/2022	\$42.83	\$8.60	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.83	\$8.60	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.83	\$8.60	\$17.57	\$0.00	\$71.00
	12/01/2023	\$46.08	\$8.60	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$41.82	\$8.60	\$17.57	\$0.00	\$67.99
	12/01/2021	\$42.83	\$8.60	\$17.57	\$0.00	\$69.00
	06/01/2022	\$43.83	\$8.60	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.83	\$8.60	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.83	\$8.60	\$17.57	\$0.00	\$72.00
	12/01/2023	\$47.08	\$8.60	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: BURNERS <i>LABORERS - ZONE 2</i>	06/01/2021	\$41.57	\$8.60	\$17.57	\$0.00	\$67.74
	12/01/2021	\$42.58	\$8.60	\$17.57	\$0.00	\$68.75
	06/01/2022	\$43.58	\$8.60	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.58	\$8.60	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.58	\$8.60	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.83	\$8.60	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	06/01/2021	\$41.82	\$8.60	\$17.57	\$0.00	\$67.99
	12/01/2021	\$42.83	\$8.60	\$17.57	\$0.00	\$69.00
	06/01/2022	\$43.83	\$8.60	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.83	\$8.60	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.83	\$8.60	\$17.57	\$0.00	\$72.00
	12/01/2023	\$47.08	\$8.60	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$41.57	\$8.60	\$17.57	\$0.00	\$67.74
	12/01/2021	\$42.58	\$8.60	\$17.57	\$0.00	\$68.75
	06/01/2022	\$43.58	\$8.60	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.58	\$8.60	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.58	\$8.60	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.83	\$8.60	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	06/01/2021	\$40.82	\$8.60	\$17.57	\$0.00	\$66.99
	12/01/2021	\$41.83	\$8.60	\$17.57	\$0.00	\$68.00
	06/01/2022	\$42.83	\$8.60	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.83	\$8.60	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.83	\$8.60	\$17.57	\$0.00	\$71.00
	12/01/2023	\$46.08	\$8.60	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 223

Effective Date - 09/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.46	\$10.90	\$0.52	\$0.00	\$28.88
2	45	\$19.65	\$10.90	\$0.59	\$0.00	\$31.14
3	50	\$21.83	\$10.90	\$0.65	\$0.00	\$33.38
4	55	\$24.01	\$10.90	\$6.28	\$0.00	\$41.19
5	60	\$26.20	\$10.90	\$6.77	\$0.00	\$43.87
6	65	\$28.38	\$10.90	\$7.24	\$0.00	\$46.52
7	70	\$30.56	\$10.90	\$7.73	\$0.00	\$49.19
8	75	\$32.75	\$10.90	\$8.21	\$0.00	\$51.86

Notes:

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2021	\$63.47	\$15.88	\$19.31	\$0.00	\$98.66
	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86

Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.74	\$15.88	\$0.00	\$0.00	\$47.62
2	55	\$34.91	\$15.88	\$19.31	\$0.00	\$70.10
3	65	\$41.26	\$15.88	\$19.31	\$0.00	\$76.45
4	70	\$44.43	\$15.88	\$19.31	\$0.00	\$79.62
5	80	\$50.78	\$15.88	\$19.31	\$0.00	\$85.97

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74

Notes:

Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2021	\$44.43	\$15.88	\$19.31	\$0.00	\$79.62
	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2021	\$45.88	\$13.50	\$15.70	\$0.00	\$75.08
	11/01/2021	\$46.88	\$13.50	\$15.70	\$0.00	\$76.08
	05/01/2022	\$48.03	\$13.50	\$15.70	\$0.00	\$77.23
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2021	\$47.40	\$13.50	\$15.70	\$0.00	\$76.60
	11/01/2021	\$48.41	\$13.50	\$15.70	\$0.00	\$77.61
	05/01/2022	\$49.57	\$13.50	\$15.70	\$0.00	\$78.77
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2021	\$22.91	\$13.50	\$15.70	\$0.00	\$52.11
	11/01/2021	\$23.51	\$13.50	\$15.70	\$0.00	\$52.71
	05/01/2022	\$24.18	\$13.50	\$15.70	\$0.00	\$53.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE <i>LOCAL 223</i> <i>/ COMMISSIONINGELECTRICIANS</i>	09/01/2020	\$36.86	\$10.90	\$12.45	\$0.00	\$60.21
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$41.31	\$13.75	\$15.80	\$0.00	\$70.86
	12/01/2021	\$42.26	\$13.75	\$15.80	\$0.00	\$71.81
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$24.50	\$8.60	\$16.64	\$0.00	\$49.74
	12/01/2021	\$24.50	\$8.60	\$16.64	\$0.00	\$49.74
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	09/01/2021	\$49.38	\$8.58	\$20.12	\$0.00	\$78.08
	03/01/2022	\$50.18	\$8.58	\$20.12	\$0.00	\$78.88

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - FLOORCOVERER - Local 2168 Zone I

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.69	\$8.58	\$1.79	\$0.00	\$35.06
2	55	\$27.16	\$8.58	\$1.79	\$0.00	\$37.53
3	60	\$29.63	\$8.58	\$14.75	\$0.00	\$52.96
4	65	\$32.10	\$8.58	\$14.75	\$0.00	\$55.43
5	70	\$34.57	\$8.58	\$16.54	\$0.00	\$59.69
6	75	\$37.04	\$8.58	\$16.54	\$0.00	\$62.16
7	80	\$39.50	\$8.58	\$18.33	\$0.00	\$66.41
8	85	\$41.97	\$8.58	\$18.33	\$0.00	\$68.88

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.09	\$8.58	\$1.79	\$0.00	\$35.46
2	55	\$27.60	\$8.58	\$1.79	\$0.00	\$37.97
3	60	\$30.11	\$8.58	\$14.75	\$0.00	\$53.44
4	65	\$32.62	\$8.58	\$14.75	\$0.00	\$55.95
5	70	\$35.13	\$8.58	\$16.54	\$0.00	\$60.25
6	75	\$37.64	\$8.58	\$16.54	\$0.00	\$62.76
7	80	\$40.14	\$8.58	\$18.33	\$0.00	\$67.05
8	85	\$42.65	\$8.58	\$18.33	\$0.00	\$69.56

Notes: Steps are 750 hrs.
 % After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
 Step 1&2 \$32.59/ 3&4 \$39.26/ 5&6 \$59.69/ 7&8 \$66.41

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$33.40	\$13.75	\$15.80	\$0.00	\$62.95
	12/01/2021	\$34.19	\$13.75	\$15.80	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 1333</i>	06/01/2020	\$39.18	\$10.80	\$10.45	\$0.00	\$60.43

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - GLAZIER - Local 1333

Effective Date - 06/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.59	\$10.80	\$1.80	\$0.00	\$32.19
2	56	\$22.04	\$10.80	\$1.80	\$0.00	\$34.64
3	63	\$24.49	\$10.80	\$2.45	\$0.00	\$37.74
4	69	\$26.94	\$10.80	\$2.45	\$0.00	\$40.19
5	75	\$29.39	\$10.80	\$3.15	\$0.00	\$43.34
6	81	\$31.83	\$10.80	\$3.15	\$0.00	\$45.78
7	88	\$34.28	\$10.80	\$10.45	\$0.00	\$55.53
8	94	\$36.73	\$10.80	\$10.45	\$0.00	\$57.98

Notes:

Apprentice to Journeyworker Ratio:1:3

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 06/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$27.90	\$13.75	\$0.00	\$0.00	\$41.65
2	60	\$30.44	\$13.75	\$15.80	\$0.00	\$59.99
3	65	\$32.97	\$13.75	\$15.80	\$0.00	\$62.52
4	70	\$35.51	\$13.75	\$15.80	\$0.00	\$65.06
5	75	\$38.05	\$13.75	\$15.80	\$0.00	\$67.60
6	80	\$40.58	\$13.75	\$15.80	\$0.00	\$70.13
7	85	\$43.12	\$13.75	\$15.80	\$0.00	\$72.67
8	90	\$45.66	\$13.75	\$15.80	\$0.00	\$75.21

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$28.53	\$13.75	\$0.00	\$0.00	\$42.28
2	60	\$31.13	\$13.75	\$15.80	\$0.00	\$60.68
3	65	\$33.72	\$13.75	\$15.80	\$0.00	\$63.27
4	70	\$36.32	\$13.75	\$15.80	\$0.00	\$65.87
5	75	\$38.91	\$13.75	\$15.80	\$0.00	\$68.46
6	80	\$41.50	\$13.75	\$15.80	\$0.00	\$71.05
7	85	\$44.10	\$13.75	\$15.80	\$0.00	\$73.65
8	90	\$46.69	\$13.75	\$15.80	\$0.00	\$76.24

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	08/01/2021	\$51.95	\$13.80	\$25.60	\$2.74	\$94.09
	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 223	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22
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For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	08/01/2021	\$51.95	\$13.80	\$25.60	\$2.74	\$94.09
	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING -WATER) PLUMBERS & PIPEFITTERS LOCAL 51	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59
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For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

HVAC MECHANIC PLUMBERS & PIPEFITTERS LOCAL 51	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59
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For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.56	\$8.60	\$16.64	\$0.00	\$62.80
	12/01/2022	\$38.41	\$8.60	\$16.64	\$0.00	\$63.65
	06/01/2023	\$39.31	\$8.60	\$16.64	\$0.00	\$64.55
	12/01/2023	\$40.21	\$8.60	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</i>	09/01/2021	\$46.50	\$13.80	\$17.14	\$0.00	\$77.44
	09/01/2022	\$48.95	\$13.80	\$17.14	\$0.00	\$79.89

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Southern MA

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.25	\$13.80	\$12.42	\$0.00	\$49.47
2	60	\$27.90	\$13.80	\$13.36	\$0.00	\$55.06
3	70	\$32.55	\$13.80	\$14.31	\$0.00	\$60.66
4	80	\$37.20	\$13.80	\$15.25	\$0.00	\$66.25

Effective Date - 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.48	\$13.80	\$12.42	\$0.00	\$50.70
2	60	\$29.37	\$13.80	\$13.36	\$0.00	\$56.53
3	70	\$34.27	\$13.80	\$14.31	\$0.00	\$62.38
4	80	\$39.16	\$13.80	\$15.25	\$0.00	\$68.21

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 37</i>	03/16/2021	\$42.46	\$7.70	\$17.10	\$0.00	\$67.26
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 37

Effective Date - 03/16/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	70	\$29.72	\$7.70	\$17.10	\$0.00	\$54.52
2	75	\$31.85	\$7.70	\$17.10	\$0.00	\$56.65
3	80	\$33.97	\$7.70	\$17.10	\$0.00	\$58.77
4	85	\$36.09	\$7.70	\$17.10	\$0.00	\$60.89
5	90	\$38.21	\$7.70	\$17.10	\$0.00	\$63.01
6	95	\$40.34	\$7.70	\$17.10	\$0.00	\$65.14

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS - ZONE 2	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER - Zone 2

Effective Date - 06/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.00	\$8.60	\$16.64	\$0.00	\$46.24
2	70	\$24.50	\$8.60	\$16.64	\$0.00	\$49.74
3	80	\$28.00	\$8.60	\$16.64	\$0.00	\$53.24
4	90	\$31.50	\$8.60	\$16.64	\$0.00	\$56.74

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.55	\$8.60	\$16.64	\$0.00	\$46.79
2	70	\$25.14	\$8.60	\$16.64	\$0.00	\$50.38
3	80	\$28.73	\$8.60	\$16.64	\$0.00	\$53.97
4	90	\$32.32	\$8.60	\$16.64	\$0.00	\$57.56

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY)	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15

Apprentice - LABORER (Heavy & Highway) - Zone 2

Effective Date - 06/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.00	\$8.60	\$16.64	\$0.00	\$46.24
2	70	\$24.50	\$8.60	\$16.64	\$0.00	\$49.74
3	80	\$28.00	\$8.60	\$16.64	\$0.00	\$53.24
4	90	\$31.50	\$8.60	\$16.64	\$0.00	\$56.74

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.55	\$8.60	\$16.64	\$0.00	\$46.79
2	70	\$25.14	\$8.60	\$16.64	\$0.00	\$50.38
3	80	\$28.73	\$8.60	\$16.64	\$0.00	\$53.97
4	90	\$32.32	\$8.60	\$16.64	\$0.00	\$57.56

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.09	\$8.60	\$16.70	\$0.00	\$60.39
	12/01/2021	\$36.00	\$8.60	\$16.70	\$0.00	\$61.30
	06/01/2022	\$36.90	\$8.60	\$16.70	\$0.00	\$62.20
	12/01/2022	\$37.75	\$8.60	\$16.70	\$0.00	\$63.05
	06/01/2023	\$38.65	\$8.60	\$16.70	\$0.00	\$63.95
	12/01/2023	\$39.55	\$8.60	\$16.70	\$0.00	\$64.85
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	08/01/2021	\$43.69	\$11.39	\$20.30	\$0.00	\$75.38
	02/01/2022	\$44.16	\$11.39	\$20.30	\$0.00	\$75.85

Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.85	\$11.39	\$20.30	\$0.00	\$53.54
2	60	\$26.21	\$11.39	\$20.30	\$0.00	\$57.90
3	70	\$30.58	\$11.39	\$20.30	\$0.00	\$62.27
4	80	\$34.95	\$11.39	\$20.30	\$0.00	\$66.64
5	90	\$39.32	\$11.39	\$20.30	\$0.00	\$71.01

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.08	\$11.39	\$20.30	\$0.00	\$53.77
2	60	\$26.50	\$11.39	\$20.30	\$0.00	\$58.19
3	70	\$30.91	\$11.39	\$20.30	\$0.00	\$62.60
4	80	\$35.33	\$11.39	\$20.30	\$0.00	\$67.02
5	90	\$39.74	\$11.39	\$20.30	\$0.00	\$71.43

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	08/01/2021	\$57.17	\$11.39	\$22.24	\$0.00	\$90.80
	02/01/2022	\$57.74	\$11.39	\$22.24	\$0.00	\$91.37

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.59	\$11.39	\$22.24	\$0.00	\$62.22
2	60	\$34.30	\$11.39	\$22.24	\$0.00	\$67.93
3	70	\$40.02	\$11.39	\$22.24	\$0.00	\$73.65
4	80	\$45.74	\$11.39	\$22.24	\$0.00	\$79.37
5	90	\$51.45	\$11.39	\$22.24	\$0.00	\$85.08

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.87	\$11.39	\$22.24	\$0.00	\$62.50
2	60	\$34.64	\$11.39	\$22.24	\$0.00	\$68.27
3	70	\$40.42	\$11.39	\$22.24	\$0.00	\$74.05
4	80	\$46.19	\$11.39	\$22.24	\$0.00	\$79.82
5	90	\$51.97	\$11.39	\$22.24	\$0.00	\$85.60

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	03/01/2021	\$39.42	\$8.58	\$21.57	\$0.00	\$69.57
	01/03/2022	\$40.67	\$8.58	\$21.57	\$0.00	\$70.82
	01/02/2023	\$41.92	\$8.58	\$21.57	\$0.00	\$72.07

Apprentice - MILLWRIGHT - Local 1121 Zone 2

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$21.68	\$8.58	\$5.72	\$0.00	\$35.98
2	65	\$25.62	\$8.58	\$17.93	\$0.00	\$52.13
3	75	\$29.57	\$8.58	\$18.98	\$0.00	\$57.13
4	85	\$33.51	\$8.58	\$20.01	\$0.00	\$62.10

Effective Date - 01/03/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.37	\$8.58	\$5.72	\$0.00	\$36.67
2	65	\$26.44	\$8.58	\$17.93	\$0.00	\$52.95
3	75	\$30.50	\$8.58	\$18.98	\$0.00	\$58.06
4	85	\$34.57	\$8.58	\$20.01	\$0.00	\$63.16

Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66)
Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER LABORERS - ZONE 2	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2021	\$23.40	\$13.75	\$15.80	\$0.00	\$52.95
	12/01/2021	\$23.98	\$13.75	\$15.80	\$0.00	\$53.53
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2021	\$28.26	\$13.75	\$15.80	\$0.00	\$57.81
	12/01/2021	\$28.94	\$13.75	\$15.80	\$0.00	\$58.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	01/01/2021	\$52.06	\$8.25	\$22.75	\$0.00	\$83.06

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$8.25	\$0.00	\$0.00	\$34.28
2	55	\$28.63	\$8.25	\$6.16	\$0.00	\$43.04
3	60	\$31.24	\$8.25	\$6.72	\$0.00	\$46.21
4	65	\$33.84	\$8.25	\$7.28	\$0.00	\$49.37
5	70	\$36.44	\$8.25	\$19.39	\$0.00	\$64.08
6	75	\$39.05	\$8.25	\$19.95	\$0.00	\$67.25
7	80	\$41.65	\$8.25	\$20.51	\$0.00	\$70.41
8	90	\$46.85	\$8.25	\$21.63	\$0.00	\$76.73

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2021	\$42.96	\$8.25	\$22.75	\$0.00	\$73.96
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* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.48	\$8.25	\$0.00	\$0.00	\$29.73
2	55	\$23.63	\$8.25	\$6.16	\$0.00	\$38.04
3	60	\$25.78	\$8.25	\$6.72	\$0.00	\$40.75
4	65	\$27.92	\$8.25	\$7.28	\$0.00	\$43.45
5	70	\$30.07	\$8.25	\$19.39	\$0.00	\$57.71
6	75	\$32.22	\$8.25	\$19.95	\$0.00	\$60.42
7	80	\$34.37	\$8.25	\$20.51	\$0.00	\$63.13
8	90	\$38.66	\$8.25	\$21.63	\$0.00	\$68.54

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2021	\$41.02	\$8.25	\$22.75	\$0.00	\$72.02
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PAINTERS LOCAL 35 - ZONE 2

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.51	\$8.25	\$0.00	\$0.00	\$28.76
2	55	\$22.56	\$8.25	\$6.16	\$0.00	\$36.97
3	60	\$24.61	\$8.25	\$6.72	\$0.00	\$39.58
4	65	\$26.66	\$8.25	\$7.28	\$0.00	\$42.19
5	70	\$28.71	\$8.25	\$19.39	\$0.00	\$56.35
6	75	\$30.77	\$8.25	\$19.95	\$0.00	\$58.97
7	80	\$32.82	\$8.25	\$20.51	\$0.00	\$61.58
8	90	\$36.92	\$8.25	\$21.63	\$0.00	\$66.80

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *	01/01/2021	\$41.56	\$8.25	\$22.75	\$0.00	\$72.56
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* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.78	\$8.25	\$0.00	\$0.00	\$29.03
2	55	\$22.86	\$8.25	\$6.16	\$0.00	\$37.27
3	60	\$24.94	\$8.25	\$6.72	\$0.00	\$39.91
4	65	\$27.01	\$8.25	\$7.28	\$0.00	\$42.54
5	70	\$29.09	\$8.25	\$19.39	\$0.00	\$56.73
6	75	\$31.17	\$8.25	\$19.95	\$0.00	\$59.37
7	80	\$33.25	\$8.25	\$20.51	\$0.00	\$62.01
8	90	\$37.40	\$8.25	\$21.63	\$0.00	\$67.28

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2021	\$39.62	\$8.25	\$22.75	\$0.00	\$70.62
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PAINTERS LOCAL 35 - ZONE 2

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.81	\$8.25	\$0.00	\$0.00	\$28.06
2	55	\$21.79	\$8.25	\$6.16	\$0.00	\$36.20
3	60	\$23.77	\$8.25	\$6.72	\$0.00	\$38.74
4	65	\$25.75	\$8.25	\$7.28	\$0.00	\$41.28
5	70	\$27.73	\$8.25	\$19.39	\$0.00	\$55.37
6	75	\$29.72	\$8.25	\$19.95	\$0.00	\$57.92
7	80	\$31.70	\$8.25	\$20.51	\$0.00	\$60.46
8	90	\$35.66	\$8.25	\$21.63	\$0.00	\$65.54

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

PANEL & PICKUP TRUCKS DRIVER	08/01/2021	\$35.78	\$13.41	\$14.82	\$0.00	\$64.01
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2021	\$35.78	\$13.41	\$16.01	\$0.00	\$65.20

PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
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PILE DRIVER LOCAL 56 (ZONE 1)

For apprentice rates see "Apprentice- PILE DRIVER"

PILE DRIVER	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER LOCAL 56 (ZONE 1)						

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$9.40	\$23.12	\$0.00	\$57.06
2	60	\$29.44	\$9.40	\$23.12	\$0.00	\$61.96
3	70	\$34.35	\$9.40	\$23.12	\$0.00	\$66.87
4	75	\$36.80	\$9.40	\$23.12	\$0.00	\$69.32
5	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
6	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
7	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68
8	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$34.01/ 3&4 \$41.46/ 5&6 \$62.80/ 7&8 \$69.25

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
PLUMBER & PIPEFITTER <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59

Apprentice - PLUMBER/PIPEFITTER - Local 51

Effective Date - 08/30/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.60	\$10.15	\$2.50	\$0.00	\$31.25
2	50	\$23.25	\$10.15	\$2.50	\$0.00	\$35.90
3	60	\$27.89	\$10.15	\$8.80	\$0.00	\$46.84
4	70	\$32.54	\$10.15	\$14.08	\$0.00	\$56.77
5	80	\$37.19	\$10.15	\$17.60	\$0.00	\$64.94

Notes:

Steps 2000hrs. Prior 9/1/05; 40/40/45/50/55/60/65/75/80/85

Apprentice to Journeyworker Ratio:1:3

PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	06/01/2021	\$36.00	\$8.60	\$16.64	\$0.00	\$61.24
	12/01/2021	\$36.91	\$8.60	\$16.64	\$0.00	\$62.15
	06/01/2022	\$37.81	\$8.60	\$16.64	\$0.00	\$63.05
	12/01/2022	\$38.66	\$8.60	\$16.64	\$0.00	\$63.90
	06/01/2023	\$39.56	\$8.60	\$16.64	\$0.00	\$64.80
	12/01/2023	\$40.46	\$8.60	\$16.64	\$0.00	\$65.70
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$36.00	\$8.60	\$16.64	\$0.00	\$61.24
	12/01/2021	\$36.91	\$8.60	\$16.64	\$0.00	\$62.15
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$33.40	\$13.75	\$15.80	\$0.00	\$62.95
	12/01/2021	\$34.19	\$13.75	\$15.80	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 170 - Dauphinis (Bellingham)</i>	01/01/2021	\$25.00	\$9.31	\$3.20	\$0.00	\$37.51
	12/01/2021	\$25.75	\$9.76	\$4.00	\$0.00	\$39.51
	01/01/2022	\$25.75	\$9.76	\$4.00	\$0.00	\$39.51
	12/01/2022	\$26.40	\$10.26	\$4.75	\$0.00	\$41.41
	01/01/2023	\$26.40	\$10.26	\$4.75	\$0.00	\$41.41
	12/01/2023	\$27.00	\$10.76	\$5.45	\$0.00	\$43.21
	01/01/2024	\$27.00	\$10.76	\$5.45	\$0.00	\$43.21
	12/01/2024	\$27.60	\$11.26	\$6.15	\$0.00	\$45.01
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofing Waterproofing &Roofing Damproofg) <i>ROOFERS LOCAL 33</i>	08/01/2021	\$47.03	\$12.28	\$18.15	\$0.00	\$77.46
	02/01/2022	\$48.46	\$12.28	\$18.15	\$0.00	\$78.89

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.52	\$12.28	\$4.56	\$0.00	\$40.36
2	60	\$28.22	\$12.28	\$18.15	\$0.00	\$58.65
3	65	\$30.57	\$12.28	\$18.15	\$0.00	\$61.00
4	75	\$35.27	\$12.28	\$18.15	\$0.00	\$65.70
5	85	\$39.98	\$12.28	\$18.15	\$0.00	\$70.41

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.23	\$12.28	\$4.56	\$0.00	\$41.07
2	60	\$29.08	\$12.28	\$18.15	\$0.00	\$59.51
3	65	\$31.50	\$12.28	\$18.15	\$0.00	\$61.93
4	75	\$36.35	\$12.28	\$18.15	\$0.00	\$66.78
5	85	\$41.19	\$12.28	\$18.15	\$0.00	\$71.62

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
 Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
 (Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	08/01/2021	\$47.28	\$12.28	\$18.15	\$0.00	\$77.71
	02/01/2022	\$48.71	\$12.28	\$18.15	\$0.00	\$79.14
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	08/01/2021	\$51.95	\$13.80	\$25.60	\$2.74	\$94.09
	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$21.82	\$13.80	\$6.01	\$0.00	\$41.63
2	42	\$21.82	\$13.80	\$6.01	\$0.00	\$41.63
3	47	\$24.42	\$13.80	\$11.26	\$1.48	\$50.96
4	47	\$24.42	\$13.80	\$11.26	\$1.48	\$50.96
5	52	\$27.01	\$13.80	\$12.23	\$1.59	\$54.63
6	52	\$27.01	\$13.80	\$12.48	\$1.60	\$54.89
7	60	\$31.17	\$13.80	\$13.87	\$1.77	\$60.61
8	65	\$33.77	\$13.80	\$14.84	\$1.87	\$64.28
9	75	\$38.96	\$13.80	\$16.77	\$2.09	\$71.62
10	85	\$44.16	\$13.80	\$18.20	\$2.28	\$78.44

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
2	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
3	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
4	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
5	52	\$27.92	\$13.80	\$12.23	\$1.62	\$55.57
6	52	\$27.92	\$13.80	\$12.48	\$1.63	\$55.83
7	60	\$32.22	\$13.80	\$13.87	\$1.80	\$61.69
8	65	\$34.91	\$13.80	\$14.84	\$1.91	\$65.46
9	75	\$40.28	\$13.80	\$16.77	\$2.13	\$72.98
10	85	\$45.65	\$13.80	\$18.20	\$2.33	\$79.98

Notes:

Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2021	\$36.24	\$13.41	\$14.82	\$0.00	\$64.47
	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2021	\$36.53	\$13.41	\$14.82	\$0.00	\$64.76
	12/01/2021	\$36.53	\$13.41	\$16.01	\$0.00	\$65.95
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2021	\$62.45	\$10.00	\$21.25	\$0.00	\$93.70

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$21.86	\$10.00	\$11.99	\$0.00	\$43.85
2	40	\$24.98	\$10.00	\$12.70	\$0.00	\$47.68
3	45	\$28.10	\$10.00	\$13.41	\$0.00	\$51.51
4	50	\$31.23	\$10.00	\$14.13	\$0.00	\$55.36
5	55	\$34.35	\$10.00	\$14.84	\$0.00	\$59.19
6	60	\$37.47	\$10.00	\$15.55	\$0.00	\$63.02
7	65	\$40.59	\$10.00	\$16.26	\$0.00	\$66.85
8	70	\$43.72	\$10.00	\$16.98	\$0.00	\$70.70
9	75	\$46.84	\$10.00	\$17.69	\$0.00	\$74.53
10	80	\$49.96	\$10.00	\$18.40	\$0.00	\$78.36

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$36.86	\$10.90	\$12.45	\$0.00	\$60.21

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 223

Effective Date - 09/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Notes: See Electrician Apprentice Wages

Telecom Apprentice Wages shall be the same as the Electrician Apprentice Wages

Apprentice to Journeyworker Ratio:2:3***

TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	08/01/2021	\$56.09	\$11.39	\$22.25	\$0.00	\$89.73
	02/01/2022	\$56.68	\$11.39	\$22.25	\$0.00	\$90.32

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.05	\$11.39	\$22.25	\$0.00	\$61.69
2	60	\$33.65	\$11.39	\$22.25	\$0.00	\$67.29
3	70	\$39.26	\$11.39	\$22.25	\$0.00	\$72.90
4	80	\$44.87	\$11.39	\$22.25	\$0.00	\$78.51
5	90	\$50.48	\$11.39	\$22.25	\$0.00	\$84.12

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.34	\$11.39	\$22.25	\$0.00	\$61.98
2	60	\$34.01	\$11.39	\$22.25	\$0.00	\$67.65
3	70	\$39.68	\$11.39	\$22.25	\$0.00	\$73.32
4	80	\$45.34	\$11.39	\$22.25	\$0.00	\$78.98
5	90	\$51.01	\$11.39	\$22.25	\$0.00	\$84.65

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$42.07	\$8.60	\$17.72	\$0.00	\$68.39
	12/01/2021	\$43.08	\$8.60	\$17.72	\$0.00	\$69.40
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$40.79	\$8.60	\$17.72	\$0.00	\$67.11
	12/01/2021	\$41.80	\$8.60	\$17.72	\$0.00	\$68.12
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$40.67	\$8.60	\$17.72	\$0.00	\$66.99
	12/01/2021	\$41.68	\$8.60	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2021	\$36.82	\$13.41	\$14.82	\$0.00	\$65.05
	12/01/2021	\$36.82	\$13.41	\$16.01	\$0.00	\$66.24
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2021	\$52.90	\$8.60	\$18.17	\$0.00	\$79.67
	12/01/2021	\$53.91	\$8.60	\$18.17	\$0.00	\$80.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2021	\$54.90	\$8.60	\$18.17	\$0.00	\$81.67
	12/01/2021	\$55.91	\$8.60	\$18.17	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2021	\$44.97	\$8.60	\$18.17	\$0.00	\$71.74
	12/01/2021	\$45.98	\$8.60	\$18.17	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2021	\$46.97	\$8.60	\$18.17	\$0.00	\$73.74
	12/01/2021	\$47.98	\$8.60	\$18.17	\$0.00	\$74.75

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2021	\$36.24	\$13.41	\$14.82	\$0.00	\$64.47
	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	08/30/2021	\$46.49	\$10.15	\$19.95	\$0.00	\$76.59
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)

Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

** Multiple ratios are listed in the comment field.

*** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.

**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 08/30/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$29.67	\$9.25	\$3.39	\$0.00	\$42.31
2	65	\$32.14	\$9.25	\$3.46	\$0.00	\$44.85
3	70	\$34.62	\$9.25	\$3.54	\$0.00	\$47.41
4	75	\$37.09	\$9.25	\$5.11	\$0.00	\$51.45
5	80	\$39.56	\$9.25	\$5.19	\$0.00	\$54.00
6	85	\$42.03	\$9.25	\$5.26	\$0.00	\$56.54
7	90	\$44.51	\$9.25	\$7.34	\$0.00	\$61.10

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$30.73	\$4.70	\$3.17	\$0.00	\$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)

Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

** Multiple ratios are listed in the comment field.

*** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.

**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

"General Decision Number: MA20210005 01/01/2021

Superseded General Decision Number: MA20200005

State: Massachusetts

Construction Type: Heavy Dredging

Counties: Barnstable, Bristol, Dukes, Essex, Nantucket, Norfolk, Plymouth and Suffolk Counties in Massachusetts.

BARNSTABLE, BRISTOL, DUKES, ESSEX, NANTUCKET, NORFOLK, PLYMOUTH, SUFFOLK

HOPPER DREDGE CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date
0 01/01/2021

* SUMA1993-001 05/24/1993

BARNSTABLE, BRISTOL, DUKES, ESSEX, NANTUCKET, NORFOLK, PLYMOUTH, SUFFOLK

	Rates	Fringes
Self-Propelled Hopper Dredge, Drag Tender.....	\$ 8.21	

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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 clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that

no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.

Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

"

"General Decision Number: MA20210006 01/01/2021

Superseded General Decision Number: MA20200006

State: Massachusetts

Construction Type: Heavy Dredging

Counties: Massachusetts Statewide.
STATEWIDE

Massachusetts All Dredging, except self-propelled hopper dredges, on the Atlantic Coast & tributary waters emptying into the Atlantic Ocean.

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date
 0 01/01/2021

* ENGI0025-001 10/01/2020

STATEWIDE

	Rates	Fringes
Dredging:		
CLASS A1.....	\$ 41.42	18.86+a+b
CLASS A2.....	\$ 36.91	18.86+a+b
CLASS B1.....	\$ 35.82	18.86+a+b
CLASS B2.....	\$ 33.72	18.86+a+b
CLASS C1.....	\$ 32.80	18.86+a+b
CLASS C2.....	\$ 31.74	18.86+a+b
CLASS D.....	\$ 26.37	18.86+a+b

CLASSIFICATIONS:
CLASS A1: Deck Captain; Mechanical Dredge Operator, Leverman, Licensed Tug Operator over 1000 HP.

CLASS A2: Crane Operator (360 swing).

CLASS B1: Derrick Operator (180 swing), Spider/Spill Barge Operator, Engineer, Electrician, Chief Welder, Chief Mate, Fill Placer, Operator II, Maintenance Engineer, Licensed Boat Operator, Licensed Crew Boat Operator.

CLASS B2: Certified Welder.

CLASS C1: Mate, Drag Barge Operator, Assistant Fill Placer, Welder, Steward.

CLASS C2: Boat Operator.

CLASS D: Oiler, Deckhand, Shoreman, Rodman, Scowman, Cook, Messman, Porter/Janitor.

INCENTIVE PAY: (Add to Hourly Rate)

Operator (NCCCO License/Certification) \$1.80 Licensed Tug Operator over 1000 HP (Assigned as Master) (USCG licensed Master of Towing Vessels (MOTV) \$1.80; Licensed Boat Operator (Assigned as lead boat captain) USCG licensed boat operator \$1.30; Engineer (QMED and Tankerman endorsement or licensed engineer (USCG) \$1.80 Oiler (QMED and Tankerman endorsement (USCG) \$1.80; All classifications (Tankerman endorsement only) USCG \$1.55; Deckhand or Mate (AB with Lifeboatman endorsement (USCG) \$1.80; All classifications (lifeboatman endorsement only (USCG) \$1.55; Welder (ABS certification) \$1.55

FOOTNOTES APPLICABLE TO ABOVE CRAFTS:

- a. PAID HOLIDAYS: New Year's Day, Martin Luther King, Jr.'s Birthday, Memorial Day, Good Friday, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day
- b. VACATION: Eight percent (8%) of the straight time rate, multiplied by the total hours worked.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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 clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is

based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
 Wage and Hour Division
 U.S. Department of Labor
 200 Constitution Avenue, N.W.
 Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
 U.S. Department of Labor
 200 Constitution Avenue, N.W.
 Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
 U.S. Department of Labor
 200 Constitution Avenue, N.W.
 Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

"General Decision Number: MA20210008 09/24/2021

Superseded General Decision Number: MA20200008

State: Massachusetts

Construction Types: Heavy (Heavy and Marine)

Counties: Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth and Suffolk Counties in Massachusetts.

HEAVY AND MARINE CONTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021
1	02/12/2021
2	03/19/2021
3	04/30/2021
4	07/16/2021
5	07/30/2021
6	08/20/2021
7	09/10/2021
8	09/17/2021
9	09/24/2021

BOIL0029-001 01/01/2021

	Rates	Fringes
BOILERMAKER.....	\$ 45.87	29.02

BRMA0001-011 08/01/2020

FOXBORO CHAPTER

BRISTOL (Attleboro, Berkley, Dighton, Mansfield, North

Attleboro, Norton, Raynham, Rehoboth, Seekonk, Taunton);
 NORFOLK, (Bellingham, Canton, Dedham, Foxboro, Franklin,
 Norfolk, Norwood, Plainville, Sharon, Walpole, Westwood,
 Wrentham); and PLYMOUTH (Lakeville)

	Rates	Fringes
Bricklayer/Cement Mason.....	\$ 53.16	34.95

BRMA0001-012 08/01/2020		

LOWELL CHAPTER

MIDDLESEX (Acton, Ashby, Ayer, Bedford, Billerica, Boxboro,
 Carlisle, Chemsford, Dracut, Dunstabale, Ft Devens, Groton,
 Littleton, Lowell, North Acton, Pepperell, Shirley, South
 Acton, Tewksbury, Townsend, Tyngsboro, West Acton, Westford,
 Wilmington)

	Rates	Fringes
BRICKLAYER.....	\$ 53.16	34.95

BRMA0001-013 08/01/2020		

LOWELL CHAPTER

MIDDLESEX (Ashland, Framingham, Holliston, Hopkinton, Hudson,
 Maynard, Natick, Sherborn, Stow); and NORFOLK (Medfield,
 Medway, Millis)

	Rates	Fringes
BRICKLAYER.....	\$ 53.16	34.95

BRMA0003-001 02/01/2021		

	Rates	Fringes
Marble & Tile Finisher.....	\$ 42.57	32.00
Marble, Tile & Terrazzo Workers.....	\$ 54.69	33.80
TERRAZZO FINISHER.....	\$ 55.77	34.47

BRMA0003-003 02/01/2021		

BOSTON CHAPTER

MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford,
 Melrose, Somerville); NORFOLK (Brookline, Milton); and SUFFOLK

	Rates	Fringes
BRICKLAYER.....	\$ 55.75	35.85

BRMA0003-011 02/01/2021		

LYNN CHAPTER

ESSEX (Amesbury, Andover, Beverly, Boxford, Danvers, Essex,
 Georgetown, Gloucester, Groveland, Hamilton, Haverhill,
 Ipswich, Lawrence, Lynn, Lynnfield, Manchester, Marblehead,
 Merrimac, Methuen, Middleton, Nahant, Newbury, Newburyport,

North Andover, Peabody, Rockport, Rowley, Salisbury, Salem, Saugus, Swampscott, Topsfield, Wakefield, Wenham, West Newbury); and MIDDLESEX (North Reading, Reading, Wakefield)

	Rates	Fringes
Bricklayer/Cement Mason.....	\$ 55.75	35.85

BRMA0003-012 02/01/2021

	Rates	Fringes
BRICKLAYER WALTHAM CHAPTER - MIDDLESEX (Belmont, Burlington, Concord, Lexington, Lincoln, Stoneham, Sudbury, Waltham, Watertown, Wayland, Weston, Winchester, Woburn).....	\$ 55.75	35.85

BRMA0003-014 02/01/2021

QUINCY CHAPTER

PLYMOUTH COUNTY (Abington, Bridgewater, Brockton, Carver, Duxbury, East Bridgewater, Halifax, Hanover, Hanson, Hingham, Hull, Kingston, Marshfield, Middleboro, Norwell, Pembroke, Plymouth, Rockland, Scituate, West Bridgewater, Whitman)

	Rates	Fringes
Bricklayer/Cement Mason.....	\$ 55.75	35.85

BRMA0003-025 02/01/2021

NEW BEDFORD CHAPTER

BARNSTABLE; BRISTOL (Acushnet, Darmouth, Fairhaven, Fall River, Freetown, New Bedford, Somerset, Swansea, Westport); DUKES; NANTUCKET; PLYMOUTH (Marion, Mattapoisett, Rochester, Wareham)

	Rates	Fringes
Bricklayer/Cement Mason.....	\$ 55.75	35.85

BRMA0003-033 02/01/2021

NEWTON CHAPTER

MIDDLESEX (Newton); NORFOLK (Dover, Needham, Wellesley)

	Rates	Fringes
Bricklayer, Plasterer.....	\$ 55.75	35.85

* CARP0056-001 08/01/2021

All of SUFFOLK COUNTY; and those areas of BARNSTABLE, BRISTOL, ESSEX, MIDDLESEX, NORFOLK, and PLYMOUTH COUNTIES situated INSIDE Boston Beltway (I-495) and North of Cape Cod Canal. ALL

of DUKES and NANTUCKET COUNTIES

	Rates	Fringes
PILEDRIVERMAN.....	\$ 50.74	33.66

* CARP0056-002 08/01/2021		

The areas of BARNSTABLE, BRISTOL, PLYMOUTH, and NORFOLK COUNTIES situated OUTSIDE Boston Beltway (I-495) and South of Cape Cod Canal

	Rates	Fringes
PILEDRIVERMAN.....	\$ 47.14	33.45

* CARP0056-003 08/01/2021		

Those areas of ESSEX and MIDDLESEX COUNTIES situated OUTSIDE Boston Beltway (I-495)

	Rates	Fringes
PILEDRIVERMAN.....	\$ 44.61	33.45

CARP0056-004 08/01/2020		

	Rates	Fringes
DIVER TENDER.....	\$ 49.07	35.57
DIVER.....	\$ 68.70	35.57

CARP0327-002 03/01/2020		

MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford, Somerville); NORFOLK (Brookline, Dedham, Milton); AND SUFFOLK COUNTIES

	Rates	Fringes
CARPENTER.....	\$ 50.64	29.30

CARP0339-002 03/01/2020		

BRISTOL (Attleborough, North Attleborough); ESSEX; MIDDLESEX (Except Belmont, Cambridge, Everett, Malden, Medford, Somerville); AND NORFOLK (Bellingham, Braintree, Canton, Cohasset, Foxboro, Franklin, Medfield, Medway, Millis, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham) COUNTIES

	Rates	Fringes
CARPENTER.....	\$ 42.40	29.10

CARP0346-001 03/01/2020		

NORFOLK (Braintree, Quincy, Cohasset, Weymouth, etc.) PLYMOUTH (Duxbury, Hanover, Hull, Hingham, Marshfield, Norwell, Pembroke Rockland, Scituate)

	Rates	Fringes
CARPENTER.....	\$ 42.40	29.10

CARP0624-002 09/01/2017		

DUKES; NANTUCKET

	Rates	Fringes
CARPENTER.....	\$ 46.43	28.35

CARP0624-006 09/01/2017		

BARNSTABLE; BRISTOL (Except Attleboro & North Attleboro);
 NORFOLK (Avon, Holbrook, Randolph, Stoughton); PLYMOUTH
 (Bridgewater, Kingston, Lakeville, Middleboro, Plymouth, S.
 Hanover, Whitman)

	Rates	Fringes
CARPENTER.....	\$ 39.28	27.90

CARP1121-001 01/06/2020		

SUFFOLK COUNTY

	Rates	Fringes
MILLWRIGHT.....	\$ 42.32	31.15

CARP1121-005 01/06/2020		

BARNSTABLE, BRISTOL, DUKES, ESSEX, MIDDLESEX, NANTUCKET,
 NORFOLK and PLYMOUTH COUNTIES

	Rates	Fringes
MILLWRIGHT.....	\$ 38.47	31.15

ELEC0096-001 09/06/2020		

MIDDLESEX (Ashby, Ashland, Ayer, Ft. Devens, Groton, Hopkinton,
 Hudson, Marlboro, Pepperell, Shirley, Stow, Townsend)

	Rates	Fringes
ELECTRICIAN.....	\$ 44.42	29.07
Teledata System Installer.....	\$ 31.54	27.27

* ELEC0099-001 06/01/2021

BRISTOL (Attleboro, North Attleboro, Seekonk)

	Rates	Fringes
ELECTRICIAN.....	\$ 43.61	54.71%
Teledata System Installer.....	\$ 31.21	13.1%+14.93

ELEC0103-002 03/01/2021

ESSEX (Amesbury, Andover, Boxford, Georgetown, Groveland, Haverhill, Lawrence, Merrimac, Methuen, Newbury, Newburyport, North Andover, Rowley, Salisbury, West Newbury); MIDDLESEX (Bedford, Billerica, Boxboro, Burlington, Carlisle, Chelmsford, Dracut, Dunstable littleton, Lowell, North Reading, Tewksbury, Tyngsboro, Westford, Wilmington)

	Rates	Fringes
ELECTRICIAN.....	\$ 55.41	33.84

ELEC0103-004 03/01/2021		

ESSEX (Beverly, Danvers, Essex, Gloucester, Hamilton, Ipswich, Manchester, Marblehead, Middleton, Peabody, Rockport, Salem, Topsfield, Wenham)

	Rates	Fringes
ELECTRICIAN.....	\$ 55.41	33.84

ELEC0103-005 03/01/2021		

ESSEX (Lynn, Lynnfield, Nahant, Saugus, Swampscott); MIDDLESEX (Acton, Arlington, Belmont, Cambridge, Concord, Everett, Framingham, Holliston, Lexington, Lincoln, Malden, Maynard, Medford, Melrose, Natick, Newton, Reading, Sherborn, Somerville, Stoneham, Sudbury, Wakefield, Waltham, Watertown, Wayland, Weston, Winchester, Woburn); NORFOLK (Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxboro, Franklino, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); PLYMOUTH (Hingham and Hull);SUFFOLK

	Rates	Fringes
ELECTRICIAN.....	\$ 55.41	33.84

ELEC0104-001 09/03/2017		

	Rates	Fringes
Line Construction:		
Cableman.....	\$ 38.45	18.42+A
Equipment Operator.....	\$ 38.45	22.50+A
Groundman.....	\$ 24.88	10.24+A
Lineman.....	\$ 45.23	25.71+A

A. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Day and Columbus Day, provided the employee has been employed 5 working days prior to any one of the listed holidays.

ELEC0223-002 09/01/2020

BARNSTABLE, BRISTOL (Except Attleboro, North Attleboro, Seekonk); DUKES; NANTUCKET; PLYMOUTH (Except Hingham and Hull Tws); NORFOLK (Avon, Halbrook, Randolph, Sloughton)

	Rates	Fringes
ELECTRICIAN.....	\$ 43.66	31.18%+13.15

 ENGI0004-009 06/01/2020

	Rates	Fringes
Power equipment operators:		
Group 1.....	\$ 49.33	29.75+a
Group 2.....	\$ 48.81	29.75+a
Group 3.....	\$ 32.72	29.75+a
Group 4.....	\$ 40.30	29.75+a
Group 5.....	\$ 23.13	29.75+a
Group 6.....	\$ 27.79	29.75+a

HOURLY PREMIUM FOR BOOM LENGTHS (Including Jib):

Over 150 ft.	+2.18
Over 185 ft.	+3.84
Over 210 ft.	+5.39
Over 250 ft.	+8.16
Over 295 ft.	+11.29
Over 350 ft.	+13.14

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

A. PAID HOLIDAYS: New Year's Day, Washington,s Birthday, Labor Day, Memorial Day, Independence Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day, Christmas Day

POWER EQUIPMENT OPERATORS CLASSIFICATIONS [HEAVY CONSTRUCTION]

GROUP 1: Power shovel; crane; truck crane; derrick; pile driver; trenching machine; mechanical hoist pavement breaker; cement concrete paver; dragline; hoisting engine; three drum machine; pumpcrete machine; loaders; shovel dozer; front end loader; mucking machine; shaft hoist; steam engine; backhoe; gradall; cable way; fork lift; cherry picker; boring machine; rotary drill; post hole hammer; post hole digger; asphalt plant on job site; concrete batching and/or mixing plant on job site; crusher plant on job site; paving concrete mixer; timber jack

GROUP 2: Sonic or vibratory hammer; grader; scraper; tandem scraper; bulldozer; tractor; mechanic - maintenance; York rake; mulching machine; paving screed machine;stationary steam boiler; paving concrete finishing machine; grout pump; portable steam boiler; portable steam generator; roller; spreader; asphalt paver; locomotives or machines used in place thereof; tamper (self propelled or tractor-draw); cal tracks; ballast regulator;rail anchor machine; switch tamper; tire truck

GROUP 3: Pumps (1-3 grouped); compressor; welding machines (1-3 grouped); generator; sighting plant; heaters (power driven, 1- 5); syphon-pulsometer; concrete mixer; valves controlling permanent plant air steam, conveyor, wellpoint system (operating)

GROUP 4: Assitant engineer (fireman)

GROUP 5: Oiler (other than truck cranes and gradalls)

GROUP 6: Oiler (on truck cranes and gradalls)

 IRON0007-001 09/16/2021

AREA 1: BRISTOL (Easton); ESSEX (Beverly,Gloucester,Lynn, Lynnfield, Manchester,Marblehead, Nahant, Rockport, Salem,

Saugus, Swampscott); MIDDLESEX (Arlington, Bedford, Belmont, Burlington, Cambridge, Carlisle, Concord, Dunstable, Everett, Framingham, Lexington, Lincoln, Malden, Maynard, Medford, Melrose, Natick, Newton, Reading, Sherborn, Somerville, Stoneham, Sudbury, Wakefield, Waltham, Watertown, Wayland, Weston, Winchester, Woburn); NORFOLK (Except Medway); PLYMOUTH (Abington, Bridgewater, Brocton, Duxbury, East Bridgewater, Halifax, Hanover, Hanson, Hingham, Hull, Kingston, Marshfield, Norwell, Pembroke, Plymouth, Plympton, Rockland, Scituate, West Bridgewater, Whitman); SUFFOLK

AREA 2: ESSEX (Amesbury, Andover, Boxford, Danvers, Essex, Georgetown, Hamilton, Haverhill, Ipswich, Lawrence, Merrimac, Methuen, Newbury, Newburyport, North Andover, Rowley, Salisbury, Topsfield, Wenham, West Newbury); MIDDLESEX (Action, Billerica, Chelmsford, Dracut, Groton, Groveland, Littleton, Lowell, Middleton, North Reading, Pepperell, Tewksbury, Tyngsboro, Westford, Wilmington)

	Rates	Fringes
IRONWORKER		
AREA 1.....	\$ 50.13	34.81
AREA 2.....	\$ 45.72	34.81

IRON0007-010 09/16/2021

MIDDLESEX (Ashby, Ashland, Ayer, Boxboro, Holliston, Hopkinton, Hudson, Marlboro, Shirley, Stow, Townsend); NORFOLK (Medway)

	Rates	Fringes
IRONWORKER.....	\$ 49.83	34.81

IRON0037-002 03/16/2021

BARNSTABLE; BRISTOL (Acushnet, Attleboro, Berkley, Dartmouth, Dighton, Fairhaven, Fall River, Freetown, Mansfield, New Bedford, North Attleboro, Norton, Raynham, Rehoboth, Seekonk, Somerset, Swansea, Taunton, Westport); DUKES; NANTUCKET; NORFOLK (Billingham, Franklin, Plainville, Wrentham); PLYMOUTH (Lakeville, Marion, Mattapoisett, Middleboro, Rochester, Wareham)

	Rates	Fringes
IRONWORKER.....	\$ 37.87	30.13

LABO0022-006 06/01/2018

SUFFOLK COUNTY (Boston, Chelsea, Revere, Winthrop, Deer & Nut Islands); MIDDLESEX COUNTY (Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn only); NORFOLK COUNTY (Brookline, Dedham, and Milton only)

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 38.00	24.10

GROUP 2.....	\$ 38.25	24.10
GROUP 3.....	\$ 38.75	24.10
GROUP 4.....	\$ 39.00	24.10
GROUP 5.....	\$ 21.50	24.10
GROUP 6.....	\$ 39.00	24.10

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; carpenter tenders; cement finisher tenders

GROUP 2: Asphalt raker; fence and guard rail erector; laser beam operator; mason tender; pipelayer; pneumatic drill operator; pneumatic tool operator; wagon drill operator

GROUP 3: Air track operator; block paver; rammer; curb setter

GROUP 4: Blaster; powderman

GROUP 5: Flagger

GROUP 6: Asbestos Abatement; Toxic and Hazardous Waste Laborers

LAB0022-012 06/01/2018

Counties of BARNSTABLE; BRISTOL; DUKES; ESSEX; NANTUCKET; PLYMOUTH; MIDDLESEX (With the exception of Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn); NORFOLK (With the exception of Brookline, Dedham, and Milton)

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 33.25	22.92
GROUP 2.....	\$ 33.50	22.92
GROUP 3.....	\$ 34.00	22.92
GROUP 4.....	\$ 34.25	22.92
GROUP 5.....	\$ 21.50	22.92
GROUP 6.....	\$ 34.25	22.92

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; carpenter tenders; cement finisher tenders

GROUP 2: Asphalt raker; fence and guard rail erector; laser beam operator; mason tender; pipelayer; pneumatic drill operator; pneumatic tool operator; wagon drilloperator

GROUP 3: Air track operator; block paver; rammer; curb setter; hydraulic & similar self powere drills

GROUP 4: Blaster; powderman

GROUP 5: Flagger

GROUP 6: Asbestos Abatement; Toxic and Hazardous Waste Laborers

	Rates	Fringes
Laborers:		
(FREE AIR OPERATION):		
SHIELD DRIVEN AND LINER		
PLATE IN FREE AIR)		
GROUP 1.....	\$ 39.40	21.80+a
GROUP 2.....	\$ 39.40	21.80+a
(OPEN AIR CASSONS,		
UNDERPINNING AND TEST		
BORING INDUSTRIES):		
TEST BORING & WELL DRILLING		
Driller.....	\$ 39.35	24.30+A
Laborer.....	\$ 37.95	24.30+A
(OPEN AIR CASSONS,		
UNDERPINNING AND TEST		
BORING INDUSTRIES):		
OPEN AIR CASSON,		
UNDERPINNING WORK & BORING		
CREW		
Bottom man.....	\$ 39.10	24.30+A
Laborers; Top man.....	\$ 37.95	24.30+A
(TUNNELS, CAISSON &		
CYLINDER WORK IN		
COMPRESSED AIR)		
GROUP 1.....	\$ 39.75	24.70+a
GROUP 2.....	\$ 42.30	24.70+a
GROUP 3.....	\$ 42.30	24.70+a
GROUP 4.....	\$ 42.30	24.70+a
GROUP 5.....	\$ 42.30	24.70+a
GROUP 6.....	\$ 44.30	24.70+a
CLEANING CONCRETE AND		
CAULKING TUNNEL (Both New		
& Existing)		
GROUP 1.....	\$ 39.40	21.80+a
GROUP 2.....	\$ 39.40	21.80+a
ROCK SHAFT, CONCRETE		
LINING OF SAME AND TUNNEL		
IN FREE AIR		
GROUP 1.....	\$ 36.85	21.80+a
GROUP 2.....	\$ 39.40	21.80+a
GROUP 3.....	\$ 39.40	21.80+a
GROUP 4.....	\$ 39.40	21.80+a
GROUP 5.....	\$ 41.40	21.80+a

LABORERS CLASSIFICATIONS for TUNNELS, CAISSON & CYLINDER WORK
IN COMPRESSED AIR

GROUP 1: Powder watchman; Top man on iron bolt; change house attendant

GROUP 2: Brakeman; trackman; groutman; tunnel laborer; outside lock tender; lock tender; guage tender

GROUP 3: Motorman, miner

GROUP 4: Blaster

GROUP 5: Mucking machine operator

GROUP 6: Hazardous Waste work within the ""HOT"" zone. (A premium of two dollars \$2.00 per hour over the basic wage rate.)

LABORERS CLASSIFICATIONS for (FREE AIR OPERATION): SHIELD DRIVEN AND LINER PLATE IN FREE AIR

GROUP 1: Miner; miner welder; conveyor operator; motorman; mucking machine operator; nozzle man; grout man-; pumps, shaft and tunnel steel and rodman; shield and erector arm operators, mole nipper, outside motorman, burner, TBM operator, safety miner; laborer topside; heading motormen; erecting operators; top signal men

GROUP 2: Brakeman; trackman

LABORERS CLASSIFICATIONS FOR CLEANING CONCRETE AND CAULKING TUNNEL (Both New & Existing)

GROUP 1: Concrete workers; strippers and form movers (wood & steel), cement finisher

GROUP 2: Form erector (wood & steel and all accessories)

LABORERS CLASSIFICATIONS for ROCK SHAFT, CONCRETE LINING OF SAME AND TUNNE IN FREE AIR

GROUP 1: Change house attendants

GROUP 2: Laborers, topside, bottom men (when heading is 50 ft. from shaft) and all other laborers

GROUP 3: Brakeman; trackman; tunnel laborers; shaft laborers

GROUP 4: Miner; cage tender; bellman

GROUP 5: Hazardous Waste work within the ""HOT"" zone. (A premium of two dollars \$2.00 per hour over the basic wage rate)

FOOTNOTE FOR LABORERS:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Patriot's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, and Christmas Day

LAB01421-001 06/01/2018

WRECKING LABORERS:

Rates Fringes

Laborers: (Wrecking)

Group 1.....	\$ 38.15	24.10
Group 2.....	\$ 38.90	24.10
Group 3.....	\$ 39.15	24.10
Group 4.....	\$ 34.15	24.10
Group 5.....	\$ 37.25	24.10
Group 6.....	\$ 38.15	24.10

Group 1: Adzeman, Wrecking Laborer.

Group 2: Burners, Jackhammers.

Group 3: Small Backhoes, Loaders on tracks, Bobcat Type Loaders, Hydraulic ""Brock"" Type Hammer Operators, Concrete Cutting Saws.

Group 4: Yardman (Salvage Yard Only).

Group 5: Yardman, Burners, Sawyers.

Group 6: Asbestos, Lead Paint, Toxic and Hazardous Waste.

PAIN0035-001 07/01/2019

BARNSTABLE BRISTOL; DUKES; ESSEX; NANTUCKET; PLYMOUTH
(Remainder of NORFOLK; MIDDLESEX AND SUFFOLK COUNTIES)

Rates Fringes

PAINTER

NEW CONSTRUCTION:

Bridge.....	\$ 50.36	30.25
Brush, Taper.....	\$ 39.86	30.25
Spray, Sandblast.....	\$ 41.26	30.25

REPAINT:

Bridge.....	\$ 50.66	30.90
Brush, Taper.....	\$ 37.92	30.25
Spray, Sandblast.....	\$ 39.32	30.25

PAIN0035-015 07/01/2019

MIDDLESEX (Cambridge, Everett, Malden, Medford, Somerville)
SUFFOLK COUNTY (Boston, Chelsea) NORFOLK COUNTY (Brookline)

Rates Fringes

PAINTER

NEW CONSTRUCTION:

Brush, Taper.....	\$ 45.65	30.25
Spray, Sandblast.....	\$ 47.05	30.25

REPAINT:

Bridge.....	\$ 50.66	30.90
Brush, Taper.....	\$ 43.71	30.25
Spray, Sandblast.....	\$ 45.11	30.25

PLAS0534-001 01/01/2020

ESSEX; MIDDLESEX; NORFOLK AND SUFFOLK COUNTY

Rates Fringes

CEMENT MASON/CONCRETE FINISHER...	\$ 43.00	37.66
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PLUM0004-001 03/01/2021

MIDDLESEX (Ashby, Ayer-West of Greenville branch of Boston and
Maine Railroad, Ft. Devens, Groton, Shirley, Townsend)

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 47.85	26.92

PLUM0012-001 03/01/2019		

ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Manchester, Marblehead, Merrimac, Methuen, Middleton, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Topsfield, Wenham, West Newbury)

	Rates	Fringes
PLUMBER.....	\$ 52.61	29.93

PLUM0012-003 03/01/2019		

ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Manchester, Marblehead, Merrimac, Methuen, Middleton, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Topsfield, Wenham, West Newbury)

	Rates	Fringes
Plumber, Pipefitter, Steamfitter.....	\$ 52.61	29.93

PLUM0012-006 03/01/2019		

ESSEX (Lynn, Lynnfield, Nahant, Saugus, and Swampscott); MIDDLESEX (Acton, Arlington, Ashland, Ayer - except W. of Greenville Branch of Boston & Maine RR, Bedford, Belmont, Billerica, Boxboro, Burlington, Cambridge, Carlisle, Chelmsford, Concord, Dracut, Dunstable, Everett, Framingham, Hudson, Holliston, Hopkinton, Lexington, Lincoln, Littleton, Lowell, Malden, Marlboro, Maynard, Medford, Melrose, Natick, Newton, North Reading, Pepperell, Reading, Sherborn, Somerville, Stoneham, Stow, Sudbury, Tewksbury, Tyngsboro, Wakefield, Waltham, Watertown, Wayland, Westford, Wilmington, Winchester, Woburn); NORFOLK (Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxboro, Franklin, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); PLYMOUTH (Hingham, Hull, Scituate); SUFFOLK

	Rates	Fringes
PLUMBER.....	\$ 56.69	29.93

PLUM0051-005 09/01/2018		

BARNSTABLE; BRISTOL; DUKES; NANTUCKET; NORFOLK (Avon, Holbrook, Randolph, Stoughton) PLYMOUTH (Remainder of County)

Rates	Fringes
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Plumbers and Pipefitters.....\$ 42.04 29.91

PLUM0537-001 03/01/2021

MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Wakefield, Winchester and Woburn); NORFOLK (Bellingham, Braintree, Brookline, Canton Cashasset, Dedham, Foxboro, Franklin, Millis, Milton, Sharon, Walpole, Westwood, and Wrentham); PLYMOUTH (Hingham, Hull, Scituate); ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Lynn, Lynnfield, Manchester, Marblehead, Merrimac, Methuen, Middleton, Nahant, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Saugus, Swampscott, Topsfield, Wenham, West Newbury)

Rates Fringes

PIPEFITTER.....\$ 52.75 34.97

TEAM0379-001 08/01/2020

Rates Fringes

Truck drivers:

Group 1.....\$ 34.98 26.6325+A+B
Group 2.....\$ 35.15 26.6325+A+B
Group 3.....\$ 35.22 26.6325+A+B
Group 4.....\$ 34.44 26.6325+A+B
Group 5.....\$ 35.44 26.6325+A+B
Group 6.....\$ 35.73 26.6325+A+B
Group 7.....\$ 36.02 26.6325+A+B

POWER TRUCKS \$.25 DIFFERENTIAL BY AXLE
TUNNEL WORK (UNDERGROUND ONLY) \$.40 DIFFERENTIAL BY AXLE
HAZARDOUS MATERIALS (IN HOT ZONE ONLY) \$2.00 PREMIUM

TRUCK DRIVERS CLASSIFICATIONS

- Group 1: Station wagons; panel trucks; and pickup trucks
- Group 2: Two axle equipment; & forklift operator
- Group 3: Three axle equipment and tireman
- Group 4: Four and Five Axle equipment
- Group 5: Specialized earth moving equipment under 35 tons other than conventional type trucks; low bed; vachual; mechanics, paving restoration equipment
- Group 6: Specialized earth moving equipment over 35 tons
- Group 7: Trailers for earth moving equipment (double hookup)

FOOTNOTES:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day and Christmas Day

B. PAID VACATION: Employees with 4 months to 1 year of service receive 1/2 day's pay per month; 1 week vacation for 1 - 5 years of service; 2 weeks vacation for 5 - 10 years of service; and 3 weeks vacation for more than 10 years of service

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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 clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

ATTACHMENT C

Massachusetts Equal Employment Opportunity Package

**CONSTRUCTION BID SPECIFICATIONS
SPECIAL PROVISIONS FOR DISADVANTAGED BUSINESS ENTERPRISES
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF MUNICIPAL SERVICES**

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM BACKGROUND

In May 2008 a United States Environmental Protection Agency (EPA) rule became effective that changed the Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) Program to a Disadvantaged Business Enterprise (DBE) Program.

For firms to qualify under the old MBE/WBE program they needed to be socially disadvantaged and had to be certified by the Supplier Diversity Office (SDO). Under the new DBE rule, the firms must be both **socially** and **economically** disadvantaged, **citizens of the United States**, and certified as a DBE. Women and certain minorities are presumed to be socially disadvantaged. The economic disadvantage is measured by the owner's initial and continuing personal net worth of less than \$1,320,000.

Because the Clean Water Act requires the use of MBEs and WBEs, these firms will still be utilized in the State Revolving Fund (SRF) Loan Program, but they must also be certified as DBEs.

SDO will continue to be the certifying agency for the SRF program. SDO certifies firms under the federal Department of Transportation program, which is acceptable for use in the SRF program. An additional form has been added to the DBE package to verify that DBEs are owned or controlled by United States citizens.

BID SPECIFICATIONS

I. In this contract, the percentage of business activity to be performed by disadvantaged business enterprise(s) (DBE) shall not be less than the following percentages of the total contract price or the percentage submitted by the contractor in the Schedule of Participation, whichever is greater:

Disadvantaged MBE (D/MBE) 5.9%

Disadvantaged WBE (D/WBE) 6.4%

II. DEFINITIONS

For the purpose of these provisions, the following terms are defined as follows:

- A. Awarding Authority – Entity that awards a prime contract under a State Revolving Fund loan.
- B. Bidder - Any individual, partnership, joint venture, corporation, or firm submitting a price, directly or through an authorized representative, for the purpose of performing construction or construction related activities under a Contract.
- C. Certified DBE – A DBE certified by the United States Small Business Administration, under its 8(a) Business Development Program (13 CFR part 124, subpart A) or its Small Disadvantaged Business Program (13 CFR part 124, subpart B); The United States Department of Transportation (DOT), under its regulations for Participation by DBEs in DOT programs (49 CFR parts 23 and 26); or SDO in accordance with 40 CFR part 33; provided that the certification meets the U.S. citizenship requirement under 40 CFR §33.202 or §33.203.
- D. Compliance Unit - A subdivision of MassDEP’s Affirmative Action Office designated to ensure compliance under these provisions.
- E. Contractor - Any business that contracts or subcontracts for construction, demolition, renovation, survey, or maintenance work in the various classifications customarily used in work and that is acting in this capacity under the subject contract.
- F. Construction Related Services - Those services performed at the work site ancillary to, and/or in support of, the construction work, such as hauling, trucking, equipment operation, surveying or other technical services, etc. For the purposes hereof, supply and delivery of materials (e.g. pre-cast concrete elements) to the site by a supplier who has manufactured those goods, or substantially altered them before re-sales shall be considered as “construction related services
- G. Construction Work - The activities at the work site, or labor and use of materials in the performance of constructing, reconstructing, erecting, demolishing, altering, installing, disassembling, excavating, etc, all or part of the work required by the Contract Documents.
- H. Disadvantaged Business Enterprise (DBE) - An entity owned or controlled by a socially and economically disadvantaged individual as described by Public Law 102-389 (42 U.S.C. 4370d) or an entity owned and controlled by a socially and economically disadvantaged individual as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note); a Small Business Enterprise (SBE); a Small Business in a Rural Area (SBRA); or a Labor Surplus Area Firm (LAF), a Historically Underutilized Business (HUB) Zone Small Business Concern, or a concern under a successor program.

- I. Equipment Rental Firm - A firm that owns equipment and assumes actual and contractual responsibility for renting said equipment to perform a useful function of the work of the contract consistent with normal industry practice
- J. Good Faith Efforts – The race and/or gender neutral measures described in 40 CFR 33, subpart C.
- K. HUBZone - A historically underutilized business zone, which is an area located within one or more qualified census tracts, qualified metropolitan counties, or lands within the external boundaries of an Indian reservation.
- L. HUBZone small business concern - A small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.
- M. Joint Venture - An agreement between SDO certified DBE and a non-DBE or non-DBE controlled enterprise.
1. A pairing of companies will be considered a DBE joint venture if the SDO certified DBE which is part of the relationship has more than 51% of the profits that are derived from that project.
 2. A joint venture between a certified DBE subcontractor and a non DBE subcontractor, in which the DBE for that proportion of the joint venture's contract equal to the DBE participation in the joint venture.
 3. Whenever a general bid is filed by a joint venture with a certified DBE participant in the joint venture that does not exercise more than 51% control over management and profits, that joint venture shall be entitled to credit as a DBE for that portion of the joint venture's contract equal to the DBE participation in the joint venture. Minority As deemed by SDO.
- N. Labor surplus area firm (LSAF) - A concern that together with its first-tier subcontractors will perform substantially in labor surplus areas (as identified by the Department of Labor in accordance with 20 CFR part 654). Performance is substantially in labor surplus areas if the costs incurred under the contract on account of manufacturing, production or performance of appropriate services in labor surplus areas exceed 50 percent of the contract price.
- O. Letter of Intent – Certified document signed by the principal(s) of the DBE with respect to the work to be performed under contract.
- P. Local Government Unit (LGU) – A city, town, or municipal district which applies for a loan under the Clean Water Trust Program.
- Q. Material Supplier – A vendor certified by SDO as a DBE in sales to supply industry from an established place of business or source of supply, and that vendor.

1. Manufactures goods from raw materials, or substantially utilizes them in the work, or substantially alters them before resale, entitling the general contractor to DBE credit for 100% of the purchase order.
 2. Provides and maintains a storage facility for materials utilized in the work, entitling the general contractor to DBE credit for 10% of the purchase order
- R. Minority and Women Business Enterprise (M/WBE) – Any business concern certified by the SDO as a bona-fide M/WBE. A bona-fide M/WBE is a business whose minority group/women ownership interests are real, which have at least 51% ownership and control over management and operation.
- S. Percent of Total Price – Is the percentage to be paid to the DBE, work they perform, as compared to the total bid price
- T. Recipient - An agency, person or political subdivision which has been awarded or received financial assistance by the Trust or MassDEP.
- U. Small business, small business concern or small business enterprise (SBE) - A concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR part 121.
- V. Small business in a rural area (SBRA) - A small business operating in an area identified as a rural county with a code 6-9 in the Rural-Urban continuum Classification Code developed by the United States Department of Agriculture in 1980.
- W. SDO – The Supplier Diversity Office.
- X. Subcontractor – A company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.
- Y. Total Contract Price – The total amount of compensation to be paid for all materials, work or services rendered in the performance of the contract
- Z. Trust – The Massachusetts Clean Water Trust established by M.G.L. c.29.

III. REQUIREMENTS FOR CONTRACT AWARD

DBE packages must be submitted by the two lowest bidders on the project. Following bid opening, the LGU shall notify the two lowest bidders to submit DBE packages to the LGU or the LGUs consultant, as directed. By the close of business on the third business day after notification, the two lowest bidders, including a bidder who is a MBE, WBE or DBE, shall submit the following information:

- A. A Schedule of Participation (Form EEO-DEP-190). The Schedule of Participation shall list those certified DBEs the bidder intends to use in fulfilling the contract obligations, the nature of the work to be performed by each certified DBE subcontractor and the total price they are to be paid.
 - 1. A listing of bona-fide services such as a professional, technical, consultant or managerial services, assistance in the procurement of essential personnel, facilities, equipment, materials, or supplies required for performance of the contract, and reasonable fees or commissions charged.
 - 2. A listing of haulers, truckers, or delivery services, not the contractors, including reasonable fees for delivery of said materials or supplies to be included on the project.
- B. A Letter of Intent (Form EEO-DEP-191) for each DBE the bidder intends to use on the project. The Letter of Intent shall include, among other things, a reasonable description of the work the certified DBE is proposing to perform and the prices the certified DBE proposes to charge for the work. A Letter of Intent shall be jointly signed by the certified DBE and the General Contractor who proposes to use them in the performance of the Contract.
- C. Each DBE must also sign and return the DBE Certification of United States Citizenship form to verify that the firm is owned or controlled by a United States citizen.
- D. The SDO "DBE Certification" as prepared by each certified DBE.
- E. A completed Request for Waiver form and backup documentation should the goals not be achieved (See IV below).

IV. REQUIREMENTS FOR MODIFICATION OR WAIVERS.

The bidder shall make every possible effort to meet the minimum requirements of certified DBE participation. If the percentage of DBE participation submitted by the bidder on its Schedule of Participation (EEO-DEP-190) does not meet the minimum requirements, the bid may be rejected by the Awarding Authority and found not to be eligible for award of the contract.

In the event that the bidder is unable to meet the minimum requirements of DBE participation, the bidder shall submit with his/her submittal required in Section III. Requirement of Contract Award a Request for Waiver form (EEO-DEP-490). The Awarding Authority shall review the waiver request to determine if the request should proceed. If approved by the Awarding Authority, the Awarding Authority shall submit the waiver request and supporting documentation, with a recommendation to MassDEP within five days of receipt of the Request for Waiver. MassDEP in conjunction with the project manager, Compliance Unit, will determine whether the waiver will be granted.

The waiver request shall include detailed information as specified below to establish that the bidder has made a good faith effort to comply with the minimum requirements of DBE participation specified in Part I. In addition, the bidder must show that such efforts were undertaken well in advance of the time set for opening of bids to allow adequate response. A waiver request shall include the following:

- A. A detailed record of the effort made to contact and negotiate with the certified DBE, including, but not limited to:
 - 1. names, addresses and telephone numbers of all such companies contacted;
 - 2. copies of written notices(s) which were sent to certified DBE potential subcontractors, prior to bid opening;
 - 3. a detailed statement as to why each subcontractor contacted (i) was not willing to do the job or (ii) was not qualified to perform the work as solicited; and
 - 4. in the case(s) where a negotiated price could not be reached the bidder should detail what efforts were made to reach an agreement on a competitive price;
 - 5. copies of advertisements, dated not less than ten (10) days prior to bid opening, as appearing in general publications, trade-oriented publications, and applicable minority/ women-focused media detailing the opportunities for participation.
- B. MassDEP may require the bidder to produce such additional information as it deems appropriate.
- C. No later than fifteen (15) days after MassDEP receives all required information and documentation, it shall make a decision in writing, whether the waiver is granted and shall provide that determination to the bidder and Awarding Authority. If the waiver request is denied, the facts upon which a denial is based will be set forth in writing. If the waiver request is denied, the bid shall be rejected by the Awarding Authority, or the contract will be determined ineligible for SRF funding.

If a Request for Waiver is denied by MassDEP and the bid is rejected by the Awarding Authority, the Awarding Authority may then move to the second bidder on the project. At the Awarding Authority's discretion, it may collect a DBE package from the third bidder on the project.

V. DISADVANTAGED BUSINESS ENTERPRISES PARTICIPATION

A. Reporting Requirements

1. The Contractor's utilization of certified DBEs will be documented based upon submittal of the LGU's monthly Payment Requisitions as reported on Form-2000. The Form-2000 form will show all certified DBEs performing work on the project regardless of any billing activity for that month. For auditing and accounting purposes, the Contractor periodically may be required to submit copies of canceled checks verifying that payments have been made to the certified DBE as listed on the schedule. The Contractor may also be required to submit current schedules on utilization of all DBEs to indicate when their services will commence and be billed for.
2. During the life of the Contract, the Contractor's fulfillment of the percentage requirements in Part I shall be determined with reference to the Contract price as follows:
 - A. If the price in the Contract executed exceeds the base bid price (e.g., because an alternate was selected or because unit prices were used in awarding the Contract), the Contractor shall submit for approval by MassDEP a revised Schedule of Participation by certified DBEs satisfying the percentage requirements and such other information concerning additional DBE participation as may be requested by MassDEP.
 - B. If the Contract price increases after execution due to change orders or other adjustments, MassDEP may require the Contractor to subcontract additional work or to purchase additional goods and services from certified DBEs up to the percentages stated in Part I.

VI. COMPLIANCE

- A. If the Schedule or any of the Letters of Intent are materially incomplete or not submitted in a timely manner, the LGU may rescind its vote of award; treat the bid informal as to substance and reject the bid. If the bid is incomplete in any other respect than the Schedule the LGU with the approval of MassDEP may waive the informalities upon satisfactory completion of the required information by the Contractor and the certified DBE as applicable.
- B. If the LGU finds that the percentage of certified DBE participation submitted by the contractor on its Schedule does not meet the percentage requirement in Part I, it shall rescind its vote of award and find such contractor not to be eligible for award of the contract.

- C. The Contractor shall not perform with its own organization, or subcontract to any other primary or subcontractor any work designated for the named certified DBEs on the schedule submitted by the Contractor under Part III without the approval of MassDEP.
- D. A Contractor's compliance with the percentage requirement in Part I shall continue to be determined by reference to the required percentage of the total contract price as stated in Section I even though the total of actual contract payments may be greater or less than the bid price.
- E. If the Contractor for reasons beyond its control cannot comply with Part III in accordance with the Schedule submitted under Part III, Section B, the contractor must submit to MassDEP as soon as they are aware of the deficiency, the reason for its inability to comply. Proposed revisions to the Schedule stating how the contractor intends to meet its obligations under these conditions must be submitted within ten (10) working days of notification.
- F. If the Contractor becomes aware by any means that that DBE is no longer certified, the Contractor shall immediately notify MassDEP. The Contractor shall use good faith efforts to retain a substitute certified DBE.
- G. If a certified DBE listed by the bidder in its Schedule of M/WBE contractors fails to obtain a performance or payment bond requested by the bidder, said failure shall not entitle the bidder to avoid the requirements of Part III (A). After a bidder has been awarded the contract, he shall not change the certified DBE listed in its Schedule at the time of the award or make any other such substitutions without the written approval of MassDEP.

VII. SANCTIONS

- A. If the Contractor does not comply with the terms of these Special Provisions, the Awarding Authority may (1) suspend any payment for the work that should have been performed by a certified DBE pursuant to the schedule, or (2) require specific performance of the Contractor's obligation by requiring the Contractor to subcontract with a DBE for any contract or specialty item at the contract price established for that item in the proposal submitted by the Contractor.
- B. To the extent that the Contractor has not complied with the terms of these Special Provisions, the Awarding Authority may retain in connection with Estimates and Payments an amount determined by multiplying the bid price of this contract by the percentage in Section I, less the amount paid to DBE's for work performed under the contract and any payments already suspended under VII A.
- C. The Awarding Authority may suspend, terminate or cancel this contract, in whole or in part, or may call upon the Contractor's surety to perform all terms and conditions in the contract, unless the contractor is able to demonstrate his compliance with the terms

of these Special Provisions, and further deny to the Contractor, the right to participate in any future contracts awarded by the Awarding Authority for a period of up to three years.

- D. In any proceeding involving the imposition of sanctions by the Awarding Authority, no sanctions shall be imposed if the Awarding Authority finds that the contractor has taken every possible measure to comply with these Special Provisions or that some other justifiable reason exists for waiving these Special Provisions in whole or in part.
- E. The contract shall provide such information as is necessary in the judgment of the Awarding Authority to ascertain its compliance with the terms of these Special Provisions.
- F. A contractor shall have the right to request suspension of any sanctions imposed under this section upon demonstrating that he is in compliance with these Special Provisions.

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
 MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF MUNICIPAL SERVICES

SCHEDULE OF PARTICIPATION FOR SRF CONSTRUCTION

Project Title: _____ **Project Location:** _____

Disadvantaged Minority Business Enterprise Participation in the SRF Loan Work

Name & Address of D/MBE	Nature of Participation	Dollar Value of Participation
1.		
2.		
3.		
Total D/MBE Commitment:		\$
Percentage D/MBE Participation = (Total D/MBE Commitment) / (Bid Price) =		%

Disadvantaged Women Business Enterprise Participation in the SRF Loan Work

Name & Address of D/WBE	Nature of Participation	Dollar Value of Participation
1.		
2.		
3.		
Total D/WBE Commitment:		\$
Percentage D/WBE Participation = (Total D/WBE Commitment) / (Bid Price) =		%

The Bidder agrees to furnish implementation reports as required by MassDEP to indicate the D/MBEs and D/WBE(s) which it has used or intends to use. Breach of this commitment constitutes a breach of the contract.

Name of Bidder: _____

Date: _____ By: _____
Signature

NOTE: Participation of a DBE may be counted in only their certified category; the same dollar participation cannot be used in computing the percentage of D/MBE participation and again of D/WBE participation.

LETTER OF INTENT FOR SRF CONSTRUCTION

This form is to be completed by the D/MBE and D/WBE and must be submitted by the Bidder no later than close of business on the third business day after notification by the LGU. A separate form must be completed for each D/MBE and D/WBE involved in the project.

Project Title: _____ Project Location: _____

TO: _____
(Name of Bidder)

FROM: _____
(Please Indicate Status D/MBE or D/WBE)

° I/we intend to perform work in connection with the above project as (check one):

- | | |
|---|--|
| <input type="checkbox"/> An individual | <input type="checkbox"/> A partnership |
| <input type="checkbox"/> A corporation | <input type="checkbox"/> A joint venture with: _____ |
| <input type="checkbox"/> Other (explain): _____ | |

° It is understood that if you are awarded the contract, you intend to enter into an agreement to perform the activity described below for the prices indicated.

DBE PARTICIPATION

Description of Activity	Date of Project Commencement	\$ Amount	% Bid Price
		\$	%

° The undersigned certify that they will enter into a formal agreement upon execution of the contract for the above referenced project.

BIDDER		DBE	
(Authorized Original Signature)	Date	(Authorized Original Signature)	Date
ADDRESS:		ADDRESS:	
TELEPHONE #:		TELEPHONE #:	
FEIN:		FEIN:	
EMAIL ADDRESS:		EMAIL ADDRESS:	

ORIGINALS:

- ° Compliance Mgr. City/Town Project Location
- ° DEP Program Manager for DEP's AAO Director

*** Attach a copy of current (within 2 years) DBE Certification**

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DBE CERTIFICATION OF UNITED STATES CITIZENSHIP

For the SRF program, under the EPA Disadvantage Business Enterprise (DBE) Rule, a DBE must be owned or controlled by a socially and economically disadvantaged person that is also a **citizen of the United States** (See 40 CFR 33.202). “Ownership” is defined at 13 CFR 124.105 and “control” is defined at 13 CFR 124.106.

DBEs are certified for the SRF program through the Supplier Diversity Office using the federal Department of Transportation (DOT) DBE rules. EPA allows the use of DBEs certified under the DOT rules as long as they are also United States citizens. To ensure compliance with the EPA rule, MassDEP must verify United States citizenship through the completion of the following form for each DBE used on the project.

SRF Project Number _____

Contract Number _____

Contract Title _____

DBE Subcontractor _____

The undersigned, on behalf of the above named DBE subcontractor, hereby certifies that the DBE firm is either owned or controlled by a person or persons that are citizens of the United States.

Printed Name and Title of DBE Signatory

DBE Signature

Date

DISADVANTAGED BUSINESS ENTERPRISE
PROGRAM DBE SUBCONTRACTOR PARTICIPATION
FORM

The United States Environmental Protection Agency (EPA) requires that this form be provided to all subcontractors on the project. At the option of the subcontractor, this form may be filled out and submitted directly to the EPA DBE Coordinator.

NAME OF SUBCONTRACTOR	PROJECT NAME
ADDRESS	CONTRACT NO.
TELEPHONE NO.	E-MAIL ADDRESS
PRIME CONTRACTOR NAME:	

Please use the space below to report any concerns regarding the above EPA-funded project (e.g., reason for termination by prime contractor, late payment, etc.).

CONTRACT ITEM NO.	ITEM OF WORK OR DESCRIPTION OF SERVICES RECEIVED FROM THE PRIME CONTRACTOR	AMOUNT SUBCONTRACTOR WAS PAID BY PRIME CONTRACTOR
_____ Subcontractor Signature		_____ Title/Date

REQUEST FOR WAIVER FOR SRF CONSTRUCTION

Upon exhausting all known sources and making every possible effort to meet the minimum requirements for DBE participation, the Bidder may seek relief either partially or entirely from these requirements by submitting a completed waiver package by the close of business on the third business day after notification by the LGU. Failure to comply with this process shall be cause to reject the bid thereby rendering the Bidder not eligible for award of the contract.

General Information

Project Title: _____ Project Location: _____
Bid Opening (time/date) _____
Bidder: _____
Mailing Address: _____
Contact Person: _____ Telephone No. _____

Minimum Requirements

The bidder must demonstrate that good faith efforts were undertaken to comply with the percentage goals as specified. The firm seeking relief must show that such efforts were taken appropriately in advance of the time set for opening bid proposals to allow adequate time for response(s) by submitting the following:

- A. A detailed record of the effort made to contact and negotiate with disadvantaged minority and/or woman owned businesses, including:
 - 1. names, addresses, telephone numbers and contact dates of all such companies contacted;
 - 2. copies of written notice(s) which were sent to DBE potential subcontractors prior to bid opening;
 - 3. a detailed statement as to why each subcontractor contacted (i) was not willing to do the job or (ii) was not qualified to perform the work as solicited; and
 - 4. in the case(s) where a negotiated price could not be reached the bidder should detail what efforts were made to reach an agreement on a competitive price.
 - 5. copies of advertisements, dated not less than ten (10) days prior to bid opening, as appearing in general publications, trade-oriented publications, and applicable minority/women-focused media detailing the opportunities for participation;

- B. MassDEP may require the bidder to produce such additional information as it deems appropriate.
- C. No later than fifteen (15) days after submission of all required information and documentation, MassDEP shall make a determination, in writing, whether the waiver request is granted and shall provide that determination to the bidder and Awarding Authority. If the waiver request is denied, the facts upon which a denial is based will be set forth in writing.

CERTIFICATION

The undersigned herewith certifies that the above information and appropriate attachments are true and accurate to the best of my knowledge and that I have been authorized to act on behalf of the bidder in this matter.

(authorized original signature)

DATE

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
 MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF MUNICIPAL SERVICES

STATE REVOLVING FUND LOAN PROGRAM – SCHEDULE OF SUBCONTRACTOR PARTICIPATION

Local Governmental Unit _____
 Project Name _____
 SRF Identification Number _____
 General Contractor _____
 Contract Value _____

The United States Environmental Protection Agency (EPA) requires that all SRF borrowers develop and maintain a list of all MBE/WBE and non MBE/WBE subcontractors on the project.
 This form must be completed and returned to MassDEP within 90 days of award of the contract.

Subcontractor	Point of Contact	Mailing Address	Telephone Number	E-Mail Address	MBE	WBE	DBE	Subcontract Value

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF RESOURCE PROTECTION
DIVISION OF MUNICIPAL SERVICES POLICIES

The Division of Municipal Services (DMS) has established the following policies for all Division financially-assisted projects.

POLICY MEMORANDUM NO. CG-1

EASEMENTS AND RIGHTS OF WAY

Prior to the approval of financial assistance for construction, the owner shall obtain and shall thereafter retain, a fee simple or such estate or interest in the site of construction and rights of access as will assure undisturbed use and possession for the purpose of construction and operation for the estimated life of the project. The Division may refuse to approve financial assistance until it has received from the owner sufficient assurances that such interests have been obtained. Unless the Division otherwise notifies the owner, the certificate (under pains and penalties of perjury) of the owner's legal representative shall constitute such sufficient assurance.

Additional cost which result from interruptions of construction or extensions of contract time caused by the owner's failure to obtain the necessary interests in land shall be ineligible for financial assistance, and all such additional costs shall be borne by the owner.

POLICY MEMORANDUM NO. CG-2

PERMITS

The owner shall be responsible for identifying and obtaining all federal, state, local and railroad permits required by the nature and location of construction, including but not limited to building construction permits and permits for street and highway cuts and openings, and all such permits shall be listed in a separate permits section of the contract documents. To the extent possible, such permits shall be obtained by the owner prior to the solicitation of bids for construction, and copies of all permits so obtained shall be included in the said permits section. The status of the application for each permit, including the permit conditions, and costs, not obtained prior to the solicitation of bids shall also be indicated in the contract documents permits section. The Division may refuse to approve financial assistance for construction unless and until it has received from the owner sufficient assurances that all necessary permits have been or will be obtained prior to the commencement of construction.

The contractor shall be responsible for obtaining all permits required of his equipment, work force, or particular operations (such as blasting) in the performance of the contract and not otherwise specified in the two preceding paragraphs as to be obtained by the owner. These permit fees shall be paid by the contractor.

The owner shall be responsible for the payment of all other permit fees required by the construction.

The following permits shall not be eligible for financial participation by the Department of Environmental Protection (DEP).

- Permits and insurance for construction in railroads' rights of way;
- Building permits;
- Permits for opening public streets and other public or municipal rights of way;
- Permits for the use of explosives;
- Permits for the disposal of waste materials;
- Permits and fees for connecting to municipal utilities.

Permits required by extraordinary circumstances and not specifically excluded from eligibility above may be eligible for DEP participation. For such permits to be so eligible, the owner or his representative must notify the DEP project engineer in advance of obtaining such permit and receive from the engineer specific agreement that such permit will be eligible for DEP participation. Eligibility for such participation will not be made retroactively.

Additional costs which result from interruptions of construction or extensions of contract time resulting from the owner's or the contractor's failure to obtain the necessary permits may be ineligible for participation.

POLICY MEMORANDUM NO. CG-3

FIELD CONTROLS

The Owner shall be responsible for indicating on the contract drawings all easement limits and all property and other control lines for locating the principal component parts of the work together with those elevations and bench marks used in the design of the work, all hereinafter referred to as "field controls". Where easement and property limits have not previously been established in the field, the owner shall be responsible for establishment of such limits. From the information provided by the Owner, unless otherwise specified, the Contractor shall develop and make all layouts required for construction, such as slope stakes, batter boards, stakes for pipe locations and other working points, lines, elevations and cut sheets.

Whenever he has reason to believe that an error exists or whenever he is otherwise unable to locate the field controls, the contractor shall promptly notify the owner and the owner's engineer of such error with appropriate documentation.

POLICY MEMORANDUM NO. CG-4

RECORD DRAWINGS:

The Owner shall be responsible for the preparation of all record drawings required by this contract. This responsibility may be delegated to the Owner's representative. The responsibility for preparation of record drawings shall not be delegated or transferred to the contractor. They may use the contractor's and sub-contractor's certified AS BUILT drawings along with their own marked up set in the preparation of the Record Drawings.

Division approved contract drawings shall be revised upon completion of the contract to reflect any changes made and/or final quantities, as appropriate.

POLICY MEMORANDUM NO. CG-5

PLAN SCALE

Unless otherwise approved in advance by the Division, the horizontal scale for construction plans for non-structural facilities shall be 1" = 40'. A larger horizontal scale shall be used where appropriate to show sufficient detail to construct the project. The vertical scale for construction plans for non-structural facilities shall be 1" = 4'. Based on the best information available at the time of their preparation, the location of underground utilities and support structures for overhead utilities shall be shown on the plans.

Unless otherwise exempted in advance by the Division, construction plans shall be updated whenever the date of the advertisement for bids for the construction of such facilities is more than one year after the date of approval by the Division or EPA; and in the case of approval by both such agencies, the later approval date shall be used in determining the need for update.

The consulting engineer shall receive adequate compensation for updating plans and specifications, and such additional cost shall be eligible for assistance to the extent not otherwise prohibited by USEPA and Division regulations and program guidance.

All revision, or review without need for revision, shall be noted and dated on the plans prior to advertisement of the project for bid.

POLICY MEMORANDUM NO. CG-6

BORINGS LOGS

All soil borings shall be taken as close as practicable to the construction line, and the location of all such borings shall be clearly indicated on the contract drawings. The plan view shall show the location and boring number of each boring. The profile view shall show the location, elevation, and depth of each soil boring, the location of each change in soil stratum, the groundwater level, and the average of blow counts at each five foot interval. As a minimum, boring logs to be submitted with the plans and specifications shall show the name of the company taking the borings, the soil classification, the number of blows per foot of penetration, the groundwater elevation, and the date on which the borings were taken.

As part of the submission of plans and specification for approval, the owner's representative shall include written justification for the lesser frequency and depth of borings where their interval is more than approximately 300' or their depth is less than 50% below depth of pipe invert.

POLICY MEMORANDUM NO. CG-7

BREAKDOWN OF BID ITEMS

The following items shall, where applicable, be listed separately in the bid documents.

1. Mobilization
2. Pavement
 - a. Municipal
 - i. temporary
 - ii. permanent
 - b. State
 - i. temporary
 - ii. permanent
4. Rock-Excavation
5. Wood or steel sheeting left in place
6. Excavation of unsuitable materials below grade.
7. Select and/or borrow material
8. Dewatering
9. Special Dewatering (coffer dam)

3. Concrete cradle or encasement
(to be identified where applicable)

Mobilization costs are the costs of initiating the contract, exclusive of the cost of materials. Payment for mobilization shall be a lump sum at the price bid for this item in the proposal and shall be payable when the contractor is operational on the site. For purposes of this policy, “operational” shall mean the substantial commencement of work on site.

The lump sum price bid for mobilization shall not exceed five per centum (5%) of the total amount of the bid.

POLICY MEMORANDUM NO. CG-8

PAVEMENT

All roads and trenches therein shall be refilled and repaved in accordance with specifications provided by the owner in the contract documents. Please note that this policy may be excludable on federally assisted projects where bid alternative items may be required (i.e. trench width vs. full width pavement). You are advised to seek project specific clarification.

Loan eligibility shall be limited to the following:

- A. Where the depth of the pipe invert is 0 to 8’, the maximum pavement widths which shall be eligible for financial assistance are as follows:

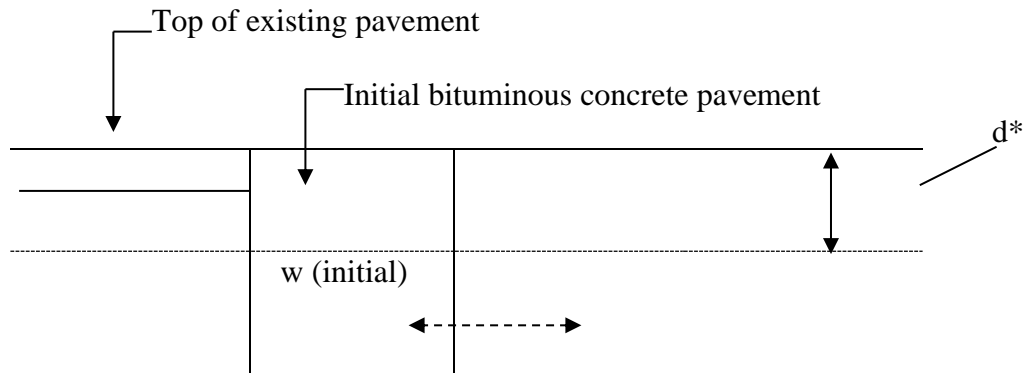
<u>Nominal Pipe Diameter</u>	<u>Maximum Eligible Widths</u>	
	<u>Initial Pavement</u>	<u>Permanent Trench</u>
0-24”	6’-6”	8’-6”

Where the nominal pipe diameter is greater than 24” the maximum eligible width for initial re-paving shall be the nominal diameter of the pipe plus four (4) feet, and for permanent trench re-paving the maximum eligible width shall be the nominal pipe diameter plus six (6) feet.

- B. For each additional four (4) feet (or fraction thereof) of pipe invert depth, add three feet to the eligible width limits stated in paragraph A.

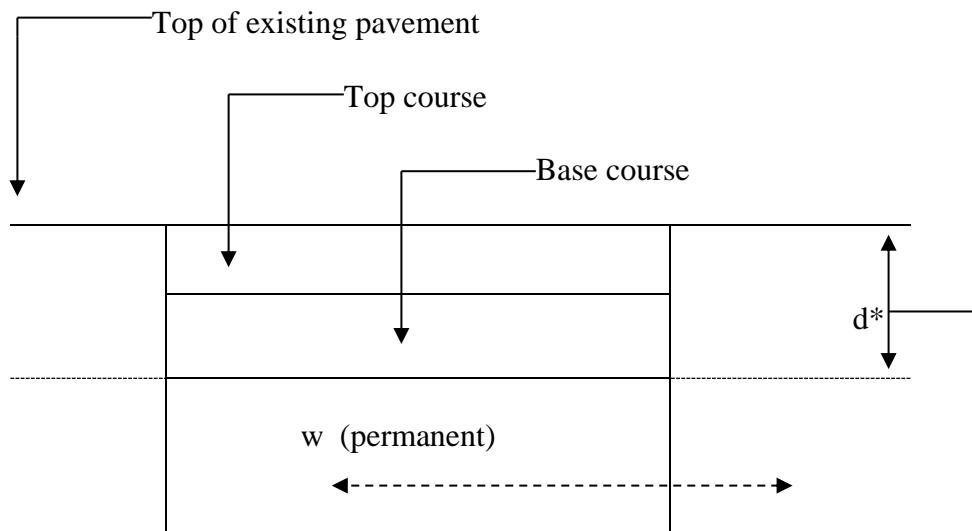
At the design phase of a project the owner has the option to elect either Initial Pavement with Option I (Permanent Trench replacement) or Initial with Option II (curb to curb over initial)

Initial Pavement



d* = depth of existing pavement to a maximum of 3 inches (see general notes #3)
w = maximum eligible Initial pavement width as described in paragraphs "A" & "B" on page DEP-DMS-CG's-P4.

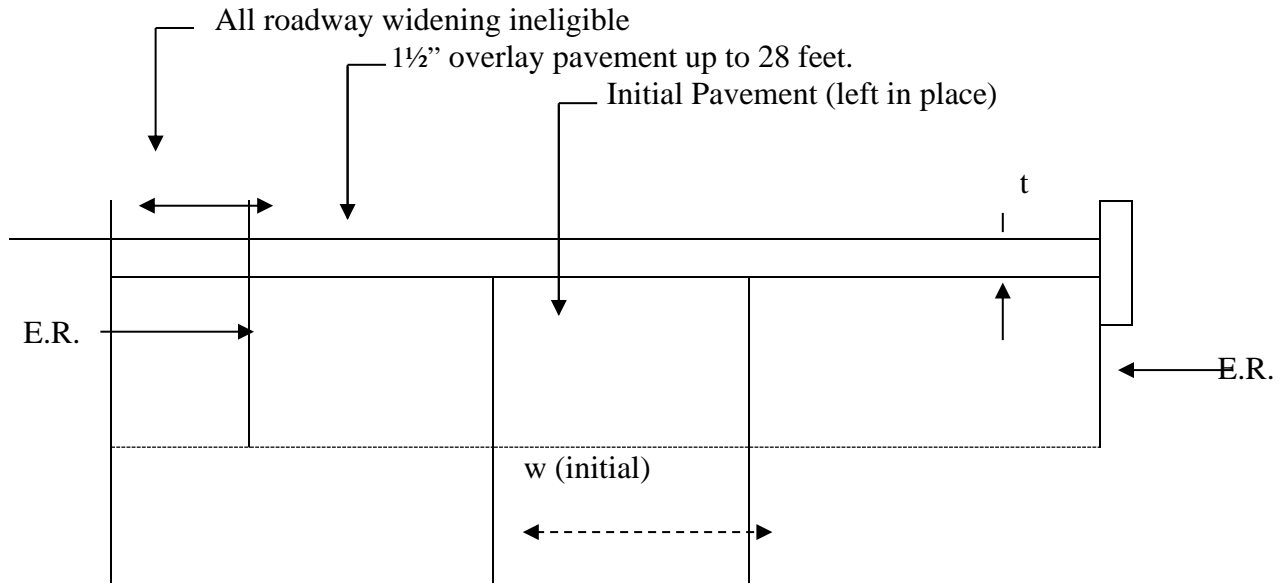
OPTION I Permanent Trench Pavement



d* = depth of existing pavement trench to a maximum of 3 inches (see general notes #3)
w = maximum eligible permanent pavement width as described in paragraphs "A" & "B".
equals initial width plus 2 feet and includes:

- Cutting edges for the permanent trench
- Removal of initial patch plus two feet of existing pavement
- Fine grading/compacting gravel
- Placement of Permanent Trench pavement in two courses.

OPTION II Curb to Curb Pavement (overlay pavement for roadways up to 28 feet)



E.R.= edge of existing paved roadway

t = one and one half inch (1 1/2") overlay of bituminous concrete pavement

GENERAL NOTES:

1. Repavement of settled areas and crown restoration within the trench limits shall be the responsibility of the contractor.
2. Leveling outside the trench limits shall be the responsibility of the owner.
3. Sewer trench re-fill and pavement re-paving on public ways under the jurisdiction of the Massachusetts Department of Public Works, the Metropolitan District Commission, or other such agency shall be in accordance with permit(s) issued therefore by that Department or Commission, as the case may be.
4. The Division will consider requests for increase in the participating pay limits defined in paragraphs A and B, when such increases are, in the Division's opinion, reasonable. Such requests should be documented in writing and submitted to the Division in a timely manner.
5. Projects which deviate from the above options are required to seek Division review and approval.

POLICY MEMORANDUM NO. CG-9

PIPE TESTING

Monthly payment estimates shall be prepared in accordance with contract documents. All pipe shall be tested in accordance with the contract documents and sound engineering practice. If, after 60 days following submission of a monthly payment estimate for pipe items, the pipe for which payment is requested has not been successfully tested, the owner may withhold up to 10% of the amount requested for such pipe items until the pipe has been so tested. However, in the case of a major (pipe diameter 24 inches or greater) interceptor pipe installation, sums retained by the owner pursuant to this policy memorandum shall not exceed two per centum (2%) of the costs of such pipe items.

Executed change orders submitted to the Division for review and processing for financial assistance must be prepared on the attached Change Order Forms (CG-10, Attachment 1, pages A-1 & A-2) with a duplicate copy, calculation sheet(s) (CG-10, Attachment 2), and all other supporting documentation necessary for evaluation. Failure to comply with these instructions will result in delays in processing the change order and/or limited financial assistance.

M.G.L. c.44, s.31C requires that the auditor, accountant, or other municipal officer having similar duties must certify that adequate funding in an amount sufficient to cover the total cost of the change order has been made. Change orders will not be processed or approved until this certification is made on the face of the Change Order Form (CG-10 Attachment 1).

Payment of Change Orders:

Payment of all change orders shall be in accordance with the relevant provisions of Massachusetts General laws, Chapter 30, Section 39G for non-building construction and Section 39K for building construction.

Payment of change orders shall be made in accordance with one of the following three methods:

- A. Existing unit prices as set forth in the contract; or
- B. Agreed upon lump sum or unit prices; or
- C. Time and materials

A. Payment for work for which there is a unit price in the contract:

Where the contract contains a unit price for work and the Engineer orders a change for work of the same kind as other work contained in the contract and is performed under similar physical conditions, the contractor may accept full and final payment at the contract unit price(s) for the acceptable quantities.

B. Payment for work or materials for which no price is contained in the contract:

If the Engineer directs, the contractor shall submit promptly in writing to the Engineer and offer to do the required work on a lump sum or unit price basis, as specified by the Engineer. The stated price, either lump sum or unit price, shall be divided so as to show that it is the sum of:

- (1) The estimated cost of labor, plus
- (2) Direct Labor Cost, plus
- (3) Material and Freight Costs, plus
- (4) Equipment Costs, plus
- (5) An amount not to exceed 20% of the sum of items (1) through (4) for overhead and profit, plus (if applicable),
- (6) In the case of work done by a subcontractor and amount not to exceed 7 ½ %, for the general contractor of the sum of items (1) through (4) for his overhead and profit, less, if applicable,

- (7) Credits for work deleted from the contract.
- C.
- D. Payment for work on a time and materials basis:
Unless an agreed lump sum and/or unit price is obtained from above and is so stated in the change price, the contractor shall accept as full payment for which no other agreement is contained in contract, and amount equal to:
- (1) The estimated cost of Labor, plus
 - (2) Direct Labor Cost, plus
 - (3) Material and Freight Costs, plus
 - (4) Equipment Costs, plus
 - (5) An amount not to exceed 20% of the sum of items (1) through (4) for overhead and profit, plus (if applicable),
 - (6) In the case of work done by a subcontractor and amount not to exceed 7 ½ %, for the general contractor of the sum of items (1) through (4) for his overhead and profit, less, if applicable,
 - (7) Credits for work deleted from the contract.

Explanation of items (1) through (7) as outlined in “B” and “C”:

- (1) Labor – Only those workers employed on the project who are doing the extra work, including the foreman in charge, are allowable. General foremen, superintendents, or other supervisory personnel are considered to be included in the overhead markup as provided in items (5) and/or (6). Hourly labor rates in excess of those as listed in the contract wage rates (Federal or State, whichever applies require documentation. As a minimum, an explanation and the appropriate copy of the certified payroll are required.
- (2) Direct Labor Costs - These costs are limited to those which are required in the contract document. Coverage in excess of the contract provisions, secured by the contractor/subcontractor(s) at his option, are ineligible for financial assistance. The following list of typical direct labor charges is provided for your assistance and is in no way intended to be complete or all encompassing:
 - Workman’s Compensation
 - Federal/State: Social Security Tax and Unemployment Tax;
 - Health, Welfare and Pension Benefits; (this cost is included in the wage rates appearing in the Mass. Wage Rates of the contract specifications)
 - Liability Insurance: Bodily Injury;
Excess Umbrella;
Property damage;
Public Liability
 - Blasters Insurance If applied to any required
 - Builders Risk Insurance direct labor costs.
 - Experience Modification Insurance
 - Surcharges

Following award and prior to execution of a construction contract, the contractor and filed sub-bidders (where applicable) shall submit for review by the owner, documentation to establish the Direct Labor Cost percentage(s) (Direct Labor markup percentage(s)).

The documented direct labor markup for this contract may be adjusted on an annual basis as measured from the date the contract is executed. The contract agreement will provide for the establishment of the Direct Labor Cost percentage.

- (3) Material and Freight – Only those materials required as a result of the change order and reasonable freight charges for delivery of same are allowable.
- (4) Equipment – Only the equipment required as a result of the change order is allowable. Equipment rental rates shall be governed by the current Nielson/Dataquest Rental Rate bluebook for Construction Equipment (the “Bluebook”). In determining the rental rate the following shall apply:
 - (a) For equipment already on the project – the monthly prorated rental rate by the hourly use shall be applicable;
 - (b) For equipment not on the project the daily rate, the weekly rate, or monthly rate will prevail, whichever will prove to be most cost effective. Small tools and manual equipment are examples of costs not allowable under this item. These costs are considered to be included in the overhead markup as provided in items (5) and/or (6)
(1 month (normal use) = 176 hours)
- (5) & (6) Overhead and Profit – All other costs not previously mentioned are considered to be included in this item, be it for the general contractor or subcontractor(s).
- (7) Credits – Work deleted, material and equipment removed from the contractor, stored and/or returned shall be credited to the cost of the change order, less costs.

The Contractor shall furnish itemized statements of the cost of the work ordered and shall give the Engineer access to all accounts, bills and vouchers relating thereto; and unless the Contractor shall furnish such itemized statements, and access to all accounts, bills and vouchers, he shall not be entitled to payment for any items of extra work for which such information is sought by the Engineer. Deviations from any of the above will be reviewed for financial assistance on a case-by-case basis.

The change order will be prepared in such manner as to clearly separate Eligible and Ineligible Costs.

CHANGE ORDER FORM

SRF Number _____
Public Entity _____
Contract Number _____
Change Order Number _____

Contract Amount (As Bid) \$ _____
Net Change in Contract Price (this change order) \$ _____
Total Adjusted Contract Price (including this and all other change orders) \$ _____

This change order extends the time to complete the work by _____ calendar days.

The extended completion date is _____

This change order checked by _____
(Chief) Resident Engineer Date

This change order is requested by: _____

This change order is recommended by: _____

Consultant Engineer P.E. Number Date

The undersigned agree to the terms of the change order.

Contractor Date

Owner Date

Certification of Appropriation under M.G.L. c.44, §31C: Adequate funding in an amount sufficient to cover the total cost of this change order is available.

By: _____
Certification Officer (Auditor, accountant, treasurer) Date

Do not write below: this space reserved for STATE AGENCY APPROVAL

CHANGE ORDER FORM (Continued)

Public Entity _____

SRF No: _____ Contract No. _____ Change Order No. _____

Contract Title: _____

Owner's Name: _____

Owner's Address: _____

Contractor's Name: _____

Contractor's Address: _____

Description of Change

Reason for Change

CALCULATION SHEET

(1)	Labor			
	Foreman	10 hrs @ \$10.00/hr.	\$	100.00
	Engineer	10 hrs @ 8.50/hr		85.00
	Operator	10 hrs @ 9.50/hr		95.00
	Laborers	24 hrs @ 7.00/hr		<u>168.00</u>
				\$448.00
(2)	Direct Labor Cost (use the agreed upon Direct Labor Cost)			
	*	(30)% of \$448		
	*	(Used for example purposes only)		134.00
(3)	Materials & Freight			
	150 l.f. of 12" pipe @ \$2.00/l.f.		\$	300.00
	15 v.f. precast SMH			1,700.00
	Freight (slip # _____ Enclosed)			<u>25.00</u>
				2,025.00
(4)	Equipment			
	1 Backhoe	10 hrs @ \$80.00/hr	\$	800.00
	1 Truck-crane	10 hrs @ \$100.00/hr		<u>1,000.00</u>
				<u>1,800.00</u>
		Total (Items 1 through 4)		4,407.00
(5)	20% markup for Overhead, Profit			
	20% of \$4,407			881.00
(6)	7 ½% markup for general contractor (if subcontractor is involved)			
	7 ½% of \$4,407			331.00
(7)	Credits (deductibles)			<u>- 323.00</u>
		Total Cost	\$	5,296.00

Reminder: Provide support documentation as necessary i.e. vouchers, correspondence, Calculation, photographs, reports

POLICY MEMORANDUM NO. CG-11

UTILITY RELOCATION

The construction of treatment facilities, sewers, pumping stations, force mains and appurtenant work can cause the relocation of utilities. Costly relocation can sometimes be minimized by early communication and cooperation of the representatives of the municipality (owner) and the utilities.

Every possible effort should be made by the owner and each utility to establish the location of existing utilities in the vicinity of the proposed construction. The owner or its consulting engineer should make every reasonable effort to design the proposed construction so that relocation of existing utilities is minimized whenever possible. If the proposed construction is in an area of many existing utilities or in an otherwise critical area, the utilities are encouraged to mark the location of their existing utilities at the site during the design phase of the project.

During the design phase of the project, the municipality should provide timely notice to all utilities known or thought to have facilities in or proximate to the site of such future construction.

POLICY MEMORANDUM NO. CG-12

**REFUNDABLE DEPOSITS FOR
PLANS AND SPECIFICATIONS**

For each set of project plans and specifications provided, the owner may require a deposit in form of cash or other appropriate security, in an amount sufficient to cover the costs of production of such plans and specifications.

Upon return of the plans and specifications to the owner within a reasonable time and in good condition, such deposit shall be refunded.

Actual mailing costs, if any, shall be borne by the party requesting such plans and specifications.

POLICY MEMORANDUM NO. CG-13

BID OPENING PROCEDURES

As a minimum, bid documents shall be reviewed/inspected for conformance to the following bid opening procedure in the order presented below. Failure to comply with any of these steps shall render the bid non-responsive and upon determination of such non-responsiveness, such bid shall be rejected immediately, set aside, and shall receive no further consideration.

Bid Opening Procedure

Step #1. **Timeliness** – The bid must be filed at the place and within the time specified therefore in the invitation to bid, and no bid shall be accepted after such time. The time at which a bid is filed should be time/date stamped or otherwise prominently noted on the bid;

Policy Memorandum No. CG-13 – Bid Opening Procedures (Con't)

Step #2. **Bid Security** – Properly executed bid security, in the amount and terms specified in the invitation to bid (equal to 5% of Base Bid or Highest Possible Amount considering all alternatives) shall be placed in a seal envelope and attached to the outside of the envelope containing the bid at the time of its submission;

A. Bid Bond

The Bid bond must be dated On or Before the Bid Date;
Issued by a Bonding Company Licensed in Massachusetts;
Accompanied by a Current Power of Attorney;
Signed by Surety;

B. Check

The Check must be a Certified, Cashiers or Bank Treasurer's;
Dated On or Before the Bid Date;

Step #3. Bid Signature – The bid and all accompanying documents so required shall be signed by the bidder or its authorized representative before submission;

Step #4. Addenda – All addenda shall be sent certified mail, return receipt requested, by the owner to all individuals and organizations which have received plans and specifications and shall be mailed not later than five days prior to the date established for submission of bids. All bidders shall include with their bids written acknowledgement of receipt of all addenda, which acknowledgement may be on a form provided therefore by the owner.

Alternates – Any Alternates shall be acknowledged.

Step #5. Written Dollar Amounts – The total dollar amount of each bid shall be read, and the three lowest bids shall be selected for further consideration. The remaining bids shall then be set aside. The three apparent low bids shall be read to determine whether the unit price for each line item of each bid has been written therein in words. If it has not, such bid shall be rejected and shall receive no further consideration. ***Bid amounts shall be consistent (words vs. numbers) and if words and numbers differ, the words govern.*** This procedure shall then be repeated with the next apparent low bid until three are acceptable which have all the unit prices written in words, at which time the lowest bid shall be announced as the apparent low bidder, and the bid opening procedure shall be closed.

The Division recommends that this policy memorandum be included in all contract specifications and that the owner's evaluator(s) use the attached form (CG-13 Attachment #1) for bid opening procedures.

The Contractor's Bid Opening Checklist also attached hereto, is for use by each contractor to assure that his bid conforms with this policy memorandum. It is recommended that the checklist (CG-13 Attachment #2) be included in information for bidders, or at the end of the bid proposal, or in some other prominent part of the bid specifications

FORM FOR BID OPENING PROCEDURES
(to be completed by the owner's evaluator(s))

CONTRACT NO.: _____

DATE: _____

CONTRACT NAME: _____

BID OPENING TIME: _____

All non-responsive bids shall be rejected forthwith by the awarding authority upon determination of such bids' non-responsiveness at the time bids are opened and read. Failure to comply with any one of the requirements shall render the bid non-responsive, and upon determination of such non-responsiveness such bid shall be rejected and receive no further consideration.

A = Acceptable

N-R = Non-Responsive (explain reasons on supplemental sheet & attach)

BIDDER	1. TIMELINESS	2. BID SECURITY	3. SIGNATURE	4. ADDENDA ALTERNATIVES	5. WRITTEN DOLLAR AMOUNTS	COMPLIANCE (CIRCLE ONE)	
						YES	NO
1						YES	NO
2						YES	NO
3						YES	NO
4						YES	NO
5						YES	NO
6						YES	NO
7						YES	NO
8						YES	NO
9						YES	NO
10						YES	NO
11						YES	NO
12						YES	NO

DEP/DMS

Evaluator(s) _____

BID OPENING PROCEDURES

CONTRACTORS CHECKLIST

CONTRACT NO.: _____ BIDDER: _____ DATE: _____

All non-responsive bids shall be rejected forthwith by the awarding authority upon determination of such bids' non-responsiveness at the time bids are opened and read. Failure to comply with one or more of the following requirements shall render the bid non-responsive, and upon determination of such non-responsiveness such bid shall be rejected and receive no further consideration.

ITEM	REQUIREMENTS	COMPLIANCE (CIRCLE 1)		REASONS FOR REJECTION
		Yes	No; Rejected	
1. Timeliness	Bid filed w/in time specified	Yes	No; Rejected	
2. Bid Security	Appropriate and properly Executed security w/bid.	Yes	No; Rejected	
3. Signature	Bid signed by authorized Representative	Yes	No; Rejected	
4. Addenda	All addenda acknowledge Any alternative	Yes	No; Rejected	
5. Dollar Amount	Dollar amount in words Specified for each line item in bid	Yes	No; Rejected	

There shall be in the contract documents a separate pay item for rock excavation. For such purposes, “rock” shall mean igneous, sedimentary, metamorphic, and conglomerate rock, which for excavation must be drilled, blasted, broken, or ripped by power tools. Boulders and concrete structures one cubic yard or greater, however removed, are included within this definition of rock for payment purposes. At the option of the owner or his representative a separate pay item for boulders, concrete structures, or concrete road base may be used.

<u>Depth From Ground Surface</u>	<u>Pay Width</u>	
<u>To Invert Pipe</u>	<u>(Nominal Pipe Diameter)</u>	
	<u>0-24”</u>	<u>Over 24”</u>
* 0 – 12’	5’0”	D+3’0”
* Over 12’ – 20’	7’0”	D+5’

Engineer’s plans and specifications shall establish pay limits below pipe and structures.

- See CG-14 Attachment #1 (typical cross section)

Payment width for depths over twenty feet (20’) shall be determined on a case-by-case basis consistent with the foregoing chart.

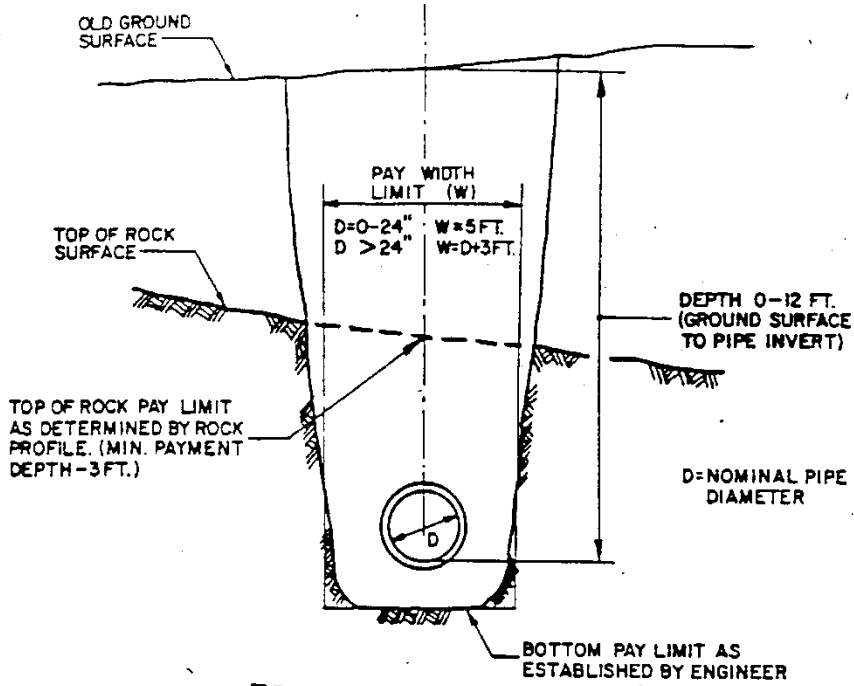
The pay limit for rock removal outside proposed manholes shall commence one foot (1’) outside the widest dimension of the structure of shall be the maximum connecting trench width, whichever is greater.

Payment depth for rock which is encountered in a trench shall be no less than three feet (3’) when removal can be accomplished only by drilling and blasting or by use of jack (air or hydraulic) hammers.

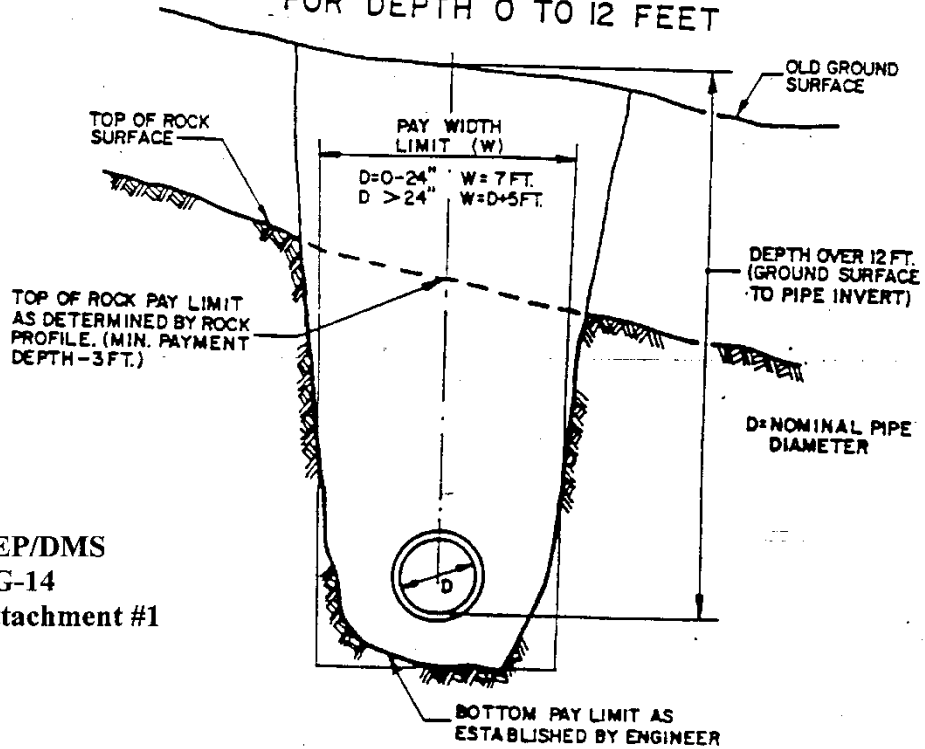
Payment for rock removed, using the same or equal equipment as utilized for normal trench excavation, shall be limited to the actual depth removed within the limits established by the contract documents.

Boulders encountered within the pay limits of excavation, whose volume is one cubic yard or greater, part of which extends outside said limits shall be paid in accordance with the actual volume excavated.

CG-14 ROCK EXCAVATION



FOR DEPTH 0 TO 12 FEET



FOR DEPTH OVER 12 FEET AND UP TO 20 FEET

DEP/DMS
 CG-14
 Attachment #1

POLICY MEMORANDUM NO. CG-15

TRAFFIC POLICE

The reasonable costs for police details required for traffic control on a construction project which receives financial assistance shall be considered as an eligible administrative cost. A police detail item shall not be included as a bid item in the contract documents.

“Police” as used in this memorandum includes local, county, capital, state, regular and auxiliary police.

Owner’s Responsibility

It shall be the owner’s responsibility to submit in writing the hourly rate of pay to be established for detailed traffic police and each change in rate during the course of the project. It is the owner’s responsibility to arrange, document and pay for such police details. The owner or its representative shall meet with the police chief or other officer in charge of police detail duty to review contract needs. The owner shall maintain a daily record of the following:

- a. Officer’s name
- b. Hours worked
- c. Location of assignment
- d. Hourly rate

POLICY MEMORANDUM NO. CG-16

**DOCUMENTATION REQUIRED TO
SUBSTANTIATE CONTRACT QUANITITES**

<u>Unit</u>	<u>Documentation required</u>
Acres (A)	Location, station, offset and calculations. Location = Street right-of-way, etc; Station = Point on Baseline; Offset = Distance left or right of Baseline
Cubic Yard (C.Y.)	Location, stations, widths, depths, calculations and Cross sections as necessary
Each (Ea.)	Location, station, and offset.
Gallon (Gal.)	Location, stations, calculations (if appropriate) and delivery slips.
Hour (Hr.)	Hours and location.
Linear Feet (L.F.)	Location, stations, and offsets.
Month (Mo.)	Location, period of time and calculations if applicable.

1000 Foot Board Measure

(MFBM)	Location, stations, offset, elevations, grade, and calculations. Attach invoices where applicable.
Pound (Lb.)	Locations, stations, and calculations (if applicable). Attach Delivery weight slips.
Square Feet (S.F.)	Locations, stations and calculations
Square Yard (S.Y.)	Locations, stations and calculations
Ton	Locations, stations and calculations (if applicable). Attach Delivery weight slips.
Vertical Feet (V.F.)	Locations, stations, elevations, and offsets.

Note:

1. All of the above, that apply must be submitted with a final payment request or change order as applicable.
2. Where in place measurement is not possible or practical, delivery slips may be used to substantiate quantities.
3. Change orders – See CG-10 in which some of the above may be applicable in justifying materials, equipment and labor.
4. When necessary, itemized quantities must be separated into eligible and non-eligible units with separate calculations to justify eligible costs.
5. Overruns and underruns of any specific item shall be explained with an appropriate sentence or paragraph.
6. On all quantities, units of payment shall be maintained at the project site and shall be updated daily so that upon field inspection by the C.O.E., EPA or DMS, the quantities paid to date can be substantiated.
7. In the case of unforeseen conditions, photos should be submitted with the applicable item in addition to the recommended documentation.
8. Documentation of units of payment shall be clearly legible and cross referenced to the applicable sheets of the record drawings.
9. For record drawings policy, please see CG-4.

DMS Policies 1 through 16 Approved By:

Steven J. McCurdy
Division of Municipal Services

DWS POLICY 88-02

DEPARTMENT OF ENVIRONMENTAL PROTECTION

POLICY FOR REVIEW OF SEWER LINE/WATER SUPPLY PROTECTION

The Department of Environmental Protection seeks to protect existing and potential water supplies from the potentially negative effects of leaking sewer lines through the adoption of a Department policy on this subject.

The following restrictions will apply to new sewer construction statewide:

Gravel Packed Wells

- ~ Within the 400 foot radius protective distance around gravel packed wells, all sewer lines and appurtenances are prohibited, unless they are necessary to eliminate existing and/or potential sources of pollution to the well.

Tubular Wells

- ~ Within the 250 foot radius protective distance around tubular wells, all sewer lines and appurtenances are prohibited, unless they are necessary to eliminate existing and/or potential sources of pollution to the well.

Gravel Packed and Tubular Wells

- ~ Within a minimum radius of 2,640 feet or unless otherwise documented by an appropriate study specifically defining the area of influence and approved by the Division of Water Supply, all sewer lines and appurtenances will be designed and constructed for maximum water tightness.
- Force Mains or Pressure Sewers: shall be tested at 150% above maximum operating pressure or 150 p.s.i. whichever is greater. Testing shall conform to the requirements of the American Water works Association (AWWA) standard c 600.
- Gravity Sewers: shall be tested by approved methods which will achieve test results for infiltration or exfiltration of less than 100 gallons/inch diameter/mile/24 hours.
- Manholes: shall be installed with watertight covers with locking or bolted and gasketed assemblies. Testing for infiltration/exfiltration shall conform to the same standards as the maximum allowed for pipes in the manhole as required for gravity sewers, indicated above.
- Satisfactory test results for Force Mains, Manholes and Gravity Sewers shall be performed prior to the expiration of the contractor's one year guarantee period.
- All pumping stations within this zone shall have standby power high water alarms telemetered to an appropriated location that is manned at all times. An emergency contingency plan must be developed by the owner and approved by the BRP.
- A minimum of Class B bedding as defined by WPCF-MOP9 must be used for all piping.
- Service connections (laterals and house connections) shall be rigidly inspected by the appropriate municipal official. Certified inspection reports shall be submitted to the BRP.

Bedrock Wells

The above requirements are the same for bedrock wells, with the Department reserving the right to require more stringent controls on a case-by-case basis.

Surface Water Supplies

- ~ Within 100 feet of all surface water supplies and tributaries all sewer lines and appurtenances are prohibited except as required to cross tributaries or to eliminate existing or potential pollution to the water supply. In the latter case, watertight construction methods shall be used.
- ~ Tributary stream crossings shall employ watertight construction methods of sewer lines and manholes. Watertight construction must extend 100 feet to either side of the stream.
- ~ Within 1,000 feet of surface water supplies and tributaries, all pumping stations shall have standby power and high water alarms telemetered to an appropriate location that is manned at all times. An emergency contingency plan must be developed by the owner of the wastewater treatment facility and submitted to the BRP for approval.
- ~ Beyond 1,000 feet and within the watershed of surface water supplies the Department may in specific circumstances after review, require additional controls.

Potential Public Water Supplies

The above requirements also apply to potential public water supplies.

Baseline Data Requirements

Two (2) copies of an appropriately scaled map(s) shall be submitted to the Department which details the proposed sewers and/or appurtenances and also includes the following:

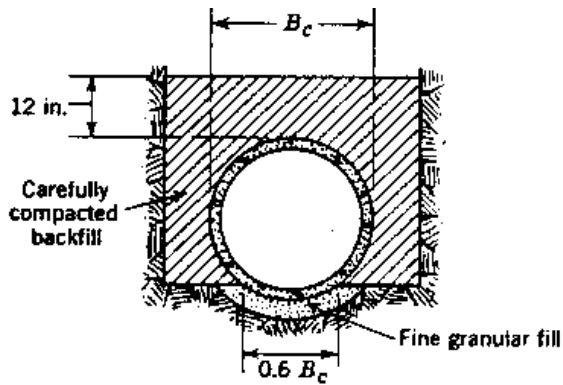
- (1) the location of all nearby existing or potential surface water supplies, tributaries thereto, and watershed boundaries;
- (2) the location of existing and potential public and municipal potable groundwater supply wells.

The Department reserves the right to impose more restrictive measures than those contained in this policy as deemed appropriate.

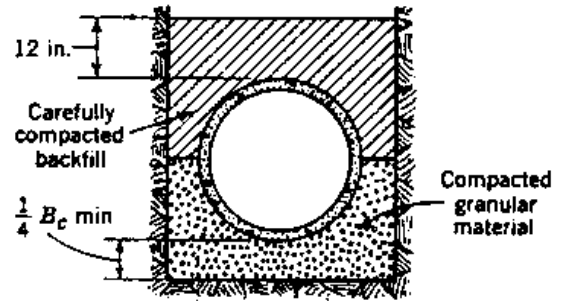
Definitions

- Appurtenances – all attachments to sewer lines necessary for the transport and operation and maintenance of sewer lines, including manholes, pumping station, siphons, etc.
- Area of influence – that area of an aquifer which contributes water to a well under the most severe recharge and pumping condition that can be realistically anticipated (i.e. pumping at the safe yield of the well for 180 days without any natural recharge occurring). It is bounded by the groundwater divides which result from pumping the well and by the contact of the edge of the aquifer with less permeable materials such as till and bedrock. At some locations, streams and lakes may form recharge boundaries.
- Potential public water supply – areas designated by communities for water supply purposes where land has been set aside and Department approved pump tests conducted and surface water supplies as defined below.
- Surface Water Supply – Waters classified as Class A by the DWPC.
- Public Water Supply Systems – as defined in 310 CMR 22.02 (DEP Drinking Water Regulations).
- Class B Bedding – as defined in WPCF Manual of Practice No. 9.

APPROVED: (Signature on File)



Shaped bottom with tamped backfill,
load factor 1.9



Compacted granular bedding,
load factor 1.9

Class B---First-Class Bedding – Class B bedding may be achieved by either of two construction methods:

- a. **Shaped Bottom with Tamped Backfill.** The bottom of the trench excavation shall be shaped to conform to a cylindrical surface with a radius at least 2 in. (5 cm) greater than the radius to the outside of the pipe and with a width sufficient to allow six-tenths of the width of the pipe barrel to be bedded in fine granular fill placed in the shaped excavation. Carefully compacted backfill shall be placed at the sides of the pipe to a thickness of at least 12 in. (30 cm) above the top of the pipe. Shaped trench bottoms are difficult to achieve under current construction conditions.
- b. **Compacted Granular Bedding with Tamped Backfill.** The pipe shall be bedded in compacted granular material placed on a flat trench bottom. The granular bedding shall have a minimum thickness of one-fourth the outside pipe diameter and shall extend halfway up the pipe barrel at the sides. The remainder of the side fills and a minimum depth of 12 in. (30 cm) over the top of the pipe shall be filled with carefully compacted material.

Davis Bacon Act Requirements

All construction projects are subject to the Davis Bacon wage rate requirements and must include the appropriate sections of the following document in its entirety in the contract documents.

The vast majority of SRF projects will be bid by Governmental Entities (i.e., Cities, Towns, Authorities, Water Districts, Wastewater Districts). These projects must include the following language in construction contracts:

I.3. Contract and Subcontract Provisions

I.4. Contract Provisions for Contracts in Excess of \$100,000 (if applicable)

I.5. Compliance Verification

This language may be found on pages DB-3-DB-11.

In certain cases, SRF projects may be bid by non-Governmental Entities (i.e., private water companies, private PWSs, etc.). These projects must include the following language in construction contracts:

II.3. Contract and Subcontract Provisions

II.4. Contract Provisions for Contracts in Excess of \$100,000 (if applicable)

II.5. Compliance Verification

This language may be found on pages DB-11-DB-21

Preamble

With respect to the Clean Water and Safe Drinking Water State revolving Funds, EPA provides capitalization grants to each State which in turn provides subgrants or loans to eligible entities within the State. Typically, the subrecipients are municipal or other local governmental entities that manage the funds. For these types of recipients, the provisions set forth under Roman Numeral I, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section 3(ii)(A), below and for compliance as described in Section I-5.

Occasionally, the subrecipient may be a private for profit or not for profit entity. For these types of recipients, the provisions set forth in Roman Numeral II, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section II-3(ii)(A), below and for compliance as described in Section II-5.

I. Requirements For Subrecipients That Are Governmental Entities:

The following terms and conditions specify how recipients will assist EPA in meeting its Davis-Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance with respect to State recipients and subrecipients that are governmental entities. If a subrecipient has

questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. If a State recipient needs guidance, the recipient may contact Valerie Marshall at EPA Region 1 (617-918-1674) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at <https://www.dol.gov/whd/govcontracts/dbra.htm>

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2012 Appropriations Act, the following clauses:

(1) Minimum wages.

(i) 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 (a)(1)(iv) 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 §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 (a)(1)(ii) 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. Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, 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 State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) 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.

(iii) 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.

(iv) 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 subrecipient(s), shall upon written request of the EPA Award Official or 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 (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, 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.

(i) 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.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls 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 the weekly payrolls. 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 <https://www.dol.gov/whd/forms/wh347.pdf> 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 subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, 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 subrecipient(s).

(B) 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:

(1) 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;

(2) 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;

(3) 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.

(C) 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 (a)(3)(ii)(B) of this section.

(D) 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.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA 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 Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, 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--

(i) Apprentices. 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.

(ii) Trainees. 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.

(iii) 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.

- (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 in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses 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 Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) 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).

(ii) 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).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any 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 Item 3, above 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 (a)(1) of this section the contractor and any subcontractor responsible therefore 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 (a)(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 (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall 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 (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(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 (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its

assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at https://www.dol.gov/whd/whd_district_offices.pdf.

II. Requirements For Subrecipients That Are Not Governmental Entities

The following terms and conditions specify how recipients will assist EPA in meeting its DB responsibilities when DB applies to EPA awards of financial assistance with respect to subrecipients that are not governmental entities. If a subrecipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient for guidance. If a State recipient needs guidance, the recipient may contact Valerie Marshall at EPA Region 1 (617-918-1674) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at <https://www.dol.gov/whd/govcontracts/dbra.htm>

Under these terms and conditions, the subrecipient must submit its proposed DB wage determinations to the State recipient for approval prior to including the wage determination in any solicitation, contract task orders, work assignments, or similar instruments to existing contractors.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients must obtain proposed wage determinations for specific localities at www.wdol.gov. After the Subrecipient obtains its proposed wage determination, it must submit the wage determination to (insert contact information for State recipient DB point of contact for wage determination) for approval prior to inserting the wage determination into a solicitation, contract or issuing task orders, work assignments or similar instruments to existing contractors (ordering instruments unless subsequently directed otherwise by the State recipient Award Official).

(b) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(c) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(d) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(e) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2011 Full-Year Continuing Appropriation, the following clauses:

(1) Minimum wages.

(i) 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 (a)(1)(iv) 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 §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 (a)(1)(ii) 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. Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, 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 State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient(s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request, and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) 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.

(iii) 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.

(iv) 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 subrecipient(s) shall upon written request of the EPA Award Official or 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 (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, 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.

(i) 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.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls 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 the weekly payrolls. 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 <https://www.dol.gov/whd/forms/wh347.pdf> 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 subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, 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 subrecipient(s).

(B) 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:

- (1) 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;
- (2) 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;
- (3) 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.

(C) 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 (a)(3)(ii)(B) of this section.

(D) 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.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA 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 Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, 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--

(i) Apprentices. 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.

(ii) Trainees. 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.

(iii) 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.

(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 in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses 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 Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) 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).

(ii) 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).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any 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 Item 3, above 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 (b)(1) of this section the contractor and any subcontractor responsible therefore 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 (b)(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 (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient shall upon the request of the EPA Award Official or 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 (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(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 (b)(1) through (4) of this section.

(c) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a). The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c). The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB . In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d). The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at https://www.dol.gov/whd/whd_district_offices.pdf.

APPENDIX I

AMERICAN IRON AND STEEL REQUIREMENTS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

FROM: Andrew D. Sawyer, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436 (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term “iron and steel products” means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the “Administrator”) finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with “split” funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A “project” consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

- Lined or unlined pipes or fittings;
- Manhole Covers;
- Municipal Castings (defined in more detail below);
- Hydrants;
- Tanks;
- Flanges;
- Pipe clamps and restraints;
- Valves;
- Structural steel (defined in more detail below);
- Reinforced precast concrete; and
- Construction materials (defined in more detail below).

12) What does the term ‘primarily iron or steel’ mean?

‘Primarily iron or steel’ places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of

greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does ‘produced in the United States’ mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of ‘municipal castings’?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

- Access Hatches;
- Ballast Screen;
- Benches (Iron or Steel);
- Bollards;
- Cast Bases;
- Cast Iron Hinged Hatches, Square and Rectangular;
- Cast Iron Riser Rings;
- Catch Basin Inlet;
- Cleanout/Monument Boxes;
- Construction Covers and Frames;
- Curb and Corner Guards;
- Curb Openings;
- Detectable Warning Plates;
- Downspout Shoes (Boot, Inlet);
- Drainage Grates, Frames and Curb Inlets;
- Inlets;
- Junction Boxes;
- Lampposts;
- Manhole Covers, Rings and Frames, Risers;
- Meter Boxes;
- Service Boxes;
- Steel Hinged Hatches, Square and Rectangular;
- Steel Riser Rings;
- Trash receptacles;
- Tree Grates;

Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is ‘structural steel’?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a ‘construction material’ for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered “structural steel”. This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a ‘construction material’ for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer, processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: <http://oig.hhs.gov/fraud/report-fraud/>

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF

assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to either of two email addresses. For CWSRF waiver requests, please send the application to: cwsrfwaiver@epa.gov. For DWSRF waiver requests, please send the application to: dwsrfwaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA’s website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm
2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.
3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public’s interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Attachment 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
<p>General</p> <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor 	✓	
<p>Cost Waiver Requests</p> <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers 		
<p>Availability Waiver Requests</p> <ul style="list-style-type: none"> • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: <ul style="list-style-type: none"> — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects? 		

Attachment 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
<p>Cost Waiver Requests</p> <ul style="list-style-type: none"> • Does the waiver request include the following information? <ul style="list-style-type: none"> — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market • Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%? 				
<p>Availability Waiver Requests</p> <ul style="list-style-type: none"> • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? <ul style="list-style-type: none"> — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials • Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers? • Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information) • Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? <p>Examples include:</p> <ul style="list-style-type: none"> — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials <ul style="list-style-type: none"> • Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits? 				

Attachment 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENT MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States (“American Iron and Steel Requirement”) unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

Attachment 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _____ (“Purchaser”) and the _____ (the “State”) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Attachment 5: Sample Certification 1

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Attachment 5: Sample Certification 2

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

ATTACHMENT D

Massachusetts Diesel Retrofit Certifications

DIESEL RETROFIT PROGRAM

The Department of Environmental Protection (“DEP”) has developed the Diesel Retrofit Program in response to increasing public health concerns with the emissions from diesel engines and vehicles.

Diesel Construction Equipment Standard

All diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract (hereinafter “Diesel Construction Equipment”) must have the following pollution control device installed unless exempt as provided below:

1. Emission control technology verified by U.S. Environmental Protection Agency (“EPA”) or the California Air Resources Board (“CARB”) for use with non-road engines;
2. Emission control technology verified by EPA or CARB for use with on-road engines provided that such equipment is operated with diesel fuel that has no more than 15 parts per million sulfur content (i.e. Ultra Low Sulfur Diesel fuel); or
3. Emission control technology certified by the manufacturer that such technology meets or exceeds the emission reductions provided by on-road or off-road emission control technology verified by EPA or CARB, i.e. that a Diesel Oxidation Catalyst is achieving the following minimum emission reductions: particulate matter 20%; carbon monoxide 40%; volatile organic compounds 50%; or a Diesel Particulate Filter is achieving a minimum of 85% emission reductions for particulate matter.

Emission control devices, such as oxidation catalysts or particulate filters, shall be installed on the exhaust system side of the Diesel Construction Equipment. The Contractor shall be responsible to insure that the emissions control technology is operated, maintained, and serviced as recommended by the manufacturer.

For the latest up-to-date list of EPA verified-technologies, see:

<https://www.epa.gov/verified-diesel-tech>

For the latest up-to-date list of CARB verified technologies, see:

<http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm>

Exemptions

The following Diesel Construction Equipment shall be exempt from the standard above. The Contractor shall include such Diesel Construction Equipment in the required recordkeeping:

1. Diesel Construction Equipment not owned by the Contractor and used in the performance of the work under this Contract for 30 calendar days (cumulative days but not necessarily consecutive) or less;
2. Unless otherwise exempt, additional Diesel Construction Equipment originally not anticipated to be used under the Contract or used as permanent replacement after the work under the Contract has commenced, for 15 calendar days from the date such Diesel Construction Equipment is brought on site;

DIESEL RETROFIT PROGRAM

3. Diesel Construction Equipment with an engine that meets the EPA particulate matter (PM) Tier emission standards in effect at the start of the Contract for non-road diesel engines for the applicable engine power group (e.g., as of January 1, 2009, a piece of Diesel Construction Equipment with a Tier 3 engine is exempt from meeting the standard until the piece of Diesel Construction Equipment is available with a Tier 4 engine) provided that if such emissions standards are superseded during the Contract then such Diesel Construction Equipment must be retrofitted in accordance with the standards above prior to the end of the Contract;
4. A large crane (e.g. a sky crane or link belt crane which is responsible for critical lift operations) if such device would adversely affect the operation of the crane provided the Contractor submits to the municipality's project engineer written technical justification documenting the adverse impact on operation; and
5. Diesel Construction Equipment that the project engineer has determined is necessary to control a compelling emergency including but not limited to, the need for rescue vehicles or other equipment to prevent harm to human beings or additional equipment required to address a catastrophic emergency such as structure collapse or imminent collapse. After the compelling emergency is controlled, such non-compliant equipment must be removed from the Contract site and may not be used in further performance of the work under this Contract. Meeting Contract deadlines is not a compelling emergency.

Contractor Certification

Each bidder shall submit as part of its bid, the Statement of Intent to Comply. Within 10 days of being notified that it has been awarded a contract, the bidder and each of its Contractors and Subcontractors shall submit a Diesel Retrofit Program Contractor Certification. Each such Certification shall contain the following information for each piece of Diesel Construction Equipment:

1. Contractor or Subcontractor name;
2. Equipment type, make, model;
3. Vehicle Identification Number or VIN;
4. Engine model and year of manufacture;
5. Engine HP rating;
6. Emission Control Device (ECD) type (Diesel Oxidation Catalyst or Diesel Particulate Filter);
7. ECD make, model, and manufacturer;
8. ECD EPA or CARB Verification Number or manufacturer's certification that the DOC or DPF meets or exceeds emission reductions provided by similar emission control technology verified by EPA or CARB;
9. ECD installation date;
10. Type of fuel to be used; and
11. Whether the equipment is owned or rented.

Recordkeeping

Each Contractor and Subcontractor shall maintain detailed records of all Diesel Construction Equipment used under the Contract, including the dates and duration times the Diesel Construction Equipment is

DIESEL RETROFIT PROGRAM

used at the Contract site. Records shall be available for inspection by DEP. Each Contractor and Subcontractor shall notify DEP within 48 hours of any new Diesel Construction Equipment brought onto the Contract site.

For Diesel Construction Equipment that has an emissions control device with a manufacturer's certification, the Contractor shall maintain records of all supporting emissions test data and test procedures. If upon review the emissions reductions are not supported by the test data and test procedures, then the emissions control device may need to be replaced with a compliant retrofit device.

Project Regulatory Agreement

The following language shall be included section 4 (Covenants of the Borrower) of the municipality's Project Regulatory Agreement if it receives funds from the State Revolving Fund:

The Borrower shall require each Contractor and Subcontractor to submit the Diesel Retrofit Program Contractor Certification to DEP and the Borrower prior to commencing work on the Project. The Borrower shall not allow any Contractor or Subcontractor to commence work at the Project site prior to submitting such Certification.

**DIESEL RETROFIT
PROGRAM**

STATEMENT OF INTENT TO COMPLY

This form must be signed and submitted by the bidder as part of the bid.

Local Governmental Unit _____ SRF Project No. _____

Contract No. _____ Contact Title _____

Bidder _____

The undersigned, on behalf of the above-named Bidder, agrees that, if awarded the Contract:

1. the Bidder shall comply with the Massachusetts Department of Environmental Protection's ("MassDEP") Diesel Retrofit Program by ensuring that all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract are equipped or retrofitted with a pollution control device in accordance with the Diesel Retrofit Program Standard;
2. the Bidder shall require all Subcontractors to comply with MassDEP's Diesel Retrofit Program by ensuring all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract are equipped or retrofitted with a pollution control device in accordance with the Diesel Retrofit Program Standard; and
3. The Bidder shall submit and shall require each Subcontractor to submit a Diesel Retrofit Program Contractor Certification (form attached) with a Diesel Retrofit List to MassDEP Municipal Services and the Bidder within 10 days of the bidder being notified that it has been awarded the Contract. The Bidder shall require each Subcontractor to update such Certification and List within 2 days of using additional Diesel Construction Equipment on the project under the Contract.

(Signature of Bidder's Authorized Representative) (Date)

DIESEL RETROFIT PROGRAM CONTRACTOR CERTIFICATION

Each Contractor and its Subcontractor(s) must sign and email this form to the DEP DMS project engineer, within 10 days after the contractor is awarded.

Local Governmental Unit _____ **SRF Project No.** _____

Contract No. _____ **Contact Title** _____

Contractor _____

I, _____, an authorized signatory for _____, whose principal place of business is at _____ do hereby certify that any and all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract (hereinafter "Diesel Construction Equipment") have pollution control devices, such as oxidation catalysts or particulate filters, installed on the exhaust system side of the diesel combustion engine equipment in accordance with the Diesel Retrofit Program Standard.

I am submitting on behalf of _____ a list of all said Diesel Construction Equipment, labeled "Diesel Retrofit List," that will be used in connection with this Contract by _____. I hereby certify that the information on the attached Diesel Retrofit List is correct and accurate as of the date of signature. The List includes the following information for each piece of Diesel Construction Equipment:

1. Equipment type, make, model;
2. Vehicle Identification Number or VIN;
3. Engine model and year of manufacture;
4. Engine HP rating;
5. Emission Control Device ("ECD") type (Diesel Oxidation Catalyst or Diesel Particulate Filter);
6. ECD make, model, and manufacturer;
7. ECD EPA or CARB Verification Number or manufacturer's certification that the DOC or DPF meets or exceeds emission reductions provided by similar emission control technology verified by EPA or CARB;
8. ECD installation date;
9. Type of fuel to be used; and
10. Whether the equipment is owned or rented.

DIESEL RETROFIT PROGRAM CONTRACTOR CERTIFICATION

_____ shall notify DEP within 48 hours of any new Diesel Construction Equipment brought onto the Contract site. _____ shall maintain detailed records of all Diesel Construction Equipment used at the Contract site, including the dates and duration times the Diesel Construction Equipment is used at the Contract site. _____ shall make such records available for inspection by DEP. _____ shall ensure that the emissions control technology for each piece of Diesel Construction Equipment is operated, maintained, and serviced as recommended by the manufacturer. _____ shall retrofit prior to the end of the Contract any Diesel Construction Equipment no longer exempt from meeting the Diesel Construction Equipment Standard under exemption 3 (because it had an engine that met the EPA particulate matter (PM) Tier emission standards currently in effect at the start of the Contract for non-road diesel engines for the applicable engine power group and such emissions standards were superseded during the Contract).

I acknowledge that this certificate is being furnished as a requirement under this Contract and is subject to applicable State and federal laws, both criminal and civil. Signed under pains and penalty of perjury on this date _____.

Signature _____

Name: _____

Title: _____

Appendix e

American Iron and Steel Requirements




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460


MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76,
Consolidated Appropriations Act, 2014

FROM: Andrew D. Sawyers, Director 
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director 
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436 (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

- (2) In this section, the term “iron and steel products” means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.
 - (b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the “Administrator”) finds that —
 - (1) applying subsection (a) would be inconsistent with the public interest;
 - (2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
 - (3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.
 - (c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.
 - (d) This section shall be applied in a manner consistent with United States obligations under international agreements.
 - (e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.
 - (f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency’s capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) **What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?**

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) **What if a project has split funding from a non-SRF source?**

Many States intend to fund projects with “split” funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A “project” consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) **What about refinancing?**

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

- Lined or unlined pipes or fittings;
- Manhole Covers;
- Municipal Castings (defined in more detail below);
- Hydrants;
- Tanks;
- Flanges;
- Pipe clamps and restraints;
- Valves;
- Structural steel (defined in more detail below);
- Reinforced precast concrete; and
- Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of ‘municipal castings’?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

- Access Hatches;
- Ballast Screen;
- Benches (Iron or Steel);
- Bollards;
- Cast Bases;
- Cast Iron Hinged Hatches, Square and Rectangular;
- Cast Iron Riser Rings;
- Catch Basin Inlet;
- Cleanout/Monument Boxes;
- Construction Covers and Frames;
- Curb and Corner Guards;
- Curb Openings;
- Detectable Warning Plates;
- Downspout Shoes (Boot, Inlet);
- Drainage Grates, Frames and Curb Inlets;
- Inlets;
- Junction Boxes;
- Lampposts;
- Manhole Covers, Rings and Frames, Risers;
- Meter Boxes;
- Service Boxes;
- Steel Hinged Hatches, Square and Rectangular;
- Steel Riser Rings;
- Trash receptacles;
- Tree Grates;
- Tree Guards;
- Trench Grates; and
- Valve Boxes, Covers and Risers.

20) What is ‘structural steel’?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a ‘construction material’ for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered “structural steel”. This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a ‘construction material’ for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer, processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1- 888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website:

<https://www.epa.gov/office-inspector-general/epa-oig-hotline>.

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process,

if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to either of two email addresses. For CWSRF waiver requests, please send the application to: cwsrfwaiver@epa.gov. For DWSRF waiver requests, please send the application to: dwsrfwaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA’s website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: <https://www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement>

2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.
3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564- 0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Appendix 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
<p>General</p> <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor 	✓	
<p>Cost Waiver Requests</p> <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers 		
<p>Availability Waiver Requests</p> <ul style="list-style-type: none"> • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: <ul style="list-style-type: none"> — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects? 		

Appendix 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
<p>Cost Waiver Requests</p> <ul style="list-style-type: none"> • Does the waiver request include the following information? <ul style="list-style-type: none"> — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market • Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%? 				
<p>Availability Waiver Requests</p> <ul style="list-style-type: none"> • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? <ul style="list-style-type: none"> — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials • Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers? • Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information) • Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? <p>Examples include:</p> <ul style="list-style-type: none"> — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials • Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits? 				

Appendix 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States (“American Iron and Steel Requirement”) unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

Appendix 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _____ (“Purchaser”) and the _____ (the “State”) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Appendix 5: Sample Certifications

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

SECTION 01170

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for environmental protection during and as the result of construction operations under this Contract except for those measures set forth in other provisions of these Specifications.
2. Environmental protection requires consideration of air, water and land, noise, solid waste management, vector and fire control.

B. Related Sections

1. Section 01300 - Submittals

1.02 QUALITY ASSURANCE

A. Requirements of regulatory agencies:

1. In order to prevent environmental pollution and to provide for environmental protection arising from construction activities related to the performance of this Contract, the Contractor and his subcontractors shall comply with all applicable Federal, State, and local laws and regulations concerning environmental protection, as well as the specific requirements stated in the Section and elsewhere in the Specifications.

1.03 SUBMITTALS

A. Under the requirements of Section 01300 - Submit the following.

B. Implementation Plan

1. Prior to commencement of the work, the Contractor shall:
 - a. Submit in writing his plans for implementing this Section for environmental protection.
 - b. Meet with the Engineer to develop mutual understandings relative to compliance with the provisions of this Section and administration of the environmental protection program.

C. Temporary Excavation and Embankments

1. If the Contractor proposes to construct temporary roads or embankments and excavations for work areas, he shall submit the following for approval prior to scheduled start of such temporary work:

- a. A layout of all temporary roads, excavations and embankments to be constructed within the work area.
- b. Plans and cross-sections of proposed embankments and their foundations, including a description of proposed materials.
- c. A landscaping plan showing the proposed restoration of the area. Removal of any necessary trees and shrubs outside the limits of existing cleared areas shall be indicated. The plan shall provide for the obliteration of construction scars and shall provide for a reasonably natural appearing final condition of the area. Modification of the Contractor's plans shall be made only with the written approval of the Engineer. No unauthorized road construction, excavation or embankment construction, including disposal areas will be permitted.

D. Erosion Sedimentation Plan

1. The Contractor shall submit to the Engineer, a detailed erosion and sedimentation plan for approval at least 10 days prior to initiation of work. The plan shall include location and construction details of the Contractor's proposed dikes, basins, etc. The Contractor shall provide and submit his control measures for stockpile material.

PART 2 PRODUCTS

2.01 GENERAL

- A. All materials shall be as specified elsewhere in this Specification.

PART 3 EXECUTION

3.01 PROTECTION OF LAND RESOURCES

- A. It is intended that the land resources within the project boundaries and outside the limits of permanent work performed under this Contract be preserved in their present condition, or be restored to a condition after completion of construction, that will appear to be natural and not detract from the appearance of the project. The Contractor shall confine his construction activities to areas defined on the Drawings or in the Specifications except with written approval of the property owners and the Engineer.
- B. Limits of working areas include areas for storage of construction material, and shall be cleared in a manner which will enable satisfactory restoration and which will not affect the environment during or after the construction period. The Contractor shall

not enter beyond the working limits of the working area except with written approval of the Engineer and Owner.

- C. The location of areas for storage of the Contractor's materials required temporarily in the performance of the work, shall be within the limits of the working area and shall require written approval of the Engineer prior to use. The preservation of the landscape shall be an imperative consideration in the selection of all such sites. Where temporary structures are constructed on sidehills, the Engineer may require cribbing to be used to obtain level foundation. Benching or leveling of earth may not be allowed, depending on the location of the proposed facility.
- D. The Contractor shall obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which permit the growth of vegetation thereon. The disturbed areas shall be graded and filled as required, and topsoil shall be spread to a depth of approximately 6 inches over the entire area and the entire area shall be seeded.

3.02 PROTECTION OF WATER RESOURCES

- A. The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumen's, calcium chloride, acids or harmful materials. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State, County, and Municipal laws concerning pollution of rivers, streams and impounded water. All work under this Contract shall be performed in such a manner that objectionable conditions will not be created in streams through, or bodies of water adjacent to, the project area.
- B. Surface drainage from cuts and fills within the construction limits, whether or not completed, and from borrow and waste disposal areas, shall, if turbidity producing materials are present, be held in suitable sedimentation basins or shall be graded to control erosion within acceptable limits. Temporary erosion and sediment control measures such as berms, dikes, drains, or sedimentation basins, if required to meet the above standards, shall be provided and maintained until permanent drainage and erosion control facilities are completed and operative. The area of bare soil exposed at any one time by construction operations should be held to a minimum.
- C. Apply temporary mulch on denuded ground immediately after rough grading is completed. This shall apply to all areas not subject to appreciable traffic during construction, even those that are to receive some form of construction later if ground is to be exposed 30 days or more.
- D. Stream and drainage ditch crossings by fording with equipment shall be limited to control turbidity, and in areas of frequent crossings, temporary culverts or bridge structures shall be installed. Any temporary culverts or bridge structures shall be

removed upon completion of the project. Fills and waste areas shall be constructed by selective placement to eliminate silts or clays on the surface that will erode and contaminate adjacent streams.

- E. At all times of the year, special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, waste washings, herbicides and insecticides, and cement and surface drainage from entering public waters.
- F. If any waste material is dumped in unauthorized area, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as specified hereinbefore, and replaced with suitable fill material, compacted and finished with topsoil, all at the expense of the Contractor.

3.03 MAINTENANCE

- A. The Contractor shall dispose of all discarded debris and aggregate samples in a manner approved by the Engineer. Toilet facilities shall be kept clean and sanitary at all times. Services shall be performed at such a time and in such a manner to least interfere with the operations. Services shall be accomplished to the satisfaction of the Engineer.
- B. The Contractor shall frequently remove materials no longer required on the site so that, at all times, the site, access routes to the site and any other areas disturbed by his operations shall present a neat, orderly, workmanlike appearance.
- C. Before semi-final payment, the Contractor shall remove all surplus material, plant of any description, and debris of every nature resulting from his operations, and put the site in a neat, orderly condition; and restore all areas which have been used for storage of materials and equipment, and all areas which have been disturbed by his operations, to their original condition or to a condition satisfactory to and approved by the Engineer.

3.04 DUST CONTROL

- A. The Contractor shall maintain all excavations, embankments, stockpiles, haul roads, permanent access roads, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which would cause a hazard or nuisance to others or contaminate surface water.

3.05 NOISE CONTROL

- A. The Contractor shall use every effort and means possible to minimize or eliminate noise caused by his operation which the Engineer may consider objectionable.
- B. All equipment utilized by the Contractor at the Landfill shall be equipped with adequate muffler systems to minimize on-site noise generation.

3.06 LITTER CONTROL

- A. Any litter generated by the Contractor's operation, or generated in the course of performing the work under Contract, shall be collected and properly disposed of on a daily basis.

3.07 VECTOR CONTROL

- A. Sanitary measures and conditions shall be maintained, by the Contractor, at all times in order to avoid harboring, feeding, and breeding of vectors.

3.08 FIRE PREVENTION AND CONTROL

- A. Open burning of any type is prohibited.

3.09 PROHIBITED CONSTRUCTION PROCEDURES

- A. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and floodplains is strictly prohibited. Any violation of this restriction by the Contractor or any person employed by him, will be brought to the immediate attention of the responsible regulatory agencies.
- B. The Contractor shall comply with the following requirements regarding prohibited construction procedures as follows:
 - 1. Dumping of spoil material into any stream corridor, any wetland, any surface waters, or at unspecified locations.
 - 2. Indiscriminate, arbitrary or capricious operation of equipment in any stream corridors, any wetlands or surface waters.
 - 3. Pumping of silt-laden water from trenches or other excavations into any surface waters, any stream corridors or any wetlands.
 - 4. Damaging vegetation adjacent to, or outside of, the area of the work.
 - 5. Disposal of trees, brush and other debris in any stream corridors, any wetlands, any surface waters, or at unspecified locations.
 - 6. Permanent or unspecified alteration of the flow line of any stream.
 - 7. Open burning of project debris.
 - 8. Location of storage stockpile areas in environmentally sensitive areas.
 - 9. Disposal of excess or unsuitable excavation material in wetlands or floodplains even with permission of the property owner.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for project meetings.

1.02 PRE-CONSTRUCTION CONFERENCE

- A. The Engineer will schedule and administer a pre-construction conference.
- B. The pre-construction conference will be scheduled and administered within fourteen (14) calendar days after the dated "Notice to Proceed". The Contractor shall be prepared to address such topics as projected construction schedules, major personnel, critical work areas, construction facilities and shop drawing submittals.

1.03 PROGRESS MEETINGS

- A. The Engineer will schedule and administer progress meetings and specially called meetings throughout the duration of the Work at minimum monthly intervals.
- B. The time and location of such meetings shall be designated by the Engineer and shall be convenient for all parties involved.
- C. The Engineer will, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies to participants, and those affected by decisions made.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for submission of schedules and shop drawings.
- B. For submittal requirements related to contaminated soils, refer to Specification Section 02080 – Excavation and Management of Contaminated Soils.

1.02 PROGRESS SCHEDULE

- A. Within fourteen (14) calendar days after execution of the Contract Documents, the Contractor shall submit to the Engineer for review a construction progress schedule conforming to requirements specified. This schedule should show the proposed dates of commencement and completion of each of the various subdivisions of work required under this Contract and the anticipated monthly percentage of completion based on the total contract price. The Contractor shall be responsible for updating and/or revising this schedule whenever directed by the Engineer throughout the duration of the Contract.
- B. Special attention is directed to the requirement that the Contractor shall start the Work, as specified under this Contract, no later than thirty (30) calendar days after the execution of the Contract Documents, unless otherwise directed by the Owner. The Contractor shall comply with all pre-construction requirements as specified. The Owner reserves the right to delay the commencement of the Work or any part thereof if the specified requirements as determined by the Engineer have not been satisfied. The Owner further reserves the right to limit or, delay construction, or certain activities thereof, in certain areas of the Contract should the Owner deem it to be in the public's best interest and/or safety to do so.
- C. The Contractor shall contact the appropriate town or city authorities concerning any public or semi-public events that may occur during the construction period that may affect construction. The Contractor alone shall be responsible for arranging his construction sequence to conform to any restrictions these events may impose. No claims for extras will be allowed because of any delay, extra materials handling, extra excavation, etc. caused by the imposed restrictions. However, additional time may be granted for completion of the work to compensate for delays caused by said restrictions.

1.03 SHOP DRAWINGS

- A. Submit copies of all shop and working drawings of concrete reinforcement, structural details, piping layout, wiring, materials fabricated especially for the Contract, and materials and equipment for which such drawings are specifically requested.
- B. Shop drawings may be submitted electronically or via hard copy. Engineer's cover sheet, properly completed, shall accompany each submittal.
- C. A maximum of two (2) submittals of each shop drawing will be reviewed by the Engineer. If more submittals are required due to the Contractor's neglect or failure to fulfill the requirements of the Contract plans and specifications, or to make corrections or modifications required by the Engineer in the review of the first two submittals, the Engineer will review the submittal and the Contractor will be responsible for the cost of the review, as determined by the Owner based on the Engineer's documentation of time and rates for additional services established in the Engineering Agreement between the Owner and the Engineer.
- D. Such drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When the dimensions are of particular importance, or when specified, the drawings shall be certified by the manufacturer or fabricator as correct for the Contract.
- E. When so specified or if considered by the Engineer to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc., may be submitted in place of shop and working drawings.
- F. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings to eliminate delay to the Work due to the absence of such drawings. All shop and working drawings must be submitted to the Engineer within thirty (30) calendar days prior to incorporation into the Work, unless otherwise permitted by the Engineer. Prior to the submittal of any shop drawings, the Contractor shall submit a schedule of proposed shop drawing transmittals. The schedule shall identify the subject matter of each transmittal, the corresponding specification section number and the proposed date of submission. Prior to and during the progress of the Work the schedule shall be revised and resubmitted as requested by the Engineer.
- G. No material or equipment shall be purchased or fabricated for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.

- H. Until the necessary review has been made, the Contractor shall not proceed with any portion of the Work (such as the construction of foundations) for which review is required.
- I. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. All shop and working drawings shall be prepared on standard size, 24 inch by 36 inch sheets, except those which are made by changing existing standard shop and working drawings. All drawings shall be clearly marked with the names of the Owner, Contractor, and building, equipment, or structure to which the drawing applies, and shall be suitable numbered. Submitted shop drawings shall be accompanied by a letter of transmittal, completed by the Contractor as approved by the Engineer.
- J. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer; other drawings shall be returned for correction.
- K. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in his letter of transmittal.
- L. The review of shop and working drawings by the Engineer will be general only, and nothing contained in this Section shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance as specified. The Contractor shall be responsible for errors and omissions in shop drawings.
- M. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires, appurtenances, or layouts etc., either existing or as detailed on the Drawings, he shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do the work necessary to make such modifications.
- N. The Contractor shall furnish additional copies of shop drawings or catalog cuts when so requested.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for Contractor's quality control of products, suppliers, manufacturers, services, site conditions, and workmanship, to produce Work of specified quality.

1.02 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Comply fully with manufacturers' instructions, including each step in sequence.
- B. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- D. Perform work by persons qualified to produce workmanship of specified quality.
- E. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.03 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified to be removed, clear area only after field sample has been accepted by the Engineer.

1.04 CERTIFIED WELDERS

- A. Structural welds shall be made only by operators who have been qualified by tests, as prescribed in the "Standard Qualification Procedure" of the American Welders Society, to perform the type of work required.
- B. Pipe welds shall be made only by operators who have been qualified by the National Certified Pipe Welding Bureau and each operator's qualification record shall be submitted to the Engineer before any work is performed.

C. Shop welding shall be in accordance with the "Code for Welding in Building Construction".

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01410

TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Qualification, duties and responsibilities of testing laboratories for construction materials testing.
2. Coordination and scheduling responsibilities of the Contractor.
3. This section is for testing of construction materials only. For environmental testing requirements, refer to Specification Section 02080 – Excavation and Management of Contaminated Soils.

B. Related Sections

1. Section 01600 - Materials and Equipment
2. Section 02200 – Earth Excavation, Backfill, Fill, and Grading

1.02 PAYMENT PROCEDURES

A. Initial Testing

1. The Owner will pay for initial testing services required by the Engineer.

B. Retesting

1. When initial tests indicate noncompliance with the Contract Documents, subsequent retesting occasioned by the noncompliance shall be performed by the same testing agency, and costs thereof will be deducted by the Owner from the Contract Sum.

C. Contractors Convenience Testing

1. Inspecting and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. E329, Agencies Engaged in Construction Inspection and/or Testing

1.04 REQUIREMENTS

A. Work included:

1. Cooperate with the Owner's selected testing agency and all others responsible or testing and inspecting the Work.
2. Provide other testing and inspecting as specified to be furnished by the Contractor in this Section and/or elsewhere in the Contract Documents.
3. Where no testing requirements are described, but the Owner directs testing, the Contractor shall provide testing under the requirements of this Specification.

B. Work not included:

1. Selection of testing laboratory: The Owner will select a qualified independent testing laboratory.

1.05 QUALITY ASSURANCE

A. Qualifications

1. The testing laboratory will be qualified to the Owner's approval in accordance with ASTM E329.

B. Regulatory requirements

1. Testing, when required, will be in accordance with all pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.
2. Regulatory Requirements Inspections and tests required by codes or ordinances, or by a plan approved authority, and which are made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01600 - Materials and Equipment.

B. Promptly process and distribute, to the Engineer, required copies of test reports and instructions to assure necessary retesting and replacement of materials with the least possible delay in progress of the Work.

1.07 SCHEDULING

A. Establishing schedule

1. By advance discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings.

2. Provide all required time within the construction schedule.
 3. Coordinate testing activity with the appropriate testing laboratory.
- B. Revising schedule
1. When changes of construction schedule are necessary during construction, coordinate all such changes with the testing laboratory as required.
- C. Adherence to schedule
1. When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra charges for testing attributable to the delay may be back-charged to the Contractor and shall not be borne by the Owner.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Site Tests

1. Representatives of the testing laboratory shall have access to the Work at all times and at all locations where the Work is in progress. Provide facilities for such access to enable the laboratory to perform its functions properly.
2. All specimens and samples for testing, unless otherwise provided in the Contract Documents, shall be taken by the testing personnel. All sampling equipment and personnel will be provided by the testing laboratory. All deliveries of specimens and samples to the testing laboratory will be performed by the testing laboratory.

END OF SECTION

SECTION 01570

TRAFFIC CONTROL (MASSACHUSETTS)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for traffic control for the duration of the Contract.

1.02 REFERENCES

- A. Manual of Uniform Traffic Control devices (MUTCD) 2009 Edition including all latest revisions.

1.03 PERFORMANCE REQUIREMENTS

- A. Contractor shall have the sole responsibility for the maintenance and protection of traffic.
- B. An authorized representative of the Contractor shall be available on a 24-hour basis for the duration of the Contract for the purpose of correcting construction related impediments or hazards.

1.04 SHOP DRAWINGS

- A. In accordance with SECTION 01300 – SUBMITTALS, submit a traffic plan delineating requirements of this section, the Contract Drawings, and the City of Taunton and Massachusetts Department of Transportation (MassDOT) requirements.
- B. Traffic control plans shall detail all typical work zones and detours.

1.05 SITE CONDITIONS

- A. Replace at no cost to the Owner pavement markings, legends and lane arrows removed or damaged by the construction operation.
- B. Restore temporary detours to original condition.
- C. Replace traffic signal loops damaged during construction within 72 hours.

1.06 SCHEDULING

- A. There shall be no time limitations on construction operations except those hours and locations where noise regulations may apply and except as required for the maintenance of traffic as required by the City of Taunton and Massachusetts Highway Department requirements.

- B. Keep closing of travel lanes to a minimum.
- C. Notify city departments 48 hours prior to construction operations on travel ways.
 - 1. Police Department (508-824-7522).
 - 2. Fire Department (508-824-4024).
 - 3. Department of Public Works (508-821-1431).
- D. The contractor shall be responsible for scheduling all police details required for the work.

1.07 PAYMENT PROCEDURES

- A. The Owner will pay for all police details required for completion of the work.

PART 2 PRODUCTS

2.01 TRAFFIC CONTROL DEVICES

- A. In accordance with the MUTCD.

PART 3 EXECUTION

3.01 INSTALLATION OF TRAFFIC CONTROL DEVICES

- A. In accordance with the MUTCD.

3.02 PROTECTION OF TRAFFIC

- A. Trenches shall be protected and barricaded in accordance with the requirements of 520 CMR §14.04 and the City of Taunton's Trench Permit (see Specification Section 01060 – Permits).
- B. Barricade trenches and roadway excavations at the end of each work period with temporary precast concrete barriers, properly lighted and marked to guide traffic to designated travel lane. Or other means acceptable to the Engineer and approved on the Traffic Plan.
- C. Maintain and protect traffic movements for the entire length of the project.
- D. Keep one lane of traffic open at all times except for brief stoppages dictated by the construction operation involving safety of vehicles in the travel lanes.
- E. Maintain access to business and private ways during construction operations.
- F. Sidewalks, crosswalks, and access ways shall be maintained in accordance with the Americans with Disabilities Act (ADA) requirements.

- G. Furnish sufficient number of signs, temporary precast concrete barriers, warning lights, drums and traffic cones to warn traffic of construction and guide traffic through the construction area in accordance with the MUTCD.

END OF SECTION

SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for delivery, storage, handling and installation of systems, materials, manufactured units, equipment, components, and accessories used in the work.

B. Related Sections

1. Section 01300 - Submittals

1.02 DELIVERY

A. Refer to Specifications' Sections for requirements pertaining to delivery and handling of materials and equipment.

B. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturers' unopened containers or packaging, dry.

C. Provide equipment and personnel to handle products by methods to prevent soiling or damage.

D. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct, and products are undamaged.

1.03 STORAGE AND PROTECTION

A. Refer to Specifications' Sections for requirements pertaining to storage and protection of materials and equipment.

B. Store products in accordance with manufacturers' instruction, with seals and labels intact and legible. Store sensitive products in weather tight enclosures; maintain within temperature and humidity ranges required by manufacturers' instructions.

C. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

D. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.

- E. Arrange storage to provide access for inspection. Periodically inspect to assure that products are undamaged, and are maintained under required conditions.

1.04 INSTALLATION STANDARDS

- A. Comply with Specifications and referenced standards as minimum requirements.
- B. Components required to be supplied in quantity within a Specification Section shall be the same, and shall be interchangeable.
- C. Do not use materials and equipment removed from existing structures, except as specifically required, or allowed, by the Contract Documents.
- D. Perform work by persons qualified to produce workmanship of specified quality.
- E. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
- F. When work is specified to comply with manufacturers' instructions, submit copies as specified in Section 01300 - Submittals, distribute copies to persons involved, and maintain one set in field office.
- G. Perform work in accordance with details of instructions and specified requirements.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01700

CONTRACT CLOSE-OUT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for specific administrative procedures, close-out submittals and forms used at substantial and final completion of the Work.
- B. Contractor shall satisfy all administrative requirements within the Contract Documents and the Requirements listed in this section prior to Contract Close-out.

1.02 FINAL CLEANING

- A. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- B. The Contractor shall restore or replace, when and as directed, any public or private property damage by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end, the Contractor shall do as required, all necessary highway or driveway, walk and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.
- C. Unless otherwise specified under the various Sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.
- D. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for occupancy.
- E. Cleaning shall include all surfaces, interior and exterior in which the Contractor and all Subcontractors have had access whether existing or new.
- F. Refer to Sections of the Specifications for cleaning of specific products or work.

- G. Use only those materials which will not create hazards to health or property and which will not damage surfaces.
- H. Use only those cleaning materials and methods that are recommended by the manufacturer of surfaces material to be cleaned.
- I. Employ experienced workmen, or professional cleaners, for final cleaning operations.

1.03 PROJECT AS-BUILTS

- A. Project As-builts shall consist of all the contract drawings.
- B. The Contractor and all Subcontractors shall be required to maintain one set of As-builts, as the work relates to their Sections of the Specifications, at the site. As-builts will be used by the Engineer as the basis of Record Drawings.
- C. As-builts shall be stored and maintained in the General Contractor's field office apart from other documents used for construction. The As-builts shall be maintained in a clean, dry, and legible condition and shall not be used for construction purposes.
- D. As-builts shall be available at all time for inspection by the Engineer. All deficiencies noted shall be promptly corrected.
- E. The following information shall be indicated on the As-builts:
 - 1. Record all changes, including change orders, in the location, size, number, and type both horizontally and vertically of all elements of the projects which deviate from those indicated on all the contract drawings.
 - 2. The tolerance for the actual location of utilities and appurtenances within the building to be marked on the As-builts shall be plus or minus two (2) inches.
 - 3. The location of all underground utilities and appurtenances referenced to permanent surface improvements, both horizontally and vertically at ten (10) ft. intervals and at all changes of direction.
 - 4. The location of all internal utilities and appurtenances, concealed by finish materials, including but not limited to valves, coils, dampers, vents, clean outs, strainers, pipes, junction boxes, turning vanes, variable and constant volume boxes, ducts, traps and maintenance devices. The location of these internal utilities, appurtenances and devices shall be shown by offsets to the column grid lines on the drawings.
 - 5. Each of the utilities and appurtenances shall be referenced by showing a tag number, area served and function on the As-builts.
- F. At the end of each month and before payment for materials installed, the Contractor, and his Subcontractors, shall review As-builts for purpose of payment. IF

THE CHANGES IN LOCATION OF ALL INSTALLED ELEMENTS ARE NOT SHOWN ON THE AS-BUILTS AND VERIFIED IN THE FIELD, THEN THE MATERIAL SHALL NOT BE CONSIDERED AS INSTALLED AND PAYMENT WILL BE WITHHELD.

- G. Prior to the installation of all finish materials, a review of the As-builts shall be made to confirm that all changes have been recorded. All costs to investigate such conditions shall be borne by the applicable party as demonstrated by the Engineer.
- H. At the completion of the contract, each Subcontractor shall submit to the Contractor a complete set of his respective As-builts indicating all changes. After checking the above drawings, the Contractor shall certify in writing on the title sheet of the drawings that they are complete and correct and shall submit the As-builts to the Engineer.

1.04 WARRANTIES

- A. Comply with requirements of Section 01740 Warranties.

1.05 FINAL INSPECTION

- A. The Contractor shall submit written certification that:
 - 1. Project has been inspected for compliance with Contract Documents.
 - 2. Equipment and systems have been tested in the presence of the manufacturer's representative and are operational and satisfactory.
 - 3. Project is completed, and ready for final inspection.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01740

WARRANTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

1.02 SUBMITTAL

- A. Submit written warranties to the Owner prior to the date fixed by the Engineer for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than a date of Substantial Completion for the Work, or a designed portion of the Work, submit written warranties upon request of the Owner.
- B. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner prior to acceptance of this portion of the Work.
- C. Refer to individual Sections of Division 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.

1.03 WARRANTY REQUIREMENT

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
- E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the contract Documents.
- F. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.04 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01800

MAINTENANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for maintaining work completed under this Contract.

1.02 MAINTENANCE PERIOD

- A. The general maintenance period for all construction or materials under this Contract shall be one (1) year subsequent to the date of the acceptance of the work by the Owner, or as provided by other sections of this Specification.
- B. If the Owner puts any structure or equipment to use prior to acceptance of all work under the Contract, the maintenance period for such structures or equipment shall be calculated from the time use begins.
- C. Contractor agrees to replace the material which does not conform to the Contract requirements, and to repair any damage of material or work without cost to the Owner, to satisfaction of Engineer, in conformance with Contract Documents provided orders for replacement and/or repairs are received in writing by the Contractor within the one year period.
- D. This Section shall in no way limit the duration of the Contractor's responsibility for the correction of any defect due to workmanship or materials provided by the Contractor which are not in compliance with the Contract Documents.

1.03 ABUSE OF WORK

- A. Contractor is not obligated to perform work of replacement or repair that he may prove is required because of abuse by parties other than the Contractor, after the date the Owner puts to continuous use the work requiring replacements or repair, or after date the Owner has approved the Certificate of Completion.

1.04 EMERGENCY REPAIRS

- A. If the Owner deems necessary, the Owner shall order replacement or repairs be undertaken within 24 hours.
- B. If the Contractor delays or fails to make the ordered replacement or repairs within the time specified, the Owner shall have the right to make such replacements or repairs and the expense shall be deducted from moneys due the Contractor, or moneys of the Contractor retained by the Owner.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

DIVISION 02

SECTION 02076

ASBESTOS-CEMENT (TRANSITE) PIPE REMOVAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements and procedures for identifying, handling, storing, and disposing of Asbestos Containing Material (ACM) including pipe and soil.

B. Related Sections

1. Section 01025 – Measurement and Payment
2. Section 02080 – Management of Contaminated Soil

1.02 WORK INCLUDED

- A. This section covers the furnishing of all labor, materials, facilities, equipment, services, employee training and testing, permits and agreements necessary to perform the work required for the removal, transportation and disposal of Asbestos Containing Material (ACM), including but not limited to asbestos-cement piping.

1. Any work concerning soil or groundwater contaminated with anything other than asbestos shall not be covered by this specification, but shall be covered by specification section 02080 – Management of Contaminated Soil

- B. The Contractor shall perform all work in accordance with these specifications, applicable sections of Massachusetts law including 310 CMR 7.15 (in accordance with MassDEP's Asbestos Cement Pipe Guidance Document and Conditional Enforcement Discretion document, May 22, 2015), U.S. Environmental Protection Agency (U.S. EPA) and OSHA regulations, NIOSH recommendations, and any other applicable federal, state and local government regulations and guidelines.

- C. Provide appropriate worker training, respiratory protection and medical examination. Provide specific training on asbestos cement pipe removal to workers who may handle asbestos cement pipe, which at a minimum should include the Massachusetts Water Works Association 8 Hour OSHA Class II Asbestos Training: Asbestos – Cement Pipe Worker Safety or equivalent. Provide MA licensed asbestos workers for any cutting or pipe breaking operations, or any work that has the potential to cause asbestos to become friable during handling. Document all training prior to work by submitting certificates of attendance or copies of licenses

- D. Should Asbestos Containing Material (ACM) be identified during the course of excavation activities, Contractor's efforts shall include, but not be limited to, the following:

1. Securing all permits and licenses, as necessary, including notification/reporting requirements, with respect to unforeseen conditions;
2. Mobilization and demobilization of all personnel (including subcontractors), equipment, materials and supplies required to perform the Work;
3. Assisting ENGINEER in obtaining environmental samples;

4. Provide secure, fenced and locked asbestos storage area in accordance with Massachusetts Department of Environmental Protection Asbestos Cement Pipe Guidance Document dated May 22, 2015, 310 CMR 7.00 and 310 CMR 19.00
 5. Upon determination by the ENGINEER that the material qualifies as ACM, coordinating all off-site disposal of ACM at an appropriate disposal facility, based upon existing in-situ characterization results and/or supplemental sampling and analytical results provided by ENGINEER.
 6. General site cleanup.
- E. The Contractor shall be responsible for the complete removal and disposal of all identified asbestos-containing/contaminated materials located at the site as specified herein and on the plans This shall include, but shall not be limited to the disposal of asbestos-cement (AC) pipe and impacted soils as required to complete the work as shown on the drawings.
- F. The Contractor's Asbestos Competent Person (CP) shall be responsible for coordinating daily asbestos activities with the Engineer, Licensed Site Professional (LSP), Licensed Asbestos Contractor (AC), Transporter (T) and Disposal Facility (DF). The Asbestos Documentation Checklist shown at the end of this section shall be completed and submitted to the Engineer by the CP on a daily basis throughout the entire project.
- G. Provide a written Asbestos Work Plan (AWP) that addresses all specification and regulatory requirements related to asbestos. The AWP must be prepared and stamped by a MA Asbestos Project Designer.
- H. Provide a written Soil Management Plan (SMP) that addresses all specification and regulatory requirements related to asbestos storage, transport and disposal. The SMP must be prepared by a MA Licensed Site Professional. **Note that if the contractor chooses to do so, he may submit a single Soil Management Plan which meets the requirements of both this specification section and the requirements of Section 02080 – Management of Contaminated Soil.**

1.03 DEFINITIONS

All terms not defined herein shall have the meaning given in the applicable publications and regulations.

- A. Abatement: Procedures to control the release of asbestos fibers from ACM; includes removal, encapsulation, and enclosure of ACM.
- B. ACM: Asbestos-containing materials.
- C. Adequately Wet: Sufficiently mixed or penetrated with liquid to prevent the release of particulate. If visible emissions are observed coming from the ACM, then that material has not been adequately wetted.
- D. Amended Water: Water containing a wetting agent or surfactant that has been added to increase the ability of the water to penetrate ACM.

- E. Asbestos: Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated or altered.
- F. Asbestos-Cement (AC) Piping: AC pipe has been widely used for water and sewer mains and occasionally used as electrical conduits, drainage pipe, and vent pipes.
- G. Asbestos Containing Material (ACM): Any material containing equal to or greater than 1% asbestos based on analysis via polarized light microscopy (PLM) is considered ACM.
- H. Asbestos Contaminated Material: any material which has become contaminated (surficially or in the materials matrix or composition) with one or more asbestos fibers.
- I. Asbestos Documentation Checklist (ADC): A checklist that must be submitted daily that documents asbestos (i.e. soil, pipe, etc) removal activities and regulatory compliance during the project. The Contractor's Asbestos Competent Person (CP) shall be responsible for completing the ADC, then obtaining review and verification by the Engineer's Resident Project Representative (RPR). The CP is responsible for coordinating other activities as needed by the Asbestos Monitor (AM), Licensed Asbestos Contractor (AC), Transporter (T), Disposal Facility (DF), and Licensed Site Professional (LSP). The following defines specific responsibilities for the completion of each task in the ADC:
 - 1. Competent Person – General Contactor's representative that identifies existing asbestos hazards in the workplace and selects the appropriate control strategy to minimize asbestos exposure, and has the authority to take prompt corrective measures. Oversees all removal of asbestos, including removal of intact asbestos pipe without breakage or cutting, and coordinates RPR, AM, AC, T, DF and LSP activities. Ensures all contract and specification asbestos regulatory requirements are met and documents by completing the ADC. Ensures proper personal protective equipment is worn by all workers. Collects daily asbestos air samples to document acceptable asbestos exposure levels for OSHA worker exposure. Visually inspects all soil leaving the site to verify there is no presumed asbestos containing materials present in clean soils, and notifies the Town immediately if there are any variances from the specification or regulations.
 - 2. Licensed Asbestos Contractor – General Contractor's subcontractor that performs asbestos removal in contained or glove bag work areas if pipe is damaged or friable, not intact, deteriorated, crumbled, pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix (e.g., saw cutting and/or tapping). Works with CP to ensure all asbestos stored on the site is wrapped, labeled and stored in a fenced/locked/secured area. Visually inspects clean soil to verify there is no presumed asbestos containing materials present in clean soils during site visits. Provides summary documentation to the CP for inclusion in the ADC, to ensure work is performed in accordance with the Specifications and regulatory requirements. Notifies the Town immediately if there are any variances from the specification or regulations during site visits.

3. Asbestos Monitor – Owner’s representative that performs air monitoring and/or visual inspections of contained and/or glove bag work areas to ensure area meets DOS clearance criteria. Provides summary documentation of test results to CP for inclusion in the ADC for contained work areas. Ensures proper personal protective equipment is worn by workers. Visually inspects clean soil to verify there is no presumed asbestos containing materials present in clean soils during site visits. Observes contractors work activities periodically to ensure compliance with the specifications.
 4. Engineer’s Resident Project Representative – Engineer’s representative that verifies all contract and specification asbestos regulatory requirements are met by reviewing, verifying and signing the ADC. Ensures proper personal protective equipment is worn by workers. Visually inspects all soil leaving the site to verify there is no presumed asbestos containing material present in clean soils.
 5. Licensed Site Professional – Owner’s representative that oversees activities necessary to transport and dispose of asbestos and contaminated soil in accordance with the Specifications, Soil Management Plan and regulatory requirements. Provides summary documentation to the CP for inclusion in the ADC to ensure transporters and disposal facility are permitted properly. Reviews all Waste Shipment Records for accuracy and coordinates Owner’s signature of shipping papers. Visually inspects clean soil to verify there is no presumed asbestos containing materials present in clean soils during site visits.
 6. Transporter - General Contractor’s subcontractor that transports and disposes of asbestos and contaminated soil in accordance with the Specifications, Soil Management Plan and regulatory requirements. Provides summary documentation to the CP for inclusion in the ADC to ensure transporters and disposal facility are licensed. Reviews all Waste Shipment Records (WSR) for accuracy and verifies Owner’s signature of shipping papers. Visually inspects clean soil to verify there is no presumed asbestos containing materials present in clean soils during site visits.
 7. Disposal Facility - General Contractor’s licensed disposal site for asbestos and contaminated soil in accordance with the Specifications, Soil Management Plan and regulatory requirements. Provides completed WSR to the CP for inclusion in the ADC to ensure proper asbestos disposal.
- J. Asbestos Work Plan (AWP): The written AWP addresses all specification and regulatory requirements related to asbestos. The AWP must be prepared by a Massachusetts Asbestos Project Designer.
- K. Authorized Visitors: Any visitor authorized by the Owner or any representative of a regulatory agency or other agency having jurisdiction over the project.
- L. Clean: Visually free of dust, dirt, debris and any foreign material.
- M. Clean Room: An uncontaminated room that is a part of the worker decontamination unit and in which worker’s street clothes and uncontaminated protective equipment can be stored.

- N. Competent Person: In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy to minimize asbestos exposure, who has the authority to take prompt corrective measures, as specified in 29 CFR 1926.32(f); in addition, for Class I and II work, who is trained in a course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor. A Competent Person shall be a DLS-certified asbestos inspector or have completed a DLS-approved training course specific to asbestos cement pipe worker safety (e.g. the "8 hour OSHA Class II Asbestos Training: Asbestos Cement Pipe (ACP) Worker Safety" course developed jointly by the Massachusetts Water Works and the Utility Contractors of New England, or another course similar in length and content that has been reviewed and approved in writing by DLS.
- O. Critical Barrier: One or more layers of plastic sealed over all openings into a work area or other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.
- P. Decontamination Area/Unit: An enclosed area adjacent to and connected to the regulated area and consisting of an equipment room, shower room, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
- Q. Disturbance: Activities that disrupt the matrix of ACM, crumble or pulverize ACM, or generate visible debris from ACM. Disturbance includes cutting away small amounts of ACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component.
- R. Employee Exposure: The exposure to airborne asbestos that would occur if the employee were not wearing respiratory protection equipment.
- S. Friable Asbestos Material: Material that contains more than one percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.
- T. Glove bag: Not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled; which is placed with an air-tight seal around an asbestos covering and which permits asbestos material contained by the bag to be removed without releasing asbestos fibers into the atmosphere.
- U. HEPA Filter: High-Efficiency Particulate Air (HEPA) An air filter capable of trapping and retaining at least 99.97 percent of all monodispersed particles sized 0.3 micron in diameter or larger.
- V. HEPA Vacuum: Vacuum equipment with HEPA filter system for filtering the exhaust air from the unit.
- W. Intact: The ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

- X. Negative Initial Exposure Assessment: A demonstration by the employer which complies with the criteria in 29 CFR 1926.1101 (f)(2)(iii), that employee exposure during an operation is expected to be consistently below the PEL's.
- Y. NESHAP: National Emission Standards for Hazardous Air Pollutants (Title 40, Part 61).
- Z. Non-Friable Asbestos-Containing Building Materials: Materials which contain asbestos bound by a matrix which cannot, when dry, be crumbled, pulverized, or reduced to powder by hand pressure.
- AA. Presumed Asbestos Containing Material: Material presumed to contain asbestos unless proven otherwise by laboratory analysis.
- BB. Project Designer: A person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C Sec. 763.90(g) and is certified in accordance with 453 CMR 6.00.
- CC. Project Monitor: An individual who is certified by applicable state agencies to observe abatement activities performed by contractors, to represent the Owner to ensure work is completed according to specifications and in compliance with statutes and regulations, and to perform air monitoring to determine final clearance.
- DD. Regulated Area: An established area within which airborne concentration of asbestos fibers exceeds or can reasonably be expected to exceed the permissible exposure limit.
- EE. Removal: All procedures necessary to remove and dispose of ACM from the designated areas in accordance with the contract documents and all applicable regulatory requirements.
- FF. Soil Management Plan (SMP): The written SMP addresses all specification and regulatory requirements related to asbestos storage, transport and disposal. The SMP must be prepared by a MA Licensed Site Professional.
- GG. Specific Training: Course titled Massachusetts Water Works Association 8 Hour OSHA Class II Asbestos Training: Asbestos – Cement Pipe Worker Safety or equivalent that is approved by the MA Department of Environmental Protection for training contact hours.
- HH. Unforeseen Condition: Asbestos encountered during pipe removal activities that is not identified in the specification or plans.
- II. Waste Generator: Any owner or operator whose act or process produces asbestos-containing waste material.
- JJ. Waste Shipment Record: The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.

1.04 PERSONNEL QUALIFICATIONS

- A. All personnel of the Contractor or any approved subcontractors involved with asbestos abatement work (including removal of asbestos-cement pipe and soils

contaminated with asbestos containing materials) shall meet the following minimum qualifications:

1. Medical examination within the past year in accordance with OSHA 1926.1101 with a physician's written opinion that the worker has no condition that would preclude him/her from working with asbestos or wearing a respirator.
- B. The Contractor shall employ a Competent Person to oversee all aspects of ACM removal. In the event that a previously identified competent person is not on site when ACM is encountered, the Contractor shall immediately stop work and adequately wet any exposed ACM. The Contractor shall not resume work requiring ACM removal until a previously identified competent person is on site to oversee removal and has been authorized by the Owner.
- C. There shall be a sufficient number of trained and qualified workers, foremen and superintendents to accomplish the work within the required schedule. No untrained nor fully qualified and pre-approved person shall be employed to speed up completion of the abatement work.
- D. Prior to beginning any abatement activity, all personnel shall be trained in accordance with OSHA 29 CFR 1926.1101 (k)(9). Training must include, at a minimum, the elements listed at 29 CFR 1926.1101 (k)(9)(viii). Training shall have been conducted by an EPA approved trainer meeting the requirements of EPA 40 CFR 763 Appendix C (AHERA MAP). Initial training certificates and current refresher and accreditation proof must be submitted for each person working at the site. At a minimum, this should include the Massachusetts Water Works Association 8 Hour OSHA Class II Asbestos Training: Asbestos – Cement Pipe Worker Safety or equivalent.
- E. Medical examinations meeting the requirements of 29 CFR 1926.1101 (m) shall be provided for all personnel working in the regulated area, regardless of exposure levels. The physician's written opinion as required by 29 CFR 1926.1101 (m)(4) shall be provided for each person and shall include in the opinion that the person has been evaluated for working in a heat stress environment while wearing personal protective equipment (including a negative pressure respirator) and is able to perform the work.

1.05 SUBMITTALS

- A. Submittals shall be in accordance with Specification Section 01300 - Submittals.
- B. No Work will be permitted to proceed until the required submittals have been received and approved by the ENGINEER. In the event the ENGINEER requests additional information, it shall be the CONTRACTOR's responsibility to provide such additional information in a complete and timely manner, so that construction can proceed by the date stipulated in the Notice to Proceed.
 1. Submittal of all required certifications demonstrating that personnel are properly trained and qualified to perform the Work in accordance with applicable OSHA regulations and all laws governing the Work.

2. Certificates of training and documentation of medical examination including a physician's determination that the employee is able to wear a respirator and documentation of current successful respirator fit test (29 CFR 1926.1101 Appendix C) of all personnel assigned to the project, including Competent Person.
 3. Names and qualifications of all proposed subcontractors, if any, identifying the tasks to be performed by each proposed Subcontractor Respiratory Protection Program. Include site specific exposure assessment for respirator selection.
 4. The CONTRACTOR's Site-Specific Health & Safety Plan (HASP) pursuant to OSHA 1910.120 requirements. **Note that the HASP should address both the requirements of this section, and Section 02080 – Management of Contaminated Soil**
 5. Listing of Competent Persons and qualifications. For all workers, submit certificates of attendance or copies of licenses, which at a minimum should include the Massachusetts Water Works Association 8 Hour OSHA Class II Asbestos Training: Asbestos – Cement Pipe Worker Safety or equivalent.
 6. Submit a Soil Management Plan (SMP) that addresses all specification and regulatory requirements related to asbestos storage, transport and disposal. The SMP must be prepared by a MA Licensed Site Professional. **Note that if the contractor chooses to do so, he may submit a single Soil Management Plan which meets the requirements of both this specification section and the requirements of Section 02080 – Management of Contaminated Soil.**
 7. Approval of submittals by the ENGINEER shall not impose any liability upon the ENGINEER, nor shall any such approval relieve the CONTRACTOR of his/her responsibilities to meet all of the requirements and comply with all applicable laws, regulations and other applicable requirements under this Contract.
- C. During Abatement
1. Results of personnel exposure monitoring.
 2. Project schedule.
 3. Contractor shall submit completed ADCs to the Engineer on a daily basis.
- D. Post Abatement Submittals
1. Disposal receipts and Waste Shipment Record (within timeframes regulated by EPA and DLS) signed by the Owner prior to leaving the site then by the landfill operator demonstrating that the ACM removed from the project has been packaged, transported and disposed of properly.
 2. Provide the owner with copies of on-site job logs, notifications, permits, accident reports, personnel exposure air monitoring results, waivers of lien.
 3. Copies of any notices of non-compliance issued by governmental authorities.
 4. Field notes documenting visual inspections of soils for asbestos.

PART 2 - MATERIALS AND EQUIPMENT

2.01 MATERIALS

- A. Polyethylene sheeting shall be at least 6-mil thickness, shall be fire retardant and shall meet all applicable Standards for temporary construction barriers.

- B. Duct tape or other waterproof tape, furring strips, staples, nails, screws, or other materials shall be available to secure polyethylene sheeting
- C. Adequately stocked first aid kits shall be on-site.
- D. Surfactant (wetting agent) shall be a 50/50 mixture of polyoxyethylene ether and polyoxyethylene ester, or equivalent, mixed in a proportion of 1 fluid ounce to 5 gallons of water or as specified by manufacturer. An “equivalent surfactant” shall be understood to mean a material with a surface tension of 29 dynes/cm as tested in its properly mixed concentration, using ASTM method D1331-56- (“Surface and Interfacial Tension of Solutions of Surface Active Agents”)

2.02 TOOLS AND EQUIPMENT

- A. Transportation Equipment: Transportation equipment, as required, shall be suitable for loading, temporary storage, transport, and unloading of contaminated waste without exposure to persons or property. The equipment shall be secured at all times and access limited to authorized personnel only. Open-top dumpsters used for transport of asbestos waste shall be secured within a fenced compound with a locking gate.
- B. Vacuum Equipment: All vacuum equipment utilized in the work area shall be equipped with HEPA filtration systems, 99.97% efficient to 0.3 microns particulate size. Deliver all vacuums to the site with clean waste containers and new HEPA filters installed. Vacuum wands, brushes, hoses, and other accessories shall be delivered to the site new or, if previously used, shall be delivered to the site in airtight disposal bags.
- C. The Contractor shall provide approved respirators and protective clothing to all Contractor personnel. The Contractor shall also provide approved protective clothing to representatives of the Owner, and to representatives of the State or other governmental entity who may inspect the job site.
- D. The Contractor shall have sufficient equipment to mix and spray wetting agents.

PART 3 – EXECUTION

3.01 INSPECTION AND PREPARATION

- A. Notify Owner’s Representative prior to the start of the work and request inspection to document compliance with these specifications.
- B. Provide personal protective equipment (PPE) as recommended in the contractors health and safety plan (HASP)
- C. The Competent Person shall ensure that each time workers enter the regulated area, they observe and follow all required procedures and wear appropriate personal protective equipment.

- D. The Competent Person shall meet all requirements of 29 CFR 1926.1101 (o) and assure that all requirements for regulated areas at 29 CFR 1926.1101 (e) are met. No person within a regulated area shall be allowed to eat, drink, smoke, chew tobacco or gum, apply cosmetics, or in any way interfere with the fit of their respirator (if applicable).
- E. The Contractor shall instruct all employees and workers in the proper care of their personally issued respiratory protection equipment (if applicable), including daily maintenance, sanitizing procedures, etc.
- F. All respiratory protection equipment (if applicable) shall be inspected by Contractor's personnel at the beginning of each work period, including breaks and lunch periods.

3.02 SITE SECURITY

- A. Regulated area access is to be restricted to authorized trained/accredited and protected personnel. The Contractor's Competent Person shall control site security during abatement operations in order to isolate work in progress and protect adjacent personnel.

3.03 GENERAL AC PIPE PROCEDURES

- A. Non-friable asbestos materials contain more than one percent asbestos by weight and cannot be crumbled, pulverized, or reduced to powder by hand pressure when dry. Non-friable asbestos material such as asbestos concrete pipe typically have asbestos fibers that are bound or locked into the product matrix, so that the fibers are not readily released unless subject to significant abrasion. A variety of pipe disturbance activities minimize release of asbestos from non-friable materials including:
 - 1. Pipe snapping
 - 2. Placing wet burlap over piping during breakage
 - 3. Applying foam over break area
 - 4. Wet methods
 - 5. Local ventilation equipped shrouds with High Efficiency Particulate Air (HEPA) filtration
- B. Use of these methods shall be identified in the asbestos plan, then verified with worker air sampling at the start of the project to ensure non-friable asbestos is adequately controlled.
- C. The Contractor shall be responsible for taking whatever steps are necessary to prevent a release to the environment and additional contamination of the areas beneath the AC pipe.
- D. Dust and airborne fiber release shall be minimized by the use of amended water. The Contractor shall prevent visible dust emissions during, abatement, cleaning and all other activities.

- E. Expose the asbestos cement pipe without disturbing the AC pipe.
- F. Excavate no closer than 6 inches of the pipe. Carefully uncover the remainder of the pipe by hand or with a shovel.
- G. An assessment should then be made to determine if the pipe is damaged, cracked or broken.

3.04 INTACT AND NOT DETERIORATED AC PIPE REMOVAL PROCEDURE

- A. Utilize the following procedures if the pipe is not damaged (intact and not deteriorated)
- B. Place 6 mil polyethylene sheeting under the asbestos cement pipe to prevent soil contamination. If the trench is filled with water, the placement of polyethylene sheeting is not required.
- C. Adequately wet the asbestos cement pipe with amended water using surfactant or liquid soap before and during removal to avoid creating airborne dust.
- D. Remove the asbestos cement pipe to the nearest coupling. (bell or compression fitting)
- E. Slide the pipe apart at the joints (no saw cutting) or use other methods that do not cause the pipe to become friable or release asbestos fibers.
- F. In the event of breakage of asbestos pipe during removal which results in pieces contacting soil, remove all debris and soil located adjacent to and beneath the debris as well as six inches of soil from beneath and surrounding the debris. All resultant debris and soils shall be properly handled, packaged and disposed of as friable, regulated asbestos waste.
- G. The Owner's Representative and the Owner shall be notified immediately in the event of breakage.
- H. Wrap the wet asbestos cement pipe in two layers of 6 mil polyethylene sheeting, seal with duct tape and label in accordance with OSHA requirements. This can be done in the trench or adjacent to the trench.

3.05 DAMAGED PIPE REMOVAL PROCEDURE

- A. Utilize the following procedures if the pipe is damaged (not intact, deteriorated, or when saw cutting and/or tapping is necessary)
- B. Place 6 mil polyethylene sheeting under the asbestos cement pipe to prevent soil contamination.

- C. Adequately wet asbestos cement pipe with amended water where cutting or breaking will occur.
- D. If AC pipe is found to be friable or will be rendered friable, abatement shall be conducted in containment.
- E. Saw cutting of asbestos cement pipe shall only be conducted using HEPA exhausted, shrouded cutting equipment.
- F. In the event of breakage of asbestos pipe during removal which results in pieces contacting soil, then the Contractor shall remove all debris and soil located adjacent to and beneath the debris as well as six inches of soil from beneath and surrounding the debris. All resultant debris and soils shall be properly handled, packaged and disposed of as friable, regulated asbestos waste.
- G. The Owner shall be notified immediately in the event of breakage.
- H. Wrap wet asbestos cement pipe in two layers of 6 mil polyethylene sheeting, seal with duct tape and label. This can be done either in the trench or adjacent to the trench.

3.06 CLEANING AND FINAL DECONTAMINATION

- A. After the removal of the AC pipe has been completed and before removal of barriers (as applicable), the entire area shall be thoroughly wet cleaned and/or vacuumed with HEPA filtered vacuum. All plastic barriers, tapes and disposable contaminated equipment shall also be disposed of as asbestos waste. All reusable contaminated equipment such as masks, hard hats, etc., shall be thoroughly decontaminated through wet cleaning or sealed within 6-mil polyethylene bags before removal from the work area.

3.07 MONITORING, TESTING AND INSPECTION

- A. The Contractor is responsible for meeting OSHA requirements for his personnel, including but not limited to, monitoring requirements, safety compliance training and record keeping.

3.08 UNFORESEEN ASBESTOS CONTINGENCY PLAN

- A. If unforeseen asbestos is encountered during pipe removal activities not identified in the specification or plans, the Contractor shall immediately stop excavation and adequately wet any exposed ACM.
- B. The Owner shall be notified immediately in the event unforeseen asbestos is encountered.

3.09 WASTE DISPOSAL

- A. Refer to Section 02080 - Management of Contaminated Soil for additional disposal requirements.
- B. Manage wrapped asbestos cement pipe, polyethylene sheeting and any other material contaminated with visible asbestos debris as asbestos waste in accordance with 310 CMR 7.15 and 310 CMR 19.061.
- C. All asbestos wastes must be handled, packaged, stored, transported, and disposed of as in compliance with all Federal, State, and local regulations and codes.
- D. If waste containers are not already so preprinted, warning labels having waterproof print and permanent adhesive shall be affixed to the lid and/or sides of the containers, whether or not these containers are further packaged. Warning labels shall be conspicuous and legible, and conform to the latest OSHA, EPA, DOT asbestos regulatory labeling requirements.
- E. All waste shall be thoroughly wetted when packaged. When a waste bag is full, it shall be securely sealed with tape, and then placed in the designated temporary storage area inside of the work area.
- F. All AC pipe shall be double wrapped in 6-mil polyethylene sheeting and labeled as ACM prior to transport.
- G. Properly wrapped and labeled asbestos pipe, as well as all other containerized debris, must be placed in a roll-off container(s), or covered trucks, trailers or vans that are lined with 2 layers of 6 mil polyethylene sheeting. The container shall be an enclosed leak-tight container and locked having proper labels and DOT placards as required. If open top roll-off containers are used, they must be properly sealed, labeled and secured inside a locked fenced area to prevent access by unauthorized personnel and covered to prevent water accumulation.
- H. Provide legal transportation of the waste to the disposal landfill, and complete or obtain all required licenses, manifests, dump slips, or other forms. Copies of all forms or licenses, and the signed original of the WSR for each waste load, shall be given to Owner's Representative.
- I. Waste may be transported to and temporarily stored at a pre-approved off-site storage area owned by Asbestos Contractor, but it must ultimately be disposed of at the specified landfill before final payments are approved.
- J. The Contractor will document actual disposal of the waste at the designated landfill by completing a WSR and forwarding the original along with the Bill of Lading to the Owner within the time limits specified by EPA NESHAP regulations. Investigate, correct and notify owner immediately in writing if executed WSR is not received

from disposal facility. Properly executed WSR is required for final payment of work under Section 01150.

3.10 CONTRACTOR RESPONSIBILITY

- A. The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling and disposal of asbestos contaminated materials, and protection of workers and visitors to the site, and persons occupying areas adjacent to the site.

3.10 ASBESTOS DOCUMENTATION CHECKLIST

- A. The following checklist must be submitted daily that documents asbestos (i.e. soil, pipe, etc) removal activities and regulatory compliance during the project. The Contractor's Asbestos Competent Person (CP) shall be responsible for completing the ADC, then obtaining review and verification by the Engineer's Resident Project Representative (RPR). The CP is responsible for coordinating other activities as needed by the Asbestos Monitor (AM), Licensed Asbestos Contractor (AC), Transporter (T), Disposal Facility (DF), and Licensed Site Professional (LSP).

Asbestos Documentation Checklist
(This form is only required if asbestos is encountered. Attach additional documentation as necessary [e.g., test results, waste shipment records, etc.])

Project Name _____ Date: _____

Project Location _____

Mandatory Signatures:

Completed by Contractor Asbestos Competent Person (CP) - Print Name and Signature

Complete as Applicable:

Quantity of Asbestos Pipe Removed in Linear Feet _____

Quantity of Asbestos Pipe Removed under Containment in Linear Feet _____

Station Locations of Asbestos Pipe Removed _____

Quantity of Asbestos Pipe Shipped Off-Site in Linear Feet _____

Quantity of Asbestos Pipe Shipped Off-Site in Cubic Yards _____

Quantity of Asbestos Contaminated Soil Removed in Cubic Yards _____

Asbestos Contaminated Soil Removal Time in Hours _____

Disposal Site and Address _____

Transporter Name and Address _____

Summary of Asbestos Testing Results _____

Asbestos Contractor _____

Asbestos Monitoring Firm _____

Soil Management Plan Consultant _____

Check off and verify all that apply for daily asbestos compliance activities:

Y E S	N O	N A	Compliance Activity
			1. Does the DEP asbestos regulatory notification cover the start/stop date, type and quantity of removed asbestos?
			2. Do all workers removing asbestos pipe have 8-hour DEP approved asbestos pipe removal training and was an Asbestos Competent Person present?
			3. Do workers that wear respirators or are licensed asbestos workers have medical exams?
			4. Were all asbestos pipes removed intact in non-friable state?
			5. Was plastic placed under all asbestos during pipe separation?
			6. Were wet methods used during all asbestos disturbances?
			7. Was a High Efficiency Particulate Air (HEPA) filtered ventilation shroud used during uncontained pipe sawing?
			8. Were containment methods (i.e. glove bag or negative enclosure) used during non-intact breakage or cutting of asbestos?
			9. Did an Asbestos Competent Person perform a post-abatement visual inspection if breakage or cutting of asbestos pipe was necessary?
			10. Was worker air sampling performed for OSHA compliance?
			11. Did a MA Licensed Asbestos Contractor perform asbestos work under containment if asbestos pipe was friable?
			12. Were soils visually inspected for presumed asbestos containing material, other than soil and pipe scheduled for removal, prior to removal from the site?
			13. Was all asbestos disposal work performed in accordance with the Soil Management Plan and disposed of at an approved facility?
			14. Was the stored asbestos wrapped in 2 layers plastic, labeled and stored in a locked/fenced/secure location?
			15. Was all asbestos shipped off site accompanied by a properly executed Waste Shipment Record with the Owner's signature?
			16. Was all asbestos shipped off site labeled with the owner's name and address?
			17. Was proper personal protective equipment worn during asbestos work including respirators, clothing, gloves and boots?
			18. Provide in the space below, any additional comments or variances to the preceding items referencing appropriate item number:

SECTION 02080

SOIL MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for handling, transportation, stockpiling, and disposal of soil.

B. Related Sections

1. Section 01025 – Measurement and Payment
2. Section 01300 – Submittals
3. Section 02076 – Asbestos-Cement Pipe Removal
4. Section 02140 – Dewatering

1.02 WORK INCLUDED AND DEFINITIONS

A. In general, Work under this Section shall include all labor, materials, equipment, supervision and supplies necessary for the loading, handling, transportation, and disposal of.

1. Securing all permits and licenses, as necessary, including notification of local emergency personnel and notification/reporting requirements, with respect to unforeseen conditions;
2. Mobilization and demobilization of all personnel, equipment, materials and supplies required to perform the Work;
3. Based on laboratory sample results, coordinating all off-site disposal of soil either at an on-site location or at an appropriate off-site disposal facility, based upon existing in-situ characterization;
4. Segregating boulders and other large rocks for off-site management;
5. To the extent practical, removing and segregating asphalt from the soil; and,
6. General site cleanup.

B. “Natural” soil shall be defined as those containing concentrations of contaminants below the laboratory method detection limits.

C. “Polluted” soil shall be defined as those containing concentrations of contaminants above the laboratory method detection limits but below CTDEEP’s Residential Direct Exposure Criteria based on the laboratory analytical results.

D. Contaminated” soil shall be defined as those containing concentrations of contaminants above CTDEEP’s Residential Direct Exposure Criteria based on the laboratory analytical results.

1.03 SAMPLING

A. The Owner will be responsible for additional sampling and analyses as may be required by the receiving disposal facility(ies) for off-site disposal of Contaminated soil. Any such sampling services shall be identified by Contractor as quickly as possible, and Owner will respond as expeditiously as possible. Contractor shall schedule his/her activities to allow for sampling to be performed, analytical results to be compiled and management decisions to be made. No claim shall be made for reasonable delays associated with such supplemental sampling, analytical services and decision making. In most cases, Owner will provide any

necessary sampling services and analytical results within fourteen (14) days after formal request by Contractor. To accommodate a time critical project activity, and upon Contractor's request, Owner will accelerate the supplemental sampling and analytical results to the extent reasonably possible.

- B. Any samples collected and/or tested by the Contractor shall be for his own convenience only, and shall not be the basis for classification, determination of limits, or payment.

1.04 LICENSED ENVIRONMENTAL PROFESSIONAL (LEP) SERVICES

- A. Although not anticipated to be needed, Licensed Environmental Professional (LEP) services for the work shall be provided by the Engineer.

1.05 APPLICABLE LAWS AND REGULATIONS

- A. Work under this Section shall be performed in strict compliance with all applicable Federal, State and local laws, rules, regulations related to the handling and off-site management of contaminated wastes and regulated soil.

- B. Pertinent Federal and State Authorities having jurisdiction over this project include:

1. Occupational Safety and Health Administration (OSHA)
2. U.S. Environmental Protection Agency (EPA)
3. Connecticut Department of Energy and Environmental Protection (CTDEEP)

- C. The following OSHA regulations will apply:

1. Occupational Safety and Health Standards, Hazardous Waste Operations and Emergency Response - 29 CFR 1910.120.
2. Safety and Health Regulations for Construction - 29 CFR 1926.

1.06 SUBMITTALS

- A. Submittals shall be made in compliance with the requirements of **Section 01300** except as provided for herein.

- B. No Work will be permitted to proceed until the required submittals have been received and approved by the Engineer. In the event the Engineer requests additional information, it shall be the Contractor's responsibility to provide such additional information in a complete and timely manner, so that construction can proceed by the date stipulated in the Notice to Proceed.

- C. Prior to the commencement of work, the Contractor shall submit the following to the Engineer for approval:

1. Submittal of all required certifications demonstrating that personnel are properly trained and qualified to perform the Work in accordance with applicable OSHA regulations and all laws governing the Work.
2. Names and qualifications of all proposed subcontractors, if any, identifying the tasks to be performed by each proposed Subcontractor.

3. A Proposed Soil Management Plan, including a description of the proposed equipment and decontamination procedures, identification of any staging areas for the loading of the soil, proposed disposal facility(ies), and project schedule.
 4. The Contractor's Site-Specific Health & Safety Plan pursuant to OSHA 1910.120 requirements.
- D. Approval of submittals by the Engineer shall not impose any liability upon the Engineer, nor shall any such approval relieve the Contractor of his/her responsibilities to meet all of the requirements and comply with all applicable laws, regulations and other applicable requirements under this Contract.

1.07 EXISTING ENVIRONMENTAL CONDITIONS

- A. A letter summarizing soil analytical data for the project area is provided in Appendix A. A limited investigation of the soil conditions was completed. Laboratory soil testing results are provided in Table 1 of the letter. The Contractor is obligated to review existing environmental assessment reports and manage the soil in accordance with applicable state and federal regulations
- B. The Contractor shall satisfy himself/herself as to the conditions existing at the Site, the type of equipment required to perform this Work, and the quality and quantity of the materials to be removed.
- C. Failure of the Contractor to become fully acquainted with the available information will not relieve him/her of the responsibility to completely and properly perform the work in full compliance with the Contract Documents. The Engineer assumes no responsibility for any conclusion or interpretation made by the Contractor on the basis of information made available by the Owner or Engineer.

PART 2 PRODUCTS [NOT USED]

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor will provide adequate barriers and demarcation of excavations and exclusion zones to warn site visitors and the public of potential hazards.
- B. The Contractor will take appropriate means to prevent a release or the spread of hazardous wastes or contaminated materials as a result of the Contractor's operations.
- C. The Contractor will assist the Engineer with collection of soil samples for laboratory analyses, as requested.
- D. The Engineer will be responsible for collection of all samples, and the determination of the limits of contamination

3.02 SITE HEALTH & SAFETY

- A. The Contractor is solely responsible for controlling Site health and safety, including the provision of a Site Health and Safety Officer. In the performance of its Work, the Contractor

shall provide for the safety of all Contractor personnel, other Contractor's personnel, regulatory agency personnel, and the public for the duration of the Contract.

- B. The Contractor is solely responsible for his/her construction means and methods.
- C. The Engineer will be responsible for the health and safety of its personnel only.
- D. The Contractor shall provide a Health and Safety Plan (HASP) which addresses identified contaminants of concern for the Work under this Contract. Such plan shall conform to the requirements of OSHA 1910.120 and all other applicable federal, state, and local laws, regulations, ordinances, and procedures. The HASP shall be developed and implemented by the Contractor's Safety Officer experienced with the health and safety requirements of OSHA 1910.120. The HASP shall be revised, as needed, whenever new information about site hazards is obtained.
- E. All personnel performing Work in contaminated or hazardous areas shall be fully trained in accordance with the OSHA 1910.120 and the HASP and shall be thoroughly briefed on anticipated hazards, safety equipment to be employed, safety practices to be followed, and emergency procedures and communications. The Contractor shall have a medical monitoring surveillance program in place for all personnel in accordance with all applicable laws and regulations.

3.03 MISCELLANEOUS PROVISIONS

- A. Contractor must have a valid EPA identification number and any other permits or licenses required by federal, state, and local laws, regulations, ordinances, and procedures for the transportation of hazardous wastes.
- B. The Contractor shall be responsible for securing all necessary and applicable permits, certificates, licenses, and approvals required for the performance of this Work and shall be responsible for the payment of all associated fees.
- C. The Contractor shall comply with all required reporting and record keeping requirements in accordance with the provisions of this Contract and all applicable federal, state, and local laws, regulations, ordinances, and procedures.
- D. The Contractor shall be responsible for all notifications required by federal, state, and local laws, regulations, ordinances, and procedures. All notifications shall be coordinated with the Engineer.
- E. Material Shipping Records and/or Bills of Lading, as appropriate, will be provided and coordinated by the Engineer. The Owner will be responsible for signing all waste manifests and bills of lading. In order for Contractor's operations to proceed without interruption, complete and accurate information shall be provided by the Contractor during the Submittals process. Contractor shall be responsible for preparing applications to disposal facilities.

3.04 DUST MONITORING & CONTROL MEASURES

- A. The Contractor is responsible for monitoring the Work for evidence of airborne particulates (dusts) emanating from the Work area. It shall be the Contractor's responsibility to continuously monitor the work area for dust levels.

- B. The Contractor shall take appropriate measures to substantially eliminate the generation of dusts within the Work Area, including use of water provided by the Contractor and covering all stockpiled wastes and/or soil, except in the immediate vicinity of the excavation, where water may be required to control dust emissions.
- C. The Engineer will also be monitoring the site for elevated levels of dusts. In the event that visible emissions are observed, the Engineer may direct the contractor to take appropriate measures to mitigate the condition. Failure of the Contractor to implement measures that reduce dust levels may be cause for suspension of the Work, until otherwise directed by the Engineer.

3.05 EXCAVATION OF SOIL

- A. Excavation activities involving soil performed by the Contractor or Subcontractors within the Project Limits shall be performed in a manner which considers the health and safety of all Contractor and Subcontractor personnel, support personnel, the Engineer and his representatives, and the surrounding environment.
- B. When soil excavation is undertaken, the Engineer will make the final determination as to whether the soil qualifies as Natural or Polluted soil based on the laboratory analytical data.
- C. The Contractor shall minimize the spread and loss of Soil during excavation activities as follows:
 - 1. The Contractor shall segregate boulders, asphalt, construction debris and other deleterious materials from excavated Suspect Soil to the extent practicable and as directed by the Engineer. This segregation shall occur at the point of excavation, prior to the transport of Suspect soil.

3.06 TEMPORARY SOIL STOCKPILING

- A. The Engineer anticipates the need for temporary stockpiling of soil. The following provisions shall apply to the stockpiling:
 - 1. Polluted Soil shall be stockpiled out of the immediate work area and in a location designated by Owner, on 6-mil polyethylene sheeting. All stockpiled soil shall be covered with 6-mil polyethylene sheeting at the end of every working day. Sheeting shall be properly secured such that it remains fully intact during inclement weather conditions.
 - 2. All stockpiled soil shall be transported as soon as possible. In no case shall excavated soil remain stockpiled for more than 120 days from its excavation.

3.07 ON-SITE MANAGEMENT OF SOIL

- A. If the Owner can identify an acceptable on-site disposal location, soil will be handled as follows:
 - 1. The Contractor shall be responsible for the transportation and disposal of soil for on-site disposal.
 - 2. The Contractor shall contain all soil in DOT-approved containers and/or transport in DOT-approved vehicles. Loose soil, dusts and other deleterious materials shall be removed from containers and transport vehicles at the decontamination area, after loading and prior to leaving the site.

3. Vehicles used for transportation of soil shall be properly labeled and placarded, as required for off-site transportation for conformance with federal, state, and local laws, regulations, ordinances, and procedures.
4. The Contractor shall be responsible for coordination of all transporter activities. Transporter vehicles used for the transportation of Contaminated soil shall be covered, substance compatible, licensed, insured, and permitted pursuant to federal, state, and local laws, regulations, ordinances, and procedures.
5. Vehicles departing the site shall be properly logged to show the vehicle identification, driver's name, time of departure, destination, and approximate volume and content of material carried.
6. Documentation shall be maintained indicating that applicable laws have been satisfied and that soil has been successfully transported and received at the on-site disposal location.
7. Actual quantities and measurements in the field shall be tabulated by the Contractor and verified by Engineer on a daily basis. The Contractor will not be reimbursed for unit rate work performed without the prior approval of quantities by Engineer.

3.08 OFF-SITE MANAGEMENT OF CONTAMINATED SOIL

A. If the owner cannot identify an on-site disposal location, soil will be handled as follows:

1. The Contractor shall be responsible for the off-site transportation and disposal of soil designated by the Engineer for off-site disposal at an appropriate disposal facility.
2. The Engineer will be responsible for additional sampling and analyses as may be required by the receiving disposal facility(ies) for off-site disposal of soil.
3. The Contractor shall contain all soil in DOT-approved containers and/or transport in DOT-approved vehicles. In addition, loose soil, dusts and other deleterious materials shall be removed from containers and transport vehicles at the decontamination area, after loading and prior to leaving the site.
4. Vehicles used for transportation of soil shall be properly labeled and placarded, as required for off-site transportation for conformance with federal, state, and local laws, regulations, ordinances, and procedures.
5. The Contractor shall be responsible for coordination of all transporter and receiving facility activities. Transporter vehicles used for the transportation of soil shall be covered, substance compatible, licensed, insured, and permitted pursuant to federal, state, and local laws, regulations, ordinances, and procedures.
6. Vehicles departing the site shall be properly logged to show the vehicle identification, driver's name, time of departure, destination, and approximate volume and content of material carried.
7. No soil shall leave the site until the designated receiving facility has agreed in writing to accept the type and quantity of waste/soil to be shipped.
8. Contractor shall complete required facility applications and other pertinent forms for proper transportation and disposal. The Engineer shall review and the City will sign the applications. Signatures from the receiving location of materials transported off-site are required. The Contractor shall be held accountable for ensuring that requirements of the transporter and receiving disposal facility(ies) and federal, state, and local laws, regulations, ordinances, and procedures are complied with and properly documented.

9. Documentation shall be maintained indicating that applicable laws have been satisfied and that soil has been successfully transported and received at the disposal facility(ies).

10. Actual quantities and measurements in the field shall be tabulated by the Contractor and verified by Engineer on a daily basis. The Contractor will not be reimbursed for unit rate work performed without the prior approval of quantities by Engineer.

3.09 SITE CLEANUP

A. During the course of the Work, the Contractor shall keep the Site and his operations clean and neat at all times. The Contractor shall dispose of all residue resulting from the site operations; and at the conclusion for the day's Work, he shall remove and haul away surplus materials, lumber, equipment, temporary structures, and any other refuse remaining from the site operations and shall leave the site in a neat and orderly condition.

3.10 DOCUMENTATION

A. Within 21 days after substantial completion of the Work, the Contractor shall submit to the Engineer one (1) original copy of all manifests, certified weigh slips (tons), bills-of-lading, and records of final waste disposition from the accepting disposal facility(ies), and all other pertinent documentation, including a summary of dates and quantities relating to the off-site management of Polluted soil.

END OF SECTION

SECTION 02140

DEWATERING

PART 1 GENERAL

1.01 SUMMARY

- A. Dewatering specified in this section is applicable to utilities and all other structures.
- B. Section Includes
 - 1. Requirements for designing, furnishing, installing, maintaining, operating and removal of temporary dewatering systems required to lower and control water levels and hydrostatic pressures during construction.
 - 2. Requirements for disposing of pumped water.
- C. Related Sections
 - 1. Section 02080 – Excavation and Management of Contaminated Soils
 - 2. Section 02200 – Earth Excavation and Backfill

1.02 DEFINITIONS

- A. Dewatering: Lowering the zone of saturation and intercepting groundwater seepage which would otherwise emerge from the slopes or bottom of the excavations. The purposes of dewatering are to increase the stability of excavated slopes; prevent loss of material from beneath the slopes or bottom of the excavation; improve the excavating and hauling characteristics of on site soil; prevent rupture or heaving of the bottom of an excavation; and dispose of pumped water. In addition, dewatering is required to place and compact structural fill.

1.03 DESIGN REQUIREMENTS

- A. The Contractor is responsible for the adequacy of the dewatering system.
- B. Design dewatering systems to:
 - 1. Effectively reduce the hydrostatic pressure and lower the groundwater levels to a minimum of 2 feet below excavation in soil.
 - 2. Develop a substantially dry and stable subgrade for the protection of subsequent operations.
 - 3. Result in no damage to adjacent buildings, structures, utilities and other work, included in this contract.

4. Depressurize stratified layers of sand that may be confined by silt layers so that a stable excavation bottom is maintained.
- C. Methods may include sump pumping, single or multiple stage well point or jet educator well point systems, deep wells, or combinations thereof.
- D. Locate dewatering facilities where they will not interfere with existing utilities, facilities and/or construction work to be done under this Contract.

1.04 SUBMITTALS

A. Shop Drawings

1. In accordance with Section 01300 submit the following prior to dewatering system installation:
 - a. Proposed system components.
 - b. Operational plan to include locations and depth of components.
 - c. Method of disposal of pumped water, including method of insuring proper sediment removal should upset in dewatering system occur.

B. Quality Assurance/Control Submittals

1. In accordance with Section 01300 submit the following:
 - a. Dewatering systems to be designed under the direct supervision of a professional Civil Engineer registered in the state which the work is to be done.
 - b. Complete Certificate of Design at the end of this section.
 - c. Provide documentation demonstrating ability and experience of installing contractor for the type of conditions under this contract.
 - d. Names, addresses and telephone numbers of supervisory personnel actively involved in at least five successful projects requiring dewatering.

1.05 PROJECT/SITE CONDITIONS

A. Environmental Requirements

1. Dispose of all pumped water in accordance with all U.S. Environmental Protection Agency, Massachusetts Department of Environmental Protection (MassDEP), and City of Taunton requirements.

B. Existing Conditions

1. Groundwater Measurements were taken during the advancement of soil borings. (See Appendix C to the Specifications)
2. Groundwater surface is subject to fluctuations during periods of heavy precipitation.

3. Laboratory analysis of groundwater samples has not been conducted; however, review of reports for contaminated sites proximate to the work areas indicates the potential for encountering contaminated groundwater exists. Potential contaminants include but are not limited to petroleum, volatile organic compounds, and heavy metals (lead).

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 PERMITTING

- A. Discharge of contaminated groundwater should be directed to the City's sewer system. The Engineer will be responsible for sampling and testing groundwater, and assisting the contractor in obtaining approval from the Publicly Owned Treatment Works (POTW). The Contractor will be responsible for installing and maintaining any required treatment system, and for complying with the local discharge limits (Sections 23.1-23.4 of the Sewer Use Ordinance). Discharge limits are included as Attachment A to this Specification.
- B. ENGINEER will prepare a Utility-related Abatement Measure (URAM) Plan for submission to MassDEP. Engineer will be responsible for Licensed Site Professional (LSP) oversight of work within contaminated areas.
- C. Contractor will be responsible for any other local, state, or federal permitting for the dewatering system.

3.02 SITE PREPARATION

A. Surface Drainage

1. Construct dikes, ditches, pipe lines, sumps or other means to intercept and divert precipitation and surface water away from excavations.

B. Drainage of Excavated Areas

1. Construct dikes, ditches, pipe lines, sumps or other means to collect surface and seepage water which may enter the excavation.
2. Discharge water through settling basins or method approved by Engineer when water is to be deposited into an existing watercourse.

3.03 INSTALLATION

- A. Advise Engineer of changes made to Operation Plan as submitted under Part 1.04 of this section, made to accommodate field conditions.

3.04 MONITORING

- A. Observe and record daily the elevation of the groundwater during the length of the dewatering operation and provide data to Engineer on daily basis.

3.05 OPERATION

- A. Operate dewatering systems to lower the groundwater level in excavations allowing all subsequent work to be done on a stable dry subgrade.
- B. Modify dewatering procedures which cause, or threaten to cause, damage to new or existing facilities, to prevent further damage. Modifications made at no additional expense to the Owner.
- C. Maintain the water level a minimum of two (2) feet below subgrade or at lower elevation to eliminate hydrostatic pressure on structures.
- D. Prevent disturbance of foundation soils and loss of ground as water is removed.
- E. Notify the Engineer of disturbance to the foundation soils caused by an interruption or inadequacy of the dewatering system.
- F. Maintain on site, auxiliary equipment to operate the dewatering system continuously while excavations are opened below elevation of final grade.

3.06 TREATMENT OF WATER

- A. Provide treatment methods to meet or exceed all applicable local, state, and federal discharge standards.
- B. As discussed above, the potential for groundwater contamination exists, including but not limited to petroleum, volatile organic compounds, and heavy metals (lead), within the areas of potential contamination. If contamination is encountered, Contractor will provide appropriate treatment systems to address these contaminants and meet the appropriate discharge standards.
- C. The Contractor will dispose of all appropriately treated discharge water into either a local water body or the municipal sewer system. Water must meet all applicable discharge standards and be sediment free prior to being discharged.

3.07 DISPOSAL OF WATER

- A. Discharge water in a manner that will not cause erosion, flooding, damage to existing facilities, completed Work or adjacent property, improved or otherwise.

3.08 REMOVAL

- A. Remove all material and equipment from the site upon completion of dewatering operations.

- B. Seal all dewatering wells upon completion of the dewatering by pressure injecting a grout capable of sealing the wells and preventing leakage.

END OF SECTION

CERTIFICATE OF DESIGN

Re: Contract Between

OWNER: _____
(Name)

and
CONTRACTOR: _____
(Name)

on
CONTRACT: _____
(Title)

_____ Dated: _____
(Number)

Contractor hereby certifies
that _____
(Designer)

1. Is licensed or registered to perform professional engineering work in the state of

(Location of Project)

2. Is qualified to design the _____
(Item)
specified in Section _____ of the subject contract;

3. Has designed _____ before;

4. Has prepared the design in full compliance with the applications and requirements of
Section _____ of subject contract including all applicable laws, regulations, rules
and

codes; and

5. The work has been signed and sealed pursuant to the applicable state law.

FOR: _____
(Contractor)

BY: _____
(Signature)

(Name and Title)

Dated: _____

End of Section

ATTACHMENT A
WASTEWATER DISCHARGE LIMITS

WASTEWATER DISCHARGE LIMITS

All users of the Publicly Owned Treatment Works (POTW) for the City of Taunton must comply with the prohibitions and limitations specified in the City of Taunton Sewer Use Ordinance and all applicable State and Federal laws, including the Clean Water Act and the General Pretreatment Regulations.

PROHIBITIONS (complete list of prohibitions specified in Section 2 of the Sewer Use Ordinance)

Wastewater having a pH less than 5.5 or otherwise causing corrosive structural damage to the POTW or equipment. If a continuous pH chart recorder is being used, any occurrence of pH over 9.5 but under 10.5 for a period of thirty minutes or more per day is prohibited. Any occurrence of pH between 10.5 and 11.0 for more than 15 minutes per day is prohibited. Any pH occurrence over 11.0 is prohibited. If a continuous pH chart recorder is not being used, any occurrence of pH over 9.5 is prohibited. At no time shall any discharge cause the pH of the influent at the POTW headworks to go above 9.5.

Petroleum oil, nonbiodegradable cutting oil, products of mineral oil origin, or any other oil, in excess of 5 mg/L or in amounts that will cause interference or pass through.

Waters or wastes containing fats, wax, grease or oils. (not specifically prohibited above), in excess of 100 mg/L or containing other substances which may solidify or become viscous between 32 degrees Fahrenheit or 0 degrees Centigrade, and 150 degrees Fahrenheit or 65 degrees Centigrade.

LOCAL LIMITS (Section 2.4 of the Sewer Use Ordinance):

<u>Pollutant</u>	<u>Limitation</u>
Arsenic	1.21 mg/L
BOD ₅	922 mg/L
Cadmium	0.098 mg/L
Chromium	1.0 mg/L
Copper	0.58 mg/L
Cyanide	0.37 mg/L
Lead	0.88 mg/L
Mercury	0.0005 mg/L
Nickel	1.0 mg/L
Silver	0.041 mg/L
Total Suspended Solids	660 mg/L
Zinc	2.80 mg/L

SECTION 02149

MAINTAINING EXISTING FLOW

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements to maintain existing flow and implement and complete all flow diversions and/or bypass pumping required to complete the Work indicated on the Drawings.

1.02 PERFORMANCE REQUIREMENTS

- A. It is essential to the operation of the existing sewerage system that there be no interruption of the wastewater flow throughout the duration of this project. An interruption shall be considered, but may not be limited to, any condition that in the sole opinion of the Engineer adversely affects or alters operation of the existing sewage system and/or any other portion or component of the existing collection system including the associated flows; allows the level of sewage flow to increase, rise, collect, surcharge and/or overflow existing facilities in any manner; or results in any operational or permit violations being issued to the Owner.
- B. The Contractor shall provide, maintain, and operate temporary facilities such as dams, bulkheads, pumping equipment (both primary and backup units as required) conduits, electrical power, and all other labor and equipment to intercept and maintain the existing sewage flow before it reaches the point where it would interfere with his work, carry it past his work, and return it to the existing facilities beyond his work.
- C. The Contractor's attention is directed to the fact that in some locations the existing wastewater flow is a result of a combined system. Increases in normal flow should be expected during periods of wet weather. The Contractor shall therefore take all precautions necessary including monitoring weather forecasts to fully accommodate, control and sufficiently handle the increases in flow during periods of wet weather and/or storms as well as periods of normal flow.
- D. The Engineer may prohibit the carrying out of any work at any time when in his sole judgment, increased flow conditions are unfavorable or not suitable, or at any time, regardless of the existing flows, when proper precautions are not being taken to safeguard the existing sewerage system, previously constructed work, work in progress and/or the general public.
- E. In case of damage caused by the failure of the Contractor to take adequate precautions, the Contractor shall repair or replace equipment damaged and shall make such repairs or rebuild such parts of the damaged work, as the Owner may require, at no additional expense to the Owner.

1.03 SUBMITTALS

A. In accordance with SECTION 01300 submit the following:

1. Detailed plans and descriptions outlining all provisions and precautions to be taken regarding the control and handling of existing sewage flows.
2. Include such items as schedules, locations, elevations, capacities of equipment, materials, traffic maintenance plans, and all other incidental items necessary and/or required by the Owner to insure proper protection of the facilities and compliance with the requirements herein specified.
3. Qualifications as described herein.
4. Detailed proposal for noise prevention measures for review.
5. Shop drawings for all pumping, piping, and appurtenances for type and size of equipment required to perform the flow diversion and/or bypass pumping work as required herein.
6. Any deviations from the suggested bypass pump and piping locations provided on the Drawings shall be submitted for approval prior to installation.

1.04 QUALITY ASSURANCE

A. Qualifications

1. The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The Contractor shall employ the services of a vendor who can demonstrate to the Engineer that he specializes in the design and operation of temporary bypass pumping systems. The vendor shall provide at least five (5) references of projects of similar size and complexity in wastewater applications performed by his firm within the past three years within New England. The bypass system shall meet the requirements of codes and regulatory agencies having jurisdiction.
2. The vendor shall demonstrate the bypass pumping equipment is automated and is capable of functioning without the assistance of an operator.
3. The vendor shall demonstrate the pumping equipment can operate for an extended period of time running dry. After this period of time, the pump shall have the capability of pulling a 25" Hg vacuum without adjustment or repair.
4. The vendor shall demonstrate sufficient service resources and repair parts in stock to fulfill service or repair of rental equipment within one hour of a service call, twenty-four hours per day, seven days per week.
5. Temporary components of the bypass system including pumps, pipe, hose, valves, and fittings shall be provided by one bypass vendor. Hydraulic calculations and drawings required by the submittals shall be provided by the bypass vendor and stamped and certified by a Professional Engineer licensed in the Commonwealth of Massachusetts.

B. Pre-Installation Meeting

1. Contractor to schedule and attend a pre-installation meeting with the vendor, Owner and Engineer prior to installation of by-pass system.

PART 2 PRODUCTS

2.01 GENERAL

- A. At a minimum, all equipment shall be supplied in duplicate for emergency situations. Provide adequate on-line backup facilities so that no interruption in service is encountered. Equipment and installation are subject to the approval of the Owner and the Engineer.

2.02 PUMPING SYSTEM(S)

- A. All pumping units (primary and secondary) and appurtenances shall be sized properly to handle the flows encountered including increased flows due to wet weather.
- B. Pumps shall be centrifugal, end suction, fully automatic self-priming pumps that do not require the use of foot-valves, vacuum pumps, diaphragm pumps, or isolation valves in the priming system. The pumps may be electric or diesel powered. Pumps must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows and shall immediately develop 25" Hg vacuum without adjustment or repair or employ level control devices to regulate on/off or variable speed of the pump. Pumps shall be CD low noise units as manufactured by Godwin Pump of America, Inc, or approved equal. All pumping units and appurtenances shall be sized in accordance with the design parameters provided. Pumps shall not be connected by a common suction manifold.
- C. Seals shall be high pressure, mechanical self-adjusting type with silicon carbide faces capable of withstanding suction pressures to 100 psi running. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. Pump shall be capable of running dry, with no damage, for extended periods of time. All metal parts shall be of stainless steel. Elastomers shall be Viton.
- D. The Contractor shall provide the necessary start/stop controls for each pump.
- E. The Contractor shall be responsible to meet noise requirements in specified elsewhere in this section. All diesel driven primary and standby pumps shall be sound attenuated. The use of Critical Silenced Canopy pumps or acoustical Whisper Pac enclosures for sound attenuation are required.

2.03 PIPING SYSTEM(S)

- A. All piping systems (primary and secondary) and appurtenance shall be sized properly to handle the flows encountered including increased flows due to wet weather.
- B. Provide temporary bypass suction piping from the upstream manhole(s) to the bypass pumps, and temporary discharge piping from the bypass pumps to the downstream discharge manhole(s).

2.04 POWER GENERATING FACILITIES

- A. Include power generating facilities capable of providing all power necessary to operate any primary and secondary pumping systems.
- B. Maintain facility to be ready for use if required.

2.05 NOISE PREVENTION

- A. Noise prevention measures for all equipment shall be used to insure minimum noise impact or surrounding areas.
- B. Measures may include but shall not be limited to enclosures, insulation, electric pumping units, and hospital grade silencers or mufflers.
- C. Noise levels shall be maintained such that increase shall not exceed 10 dBA over background at the nearest property line.
- D. Should at any time prior to or during the performance of above mentioned work, the Engineer determines the noise prevention measures being used are not adequate, the Contractor shall at no additional cost to the Owner suspend all work until acceptable measures are incorporated.

PART 3 EXECUTION

3.01 PUBLIC SAFETY AND CONVENIENCE

A. General

- 1. The Contractor shall at all times keep the streets, highways, roads, driveways, parking lots, private walks, and public sidewalks open for pedestrian and vehicular traffic unless otherwise authorized by the Owner/Engineer. Sidewalks, crosswalks, and access points shall be established and maintained in accordance with the requirements of the Americans With Disabilities Act (ADA).

B. Public Travel Ways

- 1. Any authorized temporary closure of any streets, highways or roads shall be coordinated with the local Fire, Police and/or Department of Public Works as required by the municipality.

C. Municipal, Commercial and Private Property

- 1. Any authorized, temporary closure of any municipal, commercial or private driveway or access route will require the Contractor provide 48 hour notice to abutters of the temporary restriction of access to their property. The Contractor will make every attempt to schedule his work with as little inconvenience to the property owner as possible

3.02 INSTALLATION

- A. Keep the Engineer advised at all times of any changes made to the overall operation(s) to accommodate field conditions.
- B. Flow diversions and/or bypass pumping shall be maintained at all times as long as it is necessary to maintain the flow through the limits of the project during construction.
- C. Maintain auxiliary and/or emergency equipment at the site to continue flow division and/or by-pass pumping operations in the event of a breakdown and/or loss of normal power.
- D. The Contractor shall be responsible for the proper functioning and operation of the backup pumping units. Back-up pump(s) shall be on-line, isolated from the primary system by a valve.
- E. No work shall begin until all provisions and requirements of this Section have been reviewed and approved by the Engineer.
- F. The Engineer reserves the right to limit and/or otherwise restrict the Contractor's overall activities and/or operations at any time without claim should the Engineer deem it to be in the Owner's or public's best interest to do so.

END OF SECTION

SECTION 02200

EARTH EXCAVATION, BACKFILL, FILL AND GRADING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for; excavating in earth for trenches and structures; backfilling excavations; furnishing necessary material; compaction; constructing embankments and fills; miscellaneous earth excavations and miscellaneous grading.

B. Related Sections

1. Section 01025 - Measurement and Payment
2. Section 01410 - Testing Laboratory Services
3. Section 02080 – Management of Contaminated Soil
4. Section 02140 – Dewatering
5. Section 02149 – Maintaining Existing Flow
6. Section 02215 - Aggregate Materials
7. Section 03300 - Cast-In-Place Concrete

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM).

1. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).

1.03 MEASUREMENT AND PAYMENT PROCEDURES

A. Test Pits

1. Where determination of the exact location of pipe or other underground structure is necessary for doing the work properly, the Contractor may be required to excavate test pits to determine such locations. When such test pits may be properly considered as incidental to other excavation, the Contractor shall receive no additional compensation, the work being understood to be included as part of the excavation. When the Engineer orders test pits beyond the limits of excavation he considers a part of the work, such test pits shall be paid for as specified in SECTION 01025.

1.04 QUALITY ASSURANCE

A. Field Samples

1. Provide samples of materials as requested by the Engineer, to the Quality Control Engineer hired by the Owner, prior to delivery of materials on site, in order to facilitate field testing of compaction operations and material properties.

1.05 PROJECT/SITE CONDITIONS

A. Existing Conditions

1. There are pipes, drains, and other utilities in locations not indicated on drawings, no attempt has been made to show all services, and completeness or accuracy of information given is not guaranteed.

1.06 MAINTENANCE

- A. Maintain all work in accordance with SECTION 01800.

PART 2 PRODUCTS

2.01 MATERIALS

A. Suitable Aggregate

1. The nature of materials will govern both acceptability for backfill and methods best suited for placement and compaction.
2. All material whether from excavations or from borrow, after being placed and properly compact, will make a dense stable fill and containing no vegetation, masses of roots, individual roots more than 18 inches long, or more than 1/2 inch in diameter, stones over 6 inches in diameter, or porous matter.
3. Organic matter to be well distributed and not to exceed minor quantities.

B. Trench and Excavation Backfill

1. In general, and unless other material is indicated on drawings or specified, material used for backfilling trenches and excavations shall be suitable material which was removed in the course of making the construction excavations. If sufficient suitable material is not available from the excavations, the backfill material shall be screened gravel, bank-run or selected borrow as directed in according to respective Specification Sections.

C. Structure Backfill

1. Unless otherwise indicated or specified, all fill and backfill under structures and pavement adjacent to structures shall be compacted bank-run gravel containing not more than 10 percent material passing a 200 sieve. When coarse aggregate and fine aggregate are indicated or specified for use under structures, they shall

conform to the requirements for coarse and fine aggregate specified in SECTION 03300.

D. Filling and Embankment Backfill

1. Suitable selected materials available from the excavations and not required for backfill around pipes or against structures may be used for filling and building embankments, except as otherwise specified. Material needed in addition to that available from construction operations shall be obtained from suitable gravel banks or other suitable deposits. The Contractor shall furnish, at his own expense, all borrow material needed on the work.

E. Additional materials

1. Concrete: In accordance with SECTION 03300.
2. Crushed Stone: In accordance with SECTION 02215.
3. Bank-run gravel: In accordance with SECTION 02215.
4. Selected borrow: In accordance with SECTION 02215.

2.02 EQUIPMENT

A. Well Points

1. Designed to drain soil and prevent saturated soil from flowing into excavation.

B. Pumping Units

1. Designed for use with the wellpoints, capable of maintaining a high vacuum and, handling large volumes of air and water at the same time.

C. Underdrain Pipe

1. HDPE pipe enclosed in crushed stone encased in filter fabric..
2. Sewer pipe of quality know as "seconds".

2.03 SOURCE QUALITY CONTROL

- A. Provide Engineer with access to location of off site sources of materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify all existing utilities and facilities prior to excavation.

3.02 PROTECTION

- A. Utilities

1. Support and protect from damage existing pipes, poles, wires, fences, curbing, property line markers, and other structures, which the Engineer decides must be preserved in place without being temporarily or permanently relocated.
2. Restore items damaged during construction without compensation, to a condition at least equal prior to construction.

B. Trees

1. Enclose the trunks of trees adjacent to work with substantial wooden boxes of height necessary to protect trees from injury from piled material, equipment, operations or otherwise.
2. Employ excavating machinery and cranes of suitable type and size and operate with care to prevent injury to trees not to be cut and particularly to overhanging branches and limbs.
3. When trimming is required, make all cuts smooth and neat without splitting or crushing.
4. Cover cut areas with an application of grafting wax or tree healing paint.
5. Branches, limbs, and roots shall not be cut except by permission of the Engineer.

C. Plantings

1. Protect by suitable means or temporarily replant and maintain cultivated hedges, shrubs, and plants which may be injured by the Contractor's operations
2. Replant in their original positions and care for until growth is re-established, once the construction operations have been substantially completed.
3. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of kind and quality at least equal to which existed prior to the start of the Work.

D. Paved surfaces

1. Do not use or operate tractors, bulldozers, or other power-operated equipment with treads or wheels shaped as to cut or injure paved surfaces.
2. All surfaces which have been injured by the Contractor's operations shall be restored to a condition at least equal to which existed prior to start of the Work.
3. Suitable materials and methods shall be used for such restoration.

3.03 PREPARATION

A. Pavement Removal

1. Remove only existing pavement as necessary for the prosecution of the work.

2. Engineer may require that pavement be cut with pneumatic tools or saws without extra compensation to Contractor, where in the opinion of the Engineer it is necessary to prevent damage to the remaining road surface.
3. Dispose large of pieces of broken pavement before proceeding with excavation.

B. Top Soil Removal

1. From areas which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as directed; or, if the Contractor prefers not to separate surface materials, he shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

C. Subgrade

1. Remove loam and topsoil, loose vegetable matter, stumps, large roots, etc., from areas where embankments will be built or material will be placed for grading.
2. Shape as indicated on the drawings and prepare by forking, furrowing, or plowing to bond first layer of the new material placed.

3.04 RELOCATION AND REPLACEMENT OF EXISTING STRUCTURES

- A. The structures to which the provisions of this article apply include pipes, wires, and other structures which meet all of the following:
 1. Are not indicated on the drawings or otherwise provided for.
 2. Encroach upon or are encountered near and substantially parallel to the edge of the excavation.
 3. In the opinion of the Engineer will impede progress to such an extent that satisfactory construction cannot proceed until they have been changed in location, removed (to be later restored), or replaced.
- B. In removing existing pipes or other structures, the Contractor should use care to avoid damage to materials, and the Engineer shall include for payment only those new materials which, in his judgment, are necessary to replace those unavoidably damaged.
- C. Whenever the Contractor encounters certain existing structures as described above and is so ordered in writing, he shall do the whole or such portions of the work as he may be directed to change the location of, remove and later restore, or replace such structures, or to assist the Owner thereof in so doing. For all such work, the Contractor shall be paid under such items of work as may be applicable, otherwise as Extra Work.
- D. When fences interfere with the Contractor's operations, he shall remove and (unless otherwise specified) later restore them to a condition which existed prior to the start of the Work, all without additional compensation. The restoration of fences shall be done as promptly as possible and not left until the end of the construction period.

3.05 SHEETING AND BRACING

- A. Furnish, put in place, and maintain such sheeting, bracing, etc., as necessary to support the sides of the excavation and to prevent any movement of earth which could in any way diminish the width of the excavation to less than that necessary for proper construction, or could otherwise injure or delay the work, or endanger adjacent structures.
- B. Whenever possible, sheeting shall be driven ahead of the excavation to avoid loss of material from behind the sheeting. If it is necessary to excavate below the sheeting, care shall be taken to avoid trimming behind the face along which the sheeting will be driven. Care shall be taken to prevent voids outside of the sheeting, but, if voids occur, they shall be filled immediately with sand and compacted.
- C. Leave in place to be embedded in the backfill, or concrete, all sheeting, bracing, etc., which is indicated on the drawings to be left in place. Leave in place any and all other sheeting, bracing, etc., which the Engineer may direct to leave in place, at any time during the progress of the work, for the purpose of preventing injury to structures or property.
- D. The Engineer may direct that sheeting and bracing to be left in place be cut off at any specified elevation.
- E. All sheeting and bracing not to be left in place shall be carefully removed in such manner as not to endanger the construction or other structures. All voids left or caused by the withdrawal of sheeting shall be backfilled immediately using suitable materials and compaction methods.

3.06 DEWATERING

- A. In accordance with Section 02140.

3.07 EXCAVATION

- A. Execute operation of dewatering, sheeting and bracing without undermining or disturbing foundations of existing structures or of work previously completed under this contract.
- B. Excavate to widths that provide suitable room for:
 - 1. Building structures or laying and jointing piping.
 - 2. Placing all sheeting, bracing, and supports.
 - 3. Cofferdamming, pumping and draining.
- C. Render bottom of excavations firm, dry and acceptable in all respects.
- D. Do not plow, scrap or dig by machinery, earth at finished subgrade which results in disturbance of material below subgrade, unless indicated or specified, and remove with pick and shovel, last of material to be excavated, just before placing pipe, masonry or other structure.
- E. Make all excavations in open, except as otherwise specified or permitted.

F. Excavation Near Existing Facilities

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

G. Unauthorized Excavation

1. If the bottom of any excavation is taken out beyond the limits indicated or prescribed, the resulting void shall be backfilled at the Contractor's expense with thoroughly compacted, screened gravel, if the excavation was for a pipeline, or with Class B concrete, if the excavation was for a masonry structure.

H. Unsuitable Material

1. If material unsuitable for foundation (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the drawings and/or specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted, screened gravel, bank-run gravel, fine aggregate or concrete as directed.

3.08 TRENCHING

A. Trench Excavation

1. Where pipe is to be laid in specified bedding material or concrete cradle, the trench may be excavated by machinery to, or to just below, the designated subgrade, provided that the material remaining at the bottom of the trench is no more than slightly disturbed, as approved by the Engineer.
2. Where pipe is to be laid directly on the trench bottom, the lower part of trenches in earth shall not be excavated to subgrade by machinery, but, just before the pipe is to be placed, the last of the material to be excavated shall be removed by means of hand tools to form a flat or shaped bottom, true to grade, so that the pipe will have a uniform and continuous bearing and support on firm and undisturbed material between joints except for limited areas where the use of pipe slings may have disturbed the bottom.

B. Depth Of Trench

1. Excavate trench to depths permitting the pipe to be laid at the elevations, slopes, or depths of cover indicated on the drawings, and at uniform slopes between indicated elevations.

C. Width Of Trench

1. Excavate trench as narrow as practicable and do not widen by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

2. Excavate trenches with approximately vertical sides between the elevation of the center of the pipe and an elevation 1 ft. above the top of the pipe.

D. Trench Excavation In Fill

1. If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least 1 ft. above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall then be excavated as though in undisturbed material.
- E. Length of trench open at any one time will be controlled by conditions, subject to any limits that may be prescribed by Engineer.

3.09 BACKFILLING

A. General

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

B. Fill And Backfill Under Structures

1. The fill and backfill materials shall be placed in layers not exceeding 6 in. in thickness. Unless otherwise indicated or specified, each layer shall be compacted to 95 percent in accordance with ASTM D1557.

C. Backfilling Around Structures

1. Do not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking, or other damage. As soon as practicable after the structures are structurally adequate and other necessary work has been done, special leakage tests, if required, shall be made. Promptly after the completion of such tests, the backfilling shall be started and then shall proceed until its completion. The best of the excavated materials shall be used in backfilling within 2 ft. of the structure. Unequal soil pressures shall be avoided by depositing the material evenly around the structure.
2. The material shall be placed and compacted to 90 percent in accordance with ASTM D1557 unless otherwise indicated or specified.

D. Backfilling Pipe Trenches

1. As soon as practicable after the pipes have been laid and the joints have acquired a suitable degree of hardness, if applicable, or the structures have been built and are structurally adequate to support the loads, including construction loads to which they will be subjected, the backfilling shall be started and thereafter it shall proceed until its completion.
2. With the exception mentioned below in this paragraph, trenches shall not be backfilled at pipe joints until after that section of the pipeline has successfully passed any specified tests required. Should the Contractor wish to minimize the

maintenance of lights and barricades and the obstruction of traffic, he may, at his own risk backfill the entire trench, omitting or including backfill at joints as soon as practicable after the joints have acquired a suitable degree of hardness, if applicable, and the related structures have acquired a suitable degree of strength. He shall, however, be responsible for removing and later replacing such backfill, at his own expense, should he be ordered to do so in order to locate and repair or replace leaking or defective joints or pipe.

3. No stone or rock fragment larger than 12 in. in greatest dimension shall be placed in the backfill nor shall large masses of backfill material be dropped into the trench in such a manner as to endanger the pipeline. If necessary, a timber grillage shall be used to break the fall of material dropped from a height of more than 5 ft. Pieces of bituminous pavement shall be excluded from the backfill unless their use is expressly permitted, in which case they shall be broken up as directed.
 4. Zone Around Pipe
 - a. Backfilled with the materials and to the limits indicated on the drawings.
 - b. Material shall be compacted to minimum 85 percent by tamping.
 5. Remainder of Trench
 - a. Compact by water-jetting, or tamping, in accordance with the nature of the material to 95 percent in accordance with ASTM D1557. Water-jetting may be used wherever the material does not contain so much clay or loam as to delay or prevent satisfactory drainage. However, tamping shall be used if water-jetting does not compact the material to the density required.
 6. Excavated material which is acceptable to the Engineer for surfacing or pavement subbase shall be placed at the top of the backfill to such depths as may be specified elsewhere or as directed. The surface shall be brought to the required grade and stones raked out and removed.
- E. Placing And Compacting Embankment Material
1. After the subgrade has been prepared as hereinbefore specified, the material shall be placed thereon and built up in successive layers until it has reached the required elevation.
 2. Layers shall not exceed 12 in. in thickness before compaction. In embankments at structures, the layers shall have a slight downward slope away from the structure; in other embankments the layers shall have a slight downward slope away from the center. In general, the finer and less pervious materials shall be placed against the structures or in the center, and the coarser and more pervious materials, upon the outer parts of embankments.
 3. Each layer of material shall be compacted by the use of approved rollers or other approved means so as to secure a dense, stable, and thoroughly compacted mass. At such points as cannot be reached by mobile mechanical equipment, the

materials shall be thoroughly compacted by the use of suitable power-driven tampers.

4. Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when the material is too wet, from either rain or too great an application of water, to compact it properly; at such times the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction, or such other precautions shall be taken as may be necessary to obtain proper compaction.
5. The portion of embankments constructed below proposed structures shall be compacted to 95 percent in accordance with ASTM D1557. The top 2 ft. of an embankment below a pavement base shall be compacted to 95 percent. All other embankments shall be compacted to 90 percent in accordance with ASTM D1557.

3.10 METHODS OF COMPACTION

A. Water-Jetting

1. Saturate backfill material throughout its full depth and at frequent intervals across and along the trench until all slumping ceases.
2. Furnish one or more jet pipes, each of sufficient length to reach the specified depth and of sufficient diameter (not less than 1-1/4 in.) to supply an adequate flow of water to compact the material.
3. Equip jet pipe with a quick-acting valve, supply water through a fire hose from a hydrant or a pump having adequate pressure and capacity to achieve the required results.

B. Tamping and Rolling

1. Deposit backfill material and spread in uniform, parallel layers not exceeding 8 in. thick before compaction. Before the next layer is placed, each layer shall be tamped to obtain a thoroughly compacted mass. Care shall be taken that the material close to the bank, as well as in all other portions of the trench, is thoroughly compacted. When the trench width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar power equipment instead of by tamping. For compaction by tamping (or rolling), the rate at which backfilling material is deposited in the trench shall not exceed that permitted by the facilities for its spreading, leveling, and compacting.
2. If necessary to ensure proper compaction by tamping (or rolling), the backfill material shall first be wet by sprinkling. However, no compaction by tamping (or rolling) shall be done when the material is too wet either from rain or too great an application of water to be compacted properly; at such times the work shall be suspended until the previously placed and new materials have dried out

sufficiently to permit proper compacting, or such other precautions shall be taken as may be necessary to obtain proper compaction.

C. Miscellaneous Requirements.

1. Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine material. Only suitable quantities of stones and rock fragments shall be used in the backfill; the Contractor shall, as part of the work done under the items involving earth excavation and rock excavation as appropriate, furnish and place all other necessary backfill material.
2. All voids left by the removal of sheeting shall be completely backfilled with suitable materials, and thoroughly compacted.

3.11 STOCKPILING AND DISPOSAL OF SURPLUS EXCAVATED MATERIALS

- A. All surplus excavated materials shall be transported to 100 Arlington Street and stockpiled on polyethylene sheeting in segregated "bins" in accordance with details in the Drawings. No individual stockpile shall exceed 250 CY in size. Soil excavated from different excavations (e.g., different streets) shall be stockpiled separately.
- B. Once a bin has been filled or a stockpile has been otherwise finished (such as the completion of an excavation), the CONTRACTOR shall notify the ENGINEER that the stockpile is complete and ready to be sampled and tested for disposal parameters. The ENGINEER will then have 14 days to collect samples and provide the CONTRACTOR with test results for soil disposal.
- C. Excavated materials suitable and intended for use as backfill shall be temporarily stockpiled at the site of the excavation, or at 100 Arlington St. Soil intended for use as backfill shall be stockpiled separately from surplus soil, and may be stockpiled without polyethylene sheeting.
- D. Soil designated as "Suspect" in accordance with Section 02080 shall be stockpiled apart from other surplus soil and shall be placed on and covered with polyethylene sheeting.
- E. Surplus excavated materials not needed as specified above shall be hauled away and disposed of by the Contractor. Payment for soil disposal shall be in accordance with Specification Section 01025 (Measurement and Payment).

3.12 DISPOSAL OF SPECIAL WASTES

- A. The Contractor's attention is directed to the requirements set forth by the State of Massachusetts, Department of Environmental Protection, (MA DEP) regarding "Special Wastes" and the proper disposal thereof. All waste materials and debris, as designated by the Owner and/or Engineer, including but not limited to any sewers, storm drains, catchbasins, and combined system pipelines and associated structures, or any portions thereof, including but not limited to sludge, grit, sediment, dirt, sand, rock, grease, roots and other liquid, solid or semi-solid materials contained therein, shall be considered "Special Wastes." In addition, any excavated soils contaminated

in any manner, as designated by the Owner and/or Engineer, shall also fall under this category and shall be handled the same. When so encountered, all such materials and debris shall be removed to the extent so ordered by the Engineer and properly disposed of in strict compliance with the requirements of the MA DEP and other regulating authorities to an approved and certified waste disposal site. It shall remain the sole responsibility of the Contractor to apply for and obtain all required permits, bonds and/or insurance relative to such disposal. The Contractor shall also pay all costs associated with the disposal, required permits, bonds and insurance with no additional expense to the Owner. All handling of such "Special Waste" shall be done in strict compliance with the MA DEP requirements and/or any other federal, state or local agency having jurisdiction or authority over the same. Under no circumstances shall sewage, solids or other "Special Wastes" removed from the sewer lines be dumped or spilled onto the streets or into ditches, catch basins or storm drains. The Contractor must use watertight and State approved vehicles in transporting any wastes as hereinbefore designated.

- B. The Contractor shall indemnify and save harmless the Owner and Engineer and all persons acting for or on behalf of the Owner and Engineer from all claims and liability of any nature or kind, and all damages, costs and expenses, including attorney's fees and penalties, arising from the improper handling, transportation or disposal of "Special Wastes" as determined by the MA DEP and/or any other federal, state or local agency having jurisdiction or authority over the same.

3.13 DUST CONTROL

- A. During the progress of the Work, maintain the area of activities, by sweeping and sprinkling of streets to minimize the creation and dispersion of dust. If the Engineer decides that it is necessary to use calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed.

3.14 BRIDGING TRENCHES

- A. Provide suitable and safe bridges and other crossings where required for the accommodation of travel, and to provide access to private property during construction. Remove once bridges and crossings are no longer needed.

3.15 FIELD QUALITY CONTROL

- A. Site Tests

- 1. In accordance with SECTION 01410

3.16 CARE AND RESTORATION OF PROPERTY

- A. Restoration of existing property or structures done as promptly as practicable and not left until the end of the construction period.

END OF SECTION

SECTION 02210

ROCK EXCAVATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for removal and disposal of rock.
2. **Note that for rock payment limits, see Specification Section 01025 – Measurement and Payment**

B. Related Sections

1. Section 00500-Agreement
2. Section 00800- Supplementary Conditions
3. Section 02200-Earth Excavation, Backfill, Fill and Grading

1.02 DEFINITIONS

- A. Rock-as defined in SECTION 00500.

1.03 REQUIREMENTS

- A. Excavate rock if encountered, to the lines and grades indicated on the drawings or as directed, dispose of the excavated material, and furnish acceptable material for backfill in place of the excavated rock.
- B. Excavate rock in pipe trenches to a limit which provides 6-inches clearance minimum from the pipe after it has been laid. Before the pipe is laid, the trench shall be backfilled to the correct subgrade with thoroughly compacted, suitable material or, when so specified or indicated on the drawings, with the same material as that required for bedding the pipe, furnished and placed at the expense of the Contractor.
- C. The use of explosives will not be allowed.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 EXCESS ROCK EXCAVATION

- A. If rock is excavated beyond the limits of payment indicated on the drawings, specified, or authorized in writing by the Engineer, the excess excavation, whether resulting from overbreakage or other causes, shall be backfilled, by and at the expense of the Contractor, as specified below in this section.
- B. In pipe trenches, excess excavation below the elevation of the top of the bedding, cradle, or envelope shall be filled with material of the same type, placed and compacted in the same manner, as specified for the bedding, cradle, or envelope. Excess excavation above said elevation shall be filled with earth as specified in the article titled "Backfilling Pipe Trenches" in SECTION 02200.
- C. In excavations for structures, excess excavation in the rock beneath foundations shall be filled with 3000 psi concrete. Other excess excavation shall be filled with earth as specified in the article titled "Backfilling Around Structures" in SECTION 02200.

3.02 SHATTERED ROCK

- A. If the rock below normal depth is shattered, and the Engineer considers such shattered rock to be unfit for foundations, the shattered rock shall be removed and the excavation shall be backfilled with concrete as required, except that in pipe trenches screened gravel shall be used for backfill. All such removal and backfilling shall be done by and at the expense of the Contractor.

3.03 PREPARATION OF ROCK SURFACES

- A. Whenever so directed during the progress of the work, remove all dirt and loose rock from designated areas and shall clean the surface of the rock thoroughly, using steam to melt snow and ice, if necessary. Water in depressions shall then be removed as required so that the whole surface of the designated area can be inspected to determine whether seams or other defects exist.
- B. The surfaces of rock foundations shall be left sufficiently rough to bond well with the masonry and embankments to be built thereon, and if required, shall be cut to rough benches or steps.
- C. Before any masonry or embankment is built on or against the rock, the rock shall be scrupulously freed from all vegetation, dirt, sand, clay, boulders, scale, excessively cracked rock, loose fragments, ice, snow, and other objectionable substances. Picking, barring, wedging, streams of water under sufficient pressure, stiff brushes, hammers, steam jets, and other effective means shall be used to accomplish this cleaning. Remove free water left on the surface of the rock.

3.04 REMOVAL OF BOULDERS

- A. Remove piles of boulders and loose rock encountered within the limits of earth embankments and dispose in a suitable place.

3.05 DISPOSAL OF EXCAVATED ROCK

- A. All excavated rock shall be handled, transported and disposed of by the Contractor, at his expense, at appropriate locations, and in accordance with arrangements made by him without additional cost to the Owner.
- B. Excavated rock may be used in backfilling trenches subject to the following limitations:
 - 1. Pieces of rock larger than permitted under the article titled "Backfilling Pipe Trenches" in SECTION 02200 shall not be used for this purpose.
 - 2. The quantity of rock used as backfill in any location shall not be so great as to result in the formation of voids.
 - 3. Rock backfill shall not be placed within 36 in. of the surface of the finish grade.
- C. Surplus excavated rock shall be disposed of as specified for surplus excavated material as specified in SECTION 02200.

3.06 BACKFILLING ROCK EXCAVATIONS

- A. Where rock has been excavated and the excavation is to be backfilled, the backfilling above normal depth shall be done as specified in SECTION 02200. If material suitable for backfilling is not available in sufficient quantity from other excavations, the Contractor shall, at his own expense, furnish suitable material from outside sources.

END OF SECTION

SECTION 02215

AGGREGATE MATERIALS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for furnishing and placing materials, which include Crushed Stone, Gravel Borrow and Select Borrow.
2. Location of specified materials as detailed on the Drawings or as directed by the Engineer for excavation below normal depth, utility support, replacement of unsuitable material or elsewhere, as ordered.

B. Related Sections

1. Section 02200 - Earth Excavation, Backfill, Fill and Grading.
2. Section 02500 - Paving

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO).

1. T11, Amount of Material Finer than 0.075 mm Sieve in Aggregate
2. T27, Sieve Analysis of Fine and Coarse Aggregates.

B. American Society for Testing and Materials (ASTM).

1. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).

1.03 DEFINITIONS

- ###### A. The term Screened Gravel as used in these Contract Documents shall mean Crushed Stone.

1.04 SUBMITTALS

A. Shop Drawings

1. Provide sieve analysis when gradation requirements are given in the Specification.

B. Samples

1. Furnish representative sample including location of source with Shop Drawing transmittal sheet.

1.05 QUALITY ASSURANCE

A. Field Samples

1. The attention of the Contractor is directed to the fact that under Specification SECTION 00700, 1.03 Materials and Equipment, all materials furnished by the Contractor to be incorporated into the Work shall be subject to the inspection of the Engineer. The Engineer shall be the sole judge as to the acceptability of proposed materials and said judgement shall be final, conclusive, and binding.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Storage and Protection

1. In accordance with Specification SECTION 00700, 1.03 Materials and Equipment.

PART 2 PRODUCTS

2.01 MATERIALS

A. Crushed Stone

1. For bedding and pipe zone material for pipe larger than 3 inches diameter. Well graded in size from 3/8 inches to 3/4 inches or such other sizes as may be approved.
2. For bedding and pipe zone material for plastic pipe 3 inches diameter and less, maximum particle size shall be 3/8 inches.
3. Clean, hard, and durable particles or fragments, free from dirt, vegetation, or other objectionable matter, and free from an excess of soft, thin elongated, laminated or disintegrated pieces.
4. Screened Stone of similar size and grading to this specification may be used instead of Crushed Stone.

B. Gravel Borrow

1. Granular material well graded from fine to coarse with a maximum size of 3 inches, obtained from approved natural deposits and unprocessed except for the removal of unacceptable material and stones larger than the maximum size permitted.
2. Gravel shall not contain vegetation, masses of roots, or individual roots more than 18 inches long or more than 1/2 inches in diameter.
3. Gravel shall be substantially free from loam and other organic matter, clay and other fine or harmful substances.
4. Gradation requirements for gravel shall be determined by AASHTO-T11 and T27 and conform to the following:

Sieve	Percent Passing
1/2 inch	60-95
No. 4	50-85
No. 50	8-28
No. 200	0-8

C. Select Borrow

1. Use inorganic natural soils and/or rock having not more than 5 percent by weight passing the No. 200 sieve and having a maximum 3 inch stone size.
2. Use only material well-graded throughout entire site range, free from roots, leaves and other organic materials, free of ice or frost and aggregations of frozen soil particles.
3. Control the moisture content of borrow within plus or minus 3 percent optimum moisture content at the borrow source.

D. Gravel Base Course

1. In accordance with SECTION 02500.

E. Riprap

1. All riprap used shall be sound, tough and durable stone, not lumpy or frozen, and free from slag, cinders, ashes, rubbish or other deleterious materials. All riprap will be of the size required for each specific application, as shown on the Drawings.
2. The material for riprap shall consist of broken stone produced from sound ledge or large boulders with at least three fractured faces on each particle and shall be free from overburden, spoil, shale or organic material. The stone shall have a minimum density of 160 pounds per cubic foot. It shall be angular in shape with its minimum dimension not less than one third of the maximum dimension.
3. Stone for pipe ends shall be sound, durable rock which is angular in shape. Rounded stones, boulders, sandstone or similar stone or relatively thin slabs will not be acceptable. Each stone shall weigh not less than 50 pounds not more than 125 pounds and at least 75% of the volume shall consist of stones weighing not less than 75 pounds each. The remainder of the stones shall be so graded that when placed with the larger stones the entire mass will be compact.
4. Stone for placed riprap shall have one flat face and shall be roughly square or rectangular to facilitate laying up.
5. Riprap shall conform to the following gradation and shall be well graded within the size required:

National Stone Association Modified NSA No.	Size Inches (square opening)		
	Maximum	Average	Minimum
R-1	2	1	No. 4
R-2	4	2	1
R-3	8	4	2
R-4	14	7	4
R-5	20	10	6
R-6	26	13	8
R-7	34	18	14
R-8	50	24	18

6. "Average size" is that size exceeded by at least 50 percent of the total weight of the tonnage shipped; i.e., 50 percent of the tonnage shall consist of pieces larger than the "average" size (normally half the specified nominal top size).
7. Pieces smaller than the minimum size shown shall not exceed 15 percent of the tonnage shipped.
8. Geotextile material in accordance with SECTION 02272.

2.02 SOURCE QUALITY CONTROL

A. Test, Inspection

1. Engineer may elect to sample material supplied at the source.
2. Assist the Engineer and/or personnel from the designated testing laboratory in obtaining samples.

PART 3 EXECUTION

3.01 INSTALLATION

A. Crushed Stone

1. Spread in layers of uniform thickness not greater than 6 inches.
2. Compact thoroughly by means of a suitable vibrator or mechanical tamper.

B. Gravel Borrow

1. Spread in layers of uniform thickness not exceeding 12 inches before compaction and moistened or allowed to dry as directed.
2. Compact thoroughly by means of suitable power-driven tampers or other power-driven equipment.
3. Compaction shall conform to 95% of minimum dry density per ASTM D1557.
4. The percolation rate for the compacted bank-run gravel shall not exceed 5 minutes per inch.

C. Select Borrow

1. Spread in layers of uniform thickness not exceeding 12 in. before compaction and moistened or allowed to dry.
2. Compact thoroughly by means of suitable power-driven tampers or other power-driven equipment unless otherwise directed by the Engineer.

D. Installation

1. Preparation

- a. Areas to receive riprap shall be free of brush, trees, stumps, and other objectionable material and be dressed to a smooth surface. All soft or spongy material shall be removed to the depth shown on the plans or as authorized and replaced with gravel borrow conforming to SECTION 02215. Filled areas will be compacted as specified in SECTION 02200.
- b. Install Geotextile material at locations indicated on the Contract Drawings in accordance with SECTION 02272.

2. Dumped Riprap

- a. Stone for riprap shall be paced on the prepared area in a manner, which will produce, and evenly graded mass of stone with the minimum practical percentage of voids. The entire mass of stone shall be placed so as to conform with the lines, grades, and thicknesses shown on the plans. Riprap shall be placed to its full course thickness at one operation and in such a manner as to avoid displacing the underlying material. Placing of riprap in layers, or by dumping into chutes, or by similar methods likely to cause degradation will not be permitted.
- b. All riprap shall be placed and distributed with no large accumulations of either the larger or smaller size of stone.
- c. It is the intent of these specifications to produce a compact riprap installation in which all sizes of material are placed in their proper proportions. Hand placing or rearranging of individual stones by mechanical equipment may be required to the extent necessary to secure the results specified.
- d. When riprap and bedding material are dumped under water, thickness of the layers shall be increased as shown on the Drawings.

3. Placed Riprap

- a. Stone for placed riprap shall be placed on a prepared surface in a pattern that contains minimum voids. Top surface of riprap shall conform to a true and even plane with a tolerance of plus or minus 4-inches.
- b. Joints shall be broken as much as practicable, chocking openings with smaller stones.

- c. Larger stones placed near base of slopes, stones laid to rest on the prepared surface and not on other stones, Stones placed on slopes shall be done from the top down.
4. Riprap placed outside the specified limits will not be measured or paid for, and the Contractor may be required to remove and dispose of the excess riprap without cost to the Owner.

3.02 FIELD QUALITY CONTROL

A. Site Tests

1. In accordance with SECTION 01410.

END OF SECTION

SECTION 02224

CONTROLLED DENSITY FILL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for flowable concrete fill to be used in place of compacted soil for general backfill of trenches.

B. Related Sections

1. Section 02200 - Earth Excavation, Backfill, Fill and Grading
2. Section 03000 - Cast-In-Place Concrete

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. C33, Standard Specification for Concrete Aggregates.
2. C150, Standard Specification for Portland Cement.
3. C260, Standard Specification for Air-Entraining Admixtures for Concrete.
4. C494, Standard Specification for Chemical Admixtures for Concrete
5. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
6. C989, Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars

B. American Concrete Institute (ACI)

1. ACI Committee 229, Standard Specification for Controlled Low Strength Materials (CLSM).

1.03 DEFINITIONS

- A. Controlled Density Fill (CDF), also known as "Flowable Fill" and "Ready-mix Fill." Self-compacting, self-leveling, cementitious material used for backfills, fills and structural fills.
- B. Very Flowable, Exhibits characteristics needed for small or confined areas and required to flow over long distances.

- C. Flowable, Where the above flowability characteristics are not required.
- D. Excavatable, may be removed in the future if required.
- E. Non excavatable, not expected to be removed in the future.

1.04 DESIGN REQUIREMENTS

- A. Provide a mixture of Portland cement, aggregates, water and mineral admixtures with a low cement content and high slump to reduce strength development for possible removal and minimize settlement after placement.
- B. The proposed mix should maximize the flow characteristics of the material while producing the necessary strength.
- C. The design mixes shall have the following strengths at 28 days:
 - 1. Excavatable fill,
 - a. Class I (flowable) and II (very flowable), 30 to 100 psi., 150 psi maximum at 1 year
 - 2. Non excavatable fill,
 - a. Class III (flowable) and IV (very flowable), 100 to 1200* psi.

* Specific compressive strength(s) for structural applications are noted on the Contract Drawings
- D. Air Content to be minimum 15 %
- E. Slump, using the modified method consisting of a six inch long by three inch inside diameter straight tube of non porous material.
 - 1. Class I and III: 6” to 8” diameter
 - 2. Class II and IV: 9” to 14” diameter

1.05 PERFORMANCE REQUIREMENTS

- A. Provide fill of homogeneous structure which when cured, will have the required strength, water tightness, and durability. To this end, it is essential that careful attention be given to the selection of materials, mixtures, placing and curing of the fill.

1.06 SUBMITTALS

- A. In accordance with Section 01300, submit the following,

1. Mix design data not limited to, but including maximum and minimum strengths, air content, setting times, flowability and yield.
2. Certification by the supplier stating compatibility with the project requirements and the Contractor's installation methods.

1.07 QUALITY ASSURANCE

- A. Furnish the supplier with information as to the intended use of the CDF.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Portland Cement: ASTM C150, Type II American-made. (AASHTO M 85)
- B. Water: Clean, potable and complying with ASTM C94. (AASHTO M 157)
- C. Aggregates: ASTM C33 or a non-reactive aggregate source free of contaminants which exhibits high flow properties for controlled density fill. (AASHTO M 6, M 80)
- D. Air entraining admixture conforming to ASTM C260, or as approved by the Engineer.
- E. Chemical Admixtures: In accordance with ASTM C494. (AASHTO M 195)
- F. Fly Ash: Meet requirements of ASTM C618 Class C or Class F. (AASHTO M 295)
- G. Granulated Blast Furnace Slag: In accordance with ASTM C989. (AASHTO M 302)

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor shall follow the guideline set forth in ACI 229, except non-standard materials shall not be used.

3.02 PREPARATION

- A. Pipes and all other members to be encased in CDF shall be temporarily secured in place to prevent displacement during fill placement.
- B. To reduce hydrostatic pressure and limit displacement potential, Contractor may use a high air generator in the fill mixture to lower unit weights.
- C. Pre-job test all pump applications prior to day of placement with actual equipment.
- D. Secure site during the placement for the CDF. Cautions include but are not limited to barricades, fences, lights and steel plates.

E. Work shall be sequenced so as to keep traffic flowing within the project area.

3.03 INSTALLATION

A. CDF shall be batched at concrete plants and hauled to job sites in ready-mix trucks with continuous agitating drums.

B. During waiting period prior to discharge, truck drums shall agitate mixture.

C. CDF shall be installed in accordance with suppliers recommendations.

3.04 FIELD QUALITY CONTROL

A. All CDF to be used in the work shall be subject to testing to determine whether it conforms to the requirements of the specifications. The methods of testing shall be in accordance with the National Ready Mixed Concrete Association, Guide Specification for Controlled Low Strength Materials (CLSM) Article 8.0 Quality Control. The place, time, frequency, and method of sampling will be determined by the Engineer in accordance with the particular conditions of this project.

3.05 PROTECTION

A. Open trenches shall not be left uncovered overnight.

END OF SECTION

SECTION 02272

GEOTEXTILE MATERIALS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for installation of geotextile filter fabric in trenches, around leaching pits or drywells, and under riprap.

B. Related Sections

1. Section 02100 - Site Preparation
2. Section 02200 – Earthwork
3. Section 02215 – Aggregate Materials

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. D3786, Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method
2. D4355, Test Method for Deterioration of Geotextiles From Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
3. D4491, Test Method for Water Permeability of Geotextiles by Permittivity
4. D4533, Test Method for Trapezoid Tearing Strength of Geotextiles
5. D4632, Test Method for Grab Breaking Load and Elongation of Geotextiles
6. D4751, Test Method for Determining Apparent Opening Size of a Geotextile
7. D4833, Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
8. D5261, Measuring Mass Per Unit Area of Geotextiles.

1.03 QUALITY ASSURANCE

A. General

1. Producer of fabric to maintain competent laboratory at point of manufacture to insure quality control in accordance with ASTM testing procedures.
2. Laboratory to maintain records of quality control results.

1.04 SUBMITTALS

A. Shop Drawings

1. Submit in accordance with SECTION 01300
2. Include manufacturer's recommended method of joining of adjacent fabric panels.

B. Certificate of Conformance

1. Upon each shipment/delivery of product to the work site, furnish mill certificate(s) from the company manufacturing the fabric attesting that the fabric meets the chemical, physical, manufacturing and performance requirements specified. Fabric will be rejected if it is found to have defects, rips, flaws, deterioration or other damage.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Provide fabric in rolls wrapped with a heavy-duty protective covering to protect fabric from, mud, dirt, dust, debris and other deleterious sources until it is installed. Label each roll of fabric with number or symbol to identify production run.
- B. Do not expose fabric to ultraviolet radiation (sunlight) for more than 20 days total in period of time following manufacture until fabric is installed and covered.
- C. If Engineer determines material is damaged in any way or has excessive sunlight exposure, the Contractor shall immediately make all repairs and replacements as directed by the Engineer, at no additional cost to the Owner.

1.06 SCHEDULING

- A. Schedule Work so that the covering of the fabric with a layer of the cover material is accomplished immediately after inspection and approval of the placed fabric by the Engineer. Failure to comply with this requirement shall require replacement of the fabric.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURER/MATERIAL

- A. The geotextile fabric shall be nonwoven polypropylene designated as MIRAFI 140N as manufactured by Nicolon/Mirafi Group, Norcross, Georgia; or acceptable equivalent and shall meet the following minimum requirements:

<u>Property</u>	<u>Unit</u>	<u>Test Method</u>	<u>Requirements</u>
Weight	oz/sy	ASTM D5261	4.3
Grab Tensile Strength	lbs	ASTM D4632	120
Grab Tensile Elongation	%	ASTM D4632	50
Mullen Burst Strength	psi	ASTM D3786	240
Puncture Resistance	lbs	ASTM D4833	70
Trapezoid Tear Strength	lbs	ASTM D4533	50
Equivalent Opening Size (EOS)	US Std. Sieve (mm)	ASTM D4751	70 (0.21)
Permittivity	sec ⁻¹	ASTM D4491	1.5
Permeability	cm/sec	ASTM D4491	0.22
Flow Rate	gal/min/sf	ASTM D4491	120
Ultraviolet Resistance (strength retained at 500 hrs)	%	ASTM D4355	70

- B. To keep the number of overlay joints to a minimum, fabric shall be provided in sections not less than fifteen (15) feet in width unless otherwise approved by the Engineer prior to delivery to the site.

PART 3 EXECUTION

3.01 SUBGRADE PREPARATION

A. For Riprap

1. Prepared areas to receive geotextile in accordance with SECTION 02100 and SECTION 02200
2. Clear subgrade of all sharp objects, large stones, roots, debris, or any other foreign materials that may contribute to puncturing, shearing, rupturing or tearing of the geotextile.
3. Grade area as smooth as possible and compact in accordance with SECTION 02200, with a vibratory roller or other method approved by the Engineer.
4. Inspect subgrade and repair all unstable areas or soft spots with the installation of gravel and recompact prior to the placement of geotextile.

3.02 FABRIC INSTALLATION

A. For Riprap

1. Place at the locations shown on the Contract Drawings.
2. Unroll directly onto the prepared slope in a continuous manner. Join adjacent sections by overlapping the fabric a minimum of 12-inches. Join end sections by

overlapping the fabric a minimum of 2-feet with field-sewn joints or as recommended by the manufacturer.

3. Place fabric on slopes creating a "shingled" effect in the direction of anticipated water flow.
 4. Lay fabric smooth, maximizing surface contact with the prepared subbase, free of tension, stress, folds, wrinkles, or creases.
 5. Securely anchor fabric sections at the top of the slope as recommended by the manufacturer. Use anchoring pins, nails, staples or other such means to secure fabric to the subbase surface to prevent fabric movement caused by wind uplift, and/or placement of cover material.
 6. Maintain sufficient amount of cover material (minimum depth of 6-inches) to protect fabric during placement of riprap. Dozer buckets or blades, or other heavy or damaging equipment shall not be in direct contact with the fabric.
 7. Minimize the height from which cover material is dumped and/or dropped directly onto the fabric material in order to avoid fabric damage or movement. Equipment used for spreading and compacting the cover material shall be of the type and size to avoid damage or movement to the underlying geotextile fabric.
 8. Spread cover material in the direction of fabric overlap and in a manner that avoids creating undue tension, stress, sagging, buckling and/or other movement of the underlying fabric.
- B. Fabric Installation in Trenches
1. In accordance with manufacturers recommendations
 2. Place fabric in trench prior to placing crushed stone pipe bedding.
 3. Overlap fabric 18-inches minimum for unsewn lap joints.
 4. Do not permit equipment to travel directly on fabric.
 5. Place fabric in smooth condition to prevent tearing or puncture.
 6. Lay fabric loosely, without wrinkles or creases.
 7. Leave slack in fabric to allow for adjustment.

3.03 PROTECTION

- A. Protect the work before, during and after installation, and protect the installed work covered by other Sections.

3.04 REPAIR

- A. Geotextile fabric damaged during installation shall be repaired by a piece of geotextile material cut, placed and adequately anchored over the damaged area, subject to a 3-foot minimum overlap requirement or as directed by the Engineer.

- B. If detrimental movement of the geotextile fabric occurs during any step of the installation, as determined solely by the Engineer, the Contractor shall remove the cover material and/or sections of fabric to the limits deemed necessary and reinstall the fabric.
- C. Any fabric damage during its installation or during placement of cover materials shall be replaced by the Contractor at no additional cost to the Owner.

END OF SECTION

SECTION 02276

SILT FENCE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements to perform all operations in connection with the silt fence, as indicated on the drawings and as herein specified.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 1. D3786-01 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method
 2. D4355-02 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus
 3. D4632-91(1996) Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
 4. D4533-91(1996) Standard Test Method for Trapezoid Tearing Strength of Geotextiles.

1.03 SUBMITTALS

- A. In accordance with Section 01300.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Silt Fence as manufactured by Amoco Fabrics and Fibers, or acceptable equivalent.

2.02 MATERIALS

- A. The silt fence shall be comprised of a sediment control fabric and reinforced netting stitched together with heavy duty thread top and bottom, stapled to hardwood posts.
- B. Hardwood posts shall be 4.0 feet long, spaced a maximum 8.0 feet apart with lower ends tapered to facilitate driving into compacted soil.
- C. A 6-inch flap at the bottom of the fence shall be used to toe in the sediment control barrier to prevent silt migration under the barrier.
- D. Each section of fence shall be supplied with a coupling to attach adjoining sections.

E. Silt fence shall conform to the following test requirements:

<u>Property</u>	<u>Test Method</u>	<u>Value</u>
1. Grab Tensile	ASTM D4632	100 lbs.
2. Grab Elongation	ASTM D4632	15 %
3. Trapezoid Tear Strength	ASTM D4533	50 lbs.
4. Mullen Burst Strength	ASTM D3786	275 psi.
5. Equivalent Opening Size	US Std. Sieve	20/30
6. Ultraviolet Resistance	ASTM D4355	70 %

F. Roll Width: 3.0 feet.

G. Roll Length: 100.0 feet.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install silt fence in accordance with manufacturers written recommendations.
- B. Silt fence and hay bales shall be installed prior to any grubbing or earth excavation.
- C. Install silt fence along with hay bales or straw wattles at locations shown on the Contract Drawings or as directed by the Engineer.

3.02 MAINTENANCE

- 1. Maintain fence throughout the duration of the project.
- 2. Remove sediments when depths accumulate to 50% of the depth of the fence height, or as necessary.

3.03 REMOVAL AT PROJECT COMPLETION

- A. Remove all sediment collected by the silt fence, remove the silt fence, and restore the area to pre-construction condition to the satisfaction of the Engineer.

END OF SECTION

SECTION 02500

PAVEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for construction of all temporary and permanent pavement on paved areas affected or damaged by his operations, whether inside or outside the normal trench limits, as indicated on the drawings and as herein specified.

B. Related Sections

1. Section 02200 - Earth Excavation, Backfill, Fill And Grading
2. Section 02224 – Controlled Density Fill

1.02 REFERENCES

- A. This specification makes reference to the requirements of additional specifications as listed. The Contractor shall obtain and familiarize himself with all requirements referenced by this specification prior to preparation and installation of any pavements.

1. Standard Specifications for Highways and Bridges of the Department of Public Works of the Commonwealth of Massachusetts, dated 1988, together with all errata addenda additional revisions, and supplemental specifications, all of which are hereinafter referred to as the MassHighway Standard Specifications.

1.03 PAVEMENT SCHEDULE

- A. The Contractors attention is directed to the various pavements required under this contract, and their locations as detailed below.

- B. All pavement thickness specified in this specification shall be of the minimum thickness required after compaction.

1. Location: City Roads (Permanent Restoration)
Type: Flexible - 4"
Requirements: 12" Gravel Sub-Base Course
2 ½" Bituminous Binder
1 ½" Bituminous Surface

2. Location: City Sidewalks (Permanent Restoration)
Type: Flexible - 3"
Requirements: 8" Gravel Sub-Base Course
3" Bituminous Binder (Trench Width)

PART 2 PRODUCTS

2.01 MATERIALS

A. Gravel Sub-Base Course

1. Gravel sub-base course material shall meet the same requirements as specified in MassDOT Specification M1.03.1 except as noted above.
2. The gravel sub-base course shall be spread and compacted in layers, 6 inches max. in compacted depth each.
3. Dense-graded Crushed Stone for sub-base shall meet the same requirements as specified in MassDOT Specification M2.01.7 where called for, compacted in 4" depth.

B. Bituminous Binder Trench Width (Temporary Pavement)

1. Temporary Pavement shall be Binder Course conforming to the requirements of the MassDOT Standard Specification Section 420 and M3.11.00 for Binder Course.

C. Asphalt Tack

1. Tack coat shall consist of emulsified asphalt, grade RS-1 or cutback asphalt, Conforming to the requirements of the MassDOT Standard Specification Section M3.11.06.

D. Bituminous Binder (Permanent Pavement)

1. Bituminous Binder shall conform to the requirements of the MassDOT Standard Specification Section 420 and M3.11.00 for Binder Course.

E. Bituminous Surface (Permanent Pavement)

1. Bituminous Surface Course shall conform to the requirements of the MassDOT Standard Specification Section 460 and M3.11.00 for surface course Class I-1.

F. Reclaimed Pavement Borrow Material for Base Course

1. Materials shall meet the requirements of Material Specification M1.11.0 Reclaimed Pavement Borrow Material for Base Course.

The gradation shall meet the following requirements:

Sieve Designation	Percent Passing
3"	100%
1 1/2"	70-100%
3/4"	50-85%

No. 4	30-60%
No. 50	8-24%
No. 200	0-10%

2. Any gradation deficiencies or volume as indicated by the test pits shall be corrected by blending M1.03.1 Processed Gravel for Sub-Base or aggregate of the appropriate sieve designation into the reclaimed material. There will be no additional compensation for blending of aggregate required to meet the gradation requirements specified above unless outlined in the special provisions.

2.02 SOURCE QUALITY CONTROL

- A. The paving plant used by the Contractor for preparation of bituminous paving materials shall be acceptable to the Engineer who shall have the right to inspect the plant and the making of the material as specified in MassHighway Specification M3.11.07 except as noted above.

PART 3 EXECUTION

3.01 PREPARATION

- A. Prior to placing pavement, all backfill shall have been properly compacted as specified under Section 02200 to eliminate settling of backfill. No pavement shall be placed over poorly compacted backfill. Backfill and gravel base course shall be compacted, brought to the proper elevation, and dressed so that new pavement construction shall be at the required grade. The Contractor shall maintain the surfaces of all excavated and disturbed areas until the pavement is placed. If there is a time lapse of more than 24 hours between completion of preparation of subgrade or placing of gravel base course and placing of paving, or if subgrade or gravel base course has been eroded or disturbed by traffic, the subgrade or gravel base course shall be restored before placing pavement.
- B. When installing permanent pavement on bituminous concrete roadway the edges of existing pavement shall be cut back 12-inches, or more as required, from the trench excavation wall or damaged area to sound undamaged material, straightened, cleaned, and painted with an accepted asphalt emulsion to ensure a satisfactory bond between it and the newly placed surface courses. Existing surface courses shall be stripped from the bituminous concrete base course for at least a 6-inch width and trimmed square and straight so that new permanent surfacing shall be placed on undisturbed bituminous concrete base course. Existing pavement shall be swept clean prior to placing any asphalt emulsion over it. Existing pavement that will be under new pavement shall be painted with asphalt emulsion to ensure a satisfactory bond.
- C. Before permanent pavement is installed in State roads, the base shall be brought to the proper grade.

- D. Before permanent pavement is installed in City roads, the roadway shall be reclaimed to a depth of 16". A minimum thickness of 12" of reclaimed material shall be left in place, compacted, and brought to the proper elevation.
- E. All manhole covers, catch basin grates, valve and meter boxes, curbs, walks, walls and fences shall be adequately protected and left in a clean condition. Where required, the grades of manhole covers, catch basin grates, valve boxes, and other similar items shall be adjusted to conform to the finished pavement grade.
- F. The Contractor shall remove and acceptably dispose of all surplus and unsuitable material.

3.02 INSTALLATION

A. General

1. Unless indicated otherwise, all permanent bituminous pavement shall be installed in two courses or more. Bituminous base courses shall be carefully spread and raked to a uniform surface and thoroughly rolled before application of the top course.
2. All top courses of permanent paving shall be applied with acceptable mechanical spreaders in widths of at least 9 feet.
3. The rolling for all bituminous and gravel base courses shall conform to the standards listed in the appropriate Subsection of the Standard Specification.
4. Pavement shall be placed so that the entire roadway or paved area shall have a true and uniform surface, and the pavement shall conform to the proper grade and cross section with a smooth transition to existing pavement.

B. Gravel Base Course

1. The gravel base shall be spread and compacted in a minimum of two layers, to not less than 95 percent of the maximum dry density of the material, as determined by the Standard AASHTO Test Designation T99 compaction test Method C within 5% of optimum moisture content as determined by the Engineer.
2. Compaction shall continue until the surface is even and true to the proposed lines and grades within a tolerance of ½-inch above or below the required cross sectional elevations and to a maximum irregularity not exceeding ½ inch in 10 feet longitudinally. Any specific area a gravel base which, after being rolled, does not form a satisfactory, solid, stable foundation shall be removed, replaced and re-compacted by the Contractor without additional compensation.
3. Reclaimed Base Course – See Part 3.02 of this Specification.

C. Temporary Pavement (City Roads Only)

1. Temporary pavement shall be placed over all trenches in City roads where directed by the Engineer.
2. The Contractor, upon completing the backfilling and compaction of the trenches in the streets and the placing of the gravel base courses, shall be required to construct temporary pavement unless otherwise directed by the Engineer.
3. Temporary Pavement shall be placed in two courses and shall consist of 4-inch compacted thickness of hot bituminous mix on a 12-inch compacted thickness gravel base as directed by the Engineer.
4. The Contractor shall maintain temporary pavement in good repair and flush with the existing pavement at all times until the permanent pavement is placed.
5. The temporary pavement shall not be removed until 90 days after installation or until such time that the Engineer authorizes the placement of permanent pavement at an earlier time.

D. Bituminous Base:

1. Bituminous Base shall be used in state roads as listed in Part 1.03 of this specification.
2. Bituminous Base shall be placed to the thickness as indicated in Part 1.03 of this Specification and installed in accordance with the requirements of the MassHighway Standard Specification and as detailed in the Contract Drawings.
3. Prior to placing bituminous base, all reclaimed temporary pavement and sufficient gravel base course shall be removed, to proper depths as detailed in the contract drawings.

E. Bituminous Binder

1. Bituminous Binder shall be used in locations listed in Part 1.03 of this specification.
2. Bituminous Binder shall be placed to the thickness as indicated in Part 1 of this Specification and installed in accordance with the requirements of the MassHighway Standard Specification and as detailed in the Contract Drawings.

F. Bituminous Surface

1. Bituminous Surface shall be used in locations listed in Part 1.03 of this specification.
2. Bituminous Surface shall be placed to the thickness as indicated in Part 1.03 of this Specification and installed in accordance with the requirements of the MassHighway Standard Specification and as detailed in the Contract Drawings.

G. Sidewalks, Driveways, Parking Lots and Curbing

1. Sidewalks, driveways, parking lots and curbing that are removed or damaged by the Contractor's operations shall be restored to a condition at least equal to that in which they are found immediately prior to the start of operations. Materials and methods used for such restoration shall be in conformance with the requirements of the MassHighway Standard Specification.
2. Where the trench location is in a sidewalk, the entire width of the sidewalk shall be replaced with new material. Side forms shall be set so as to obtain and preserve a straight edge along both sides of the walk.
3. Where trench is in a driveway, the driveway shall be repaved across its entire width with even edges.
4. Gravel base course under sidewalks and driveways shall not be less than 8" thick.

H. Surface Maintenance

1. During the guarantee period, the Contractor shall maintain the bituminous surface and shall promptly make good all defects such as cracks, depressions, and holes that may occur. At all times, the surfacing shall be kept in a safe and satisfactory condition for traffic. If defects occur in surfacing constructed by the Contractor, the Contractor shall remove all bituminous concrete and base course as is necessary to properly correct the defect. After removing bituminous concrete and base course, the Contractor shall correct the cause of the defect and replace the base course and bituminous concrete in accordance with these specifications.

3.03 PAVEMENT RECLAMATION

A. Equipment

1. Recycling equipment shall have a positive depth control to insure meeting a uniform depth of processing as defined in the bid documents. Equipment shall have the ability to process the complete depth of asphalt pavement and underlying base material to assure a homogenous mass. Equipment shall be capable of crushing all oversize material except ledge or boulders larger than 8 inches in diameter.
2. A minimum of 14 calendar days prior to the proposed start of work, the Contractor shall submit, in writing, to the Engineer for approval, a description of the specific equipment and construction methods to be used in performing the work.
3. The Contractor will be required to demonstrate to the Engineer the ability of the work crew and equipment to produce reclaimed material conforming to specifications. A test section shall be constructed approximately 500 feet long and one lane wide and be located within the project limits at a location determined by the Engineer. Representative samples of reclaimed material shall

be taken from this test section for analysis by the Engineer. Full scale production will not be allowed to commence until the Engineer has reviewed the test results and gives written approval of the equipment and construction method used in the construction of the strip.

4. Failure to meet gradation requirements may be considered cause for rejection of equipment, construction method or both. Failure to meet gradation requirements due to improper equipment or construction methods shall not constitute a reason for any additional compensation for the import and blending of any additional processed gravel or aggregate to meet the deficiencies.

B. CONSTRUCTION METHODS

1. Reclaiming operations shall not be permitted when the existing pavement or sub-base contains frost, nor when the air or surface temperature is below 40 degrees.
2. The Contractor shall reclaim only that area of pavement that can be placed and compacted by the end of the same working day, at which time it may be opened to traffic with the Engineer's approval. Required density shall be maintained until the bituminous concrete pavement has been placed. Any imperfections discovered prior to its placement shall be repaired, as directed by the Engineer, at no additional compensation.
3. Prior to the start of reclamation, the existing pavement shall be swept to remove all trash, sand, dirt, organic material and other undesirable material to the satisfaction of the Engineer.
4. The existing pavement shall be sawcut full depth within the areas where the adjacent surface is to be protected (curb, side streets, etc.) as shown on the plans or as directed by the Engineer.
5. All drainage, utility and municipality structures are to be referenced and lowered to a minimum depth of 6 inches below the bottom of the proposed reclaimed sub-base course. Lowered structures shall be covered with steel plates. The voids remaining after the structures have been lowered are to be filled with a suitable material as determined by the Engineer.
6. It shall be the Contractor's responsibility to maintain drainage functioning properly in the areas under construction up to and including the time when the final system is put into use.
7. Existing suitable material shall be removed to the lines and grades established by the Engineer and replaced with a suitable material as determined by the Engineer. Existing surplus reclaimed material shall be used, when available, at no additional compensation.
8. The total thickness of the pavement structure (unless otherwise indicated) and uppermost portion of the sub-base layer shall be recycled to the design depth specified on the typical section(s). The Engineer shall perform a sieve analysis of

the reclaimed material for every 5000 square yards of material processed or as often as conditions may require. Test results shall be made available to the Contractor. If conditions warrant, the Engineer may stop work until the required test results become available.

9. If the Engineer directs, aggregate of the appropriate sieve designation shall be blended with recycled material to produce a uniform mixture meeting the gradation requirements.
10. The Contractor shall process the full existing pavement structure and sub-base materials as many times as necessary for his equipment to satisfy the gradation specifications. At the end of each day's progress, the Contractor shall apply flaky Calcium Chloride at the rate of 100 pounds per 500 square yards. The Engineer shall increase or decrease this volume as necessary and re-apply to any areas deemed necessary.
11. The reclaimed sub-base course shall be tested for compaction and smoothness and accuracy of grade. The required density shall be measured by a Nuclear Density Gauge supplied by the Engineer. If any portions are found to be unacceptable by the Engineer, such portions shall be rescarified, regraded and recompacted until required smoothness and accuracy are obtained.
12. Existing structures are to be raised and castings reset to finished binder grade (unless directed otherwise by the Engineer) after placement of the binder course at no additional compensation.
13. Excess reclamation material shall be stockpiled properly. All unsuitable material shall become the property of the Contractor to be properly disposed of outside the project limits.

END OF SECTION

SECTION 02607

PRECAST CONCRETE MANHOLES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for modular precast concrete manhole sections with tongue-and-groove joints, cast iron covers, accessories and appurtenances.

B. Related Sections

1. Section 02622 - Polyvinylchloride Gravity Sewer Pipe
2. Section 03300 - Cast-In-Place Concrete
3. Section 02610 – Manhole Rehabilitation

C. American Iron and Steel

1. The Contractor shall note that portions of this specification are subject to the American Iron and Steel (AIS) requirements of

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. A48, Standard Specification for Gray Iron Castings.
2. A615 Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
3. C32, Standard Specification of Sewer and Manhole Brick (Made from Clay or Shale), AASHTO Designation M91-42, Red Sewer Brick Only Grade SS.
4. C144, Standard Specification for Aggregate for Masonry Mortar.
5. C150, Standard Specification for Portland Cement.
6. C207, Standard Specification for Hydrated Lime for Masonry Purposes.
7. C443, Standard Specification for Joints for Concrete Pipe and Manholes Using Rubber Gaskets.
8. C478, Standard Specification for Precast Reinforced Concrete Manhole Sections.
9. C923, Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.
10. D4101, Standard Specification for Propylene Plastic Injection and Extrusion Materials.

1.03 SYSTEM DESCRIPTION

A. Design Requirements

1. Manholes shall conform in shape, size, dimensions, materials, and other respects to the details indicated in the Contract drawings.
2. All manholes shall have concrete bases. Invert channels may be formed in the concrete of the base or brickwork upon the base.
3. Manhole walls (barrels and cones) shall be precast concrete sections. The top of the cone (not to be more than 12-in.) shall be built of brickwork to permit adjustment of the frame to meet the finished surface.
4. The inverts shall conform accurately to the size of the adjoining pipes. Side inverts shall be curved and main inverts (where direction changes) shall be laid out in smooth curves of the longest possible radius which is tangent, within the manhole, to the centerlines of adjoining pipelines.

1.04 SUBMITTALS

A. Shop Drawings

1. In accordance with Specification SECTION 01300 - SUBMITTALS.

B. Samples

1. Provide representative samples of materials if requested by the Engineer.

PART 2 PRODUCTS

2.01 PRECAST CONCRETE SECTIONS

A. Conform to the ASTM C478 with the following exceptions and additional requirements:

1. All cast in place concrete shall be Class A and shall conform to the requirements specified under SECTION 03300.
2. Wall sections to be 5-inch thick minimum.
3. Type II cement in accordance with ASTM C150.
4. 4.0 feet and 5.0 feet diameter manholes minimum of 4,000 psi - 28 days compressive strength.
5. 6.0 foot diameter manhole minimum of 5,000 psi. - 28 days compressive strength except as otherwise permitted.
6. Sections shall be cured by subjecting them to thoroughly saturated steam at a temperature between 100 and 130 degrees F. for a period of not less than 12 hours or, when necessary for such additional item as may be needed to enable the sections to meet the strength requirements.

7. No more than two lift holes may be cast or drilled in each section.
 8. The date of manufacture and the name of trademark of the manufacturer shall be clearly marked on the inside of the barrel.
 9. Acceptance of the sections will be on the basis of material tests and inspection of the completed product.
- B. Flat Slab Tops
1. Thickness and reinforcement as indicated on the drawings and in accordance with ASTM C-478.
- C. Cones
1. Cones shall be precast sections of construction similar to above.
- D. Bases
1. The tops of the bases shall be suitably shaped by means of accurate bell-ring forms to receive the barrel sections.
 2. All holes for pipes shall be cast in the base sections so that there is a clear distance of four inches minimum between the inside bottom of the base section and the pipe invert.
 3. Base pads for sewer manholes shall be pre-cast with extended base as indicated on drawings and herein specified. Base pads for drain manholes shall not have extended bases.
 4. Openings for pipe and materials to be embedded in the wall of the base for these joints shall be cast in the base at the required locations during the manufacture of the base.

2.02 COMPONENTS

A. Pipe Seals

1. Premolded elastomeric-sealed joints fitted or cast integrally into the pipe opening of the manhole base and/or wall section.
2. Provide a watertight joint.
3. Maximum 10-degree omni-directional deflection.
4. Conform to ASTM C-923.
5. Seals to be:
 - a. Lock Joint Flexible Manhole Sleeve made by Interpace Corp., Parsippany, NJ;
 - b. Korn-N-Seal made by National Pollution Control Systems, Inc., Nashua, NH;
 - c. A-LOK manhole pipe seal made by A-LOK Corp., Trenton, NJ;
 - d. or an acceptable equivalent product.
6. All materials, accessories and construction methods used in making the joints shall be supplied or approved by the manufacturer of the premolded

elastomeric-sealed joint. Furnish manufacturer's written instructions to the Engineer.

B. Plastic Manhole Steps

1. Install in walls of the precast sections to form a continuous ladder with a distance of twelve inches (12) between steps.
2. Copolymer Polypropylene plastic manhole step Model PS2-PFSL as manufactured by M. A. Industries, Inc., Peachtree City, Georgia.
3. Plastic steps to be in conformance with ASTM D-4101 for type II propylene copolymers.
4. Plastic to encase 1/2-inch grade 60 steel reinforcing rod conforming to ASTM A-615.

C. Bituminous Coating

1. The material shall be:
 - a. Minwax Fibrous Brush Coat made by the Minwax Co., New York, N.Y. or
 - b. Tremco 121 Foundation Coating made by the Koppers Co., Inc., Pittsburgh, PA; or
 - c. Acceptable equivalent product.
2. Only sewer manholes shall be given a bituminous coating. Drain manholes may remain uncoated.

D. Rubber Gaskets (between manhole sections)

1. In accordance with ASTM C443.
2. Gasket configuration per manufacturers recommendation.

E. Butyl Resin Gaskets (between manhole sections)

1. In accordance with ASTM C990.
2. Gasket configuration per manufacturers recommendation.

2.03 ACCESSORIES

A. Standard Manhole Frames and Covers

1. Standard sewer manhole frames and covers shall have a 24-inch opening and shall be:
 - a. East Jordan Iron Works: Cover Model 2110A, Frame Model 2114Z
 - b. or equal meeting requirements of this section
2. Standard covers shall be non-rocking and shall weigh a minimum of 200 lbs. Frame and cover sets shall weigh a minimum of 400 lbs.
3. All cast-iron manhole frames and covers shall conform to the details shown on the drawings, or as hereinbefore specified.

4. Castings shall be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sandholes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of covers and frame seats shall be machined to prevent rocking of covers.
 5. Castings shall be thoroughly cleaned and subject to a careful hammer inspection.
 6. Castings shall be at least Class 25 conforming to the ASTM A48.
 7. Sewer manhole covers shall be H-20 load rated, have a diamond surface pattern, and be clearly marked "Sewer" or "Drain" as appropriate, in 3-inch lettering.
- B. Watertight Manhole Frames and Covers
1. Frames and covers shall come as a complete, attached assembly – cover shall not be separate from frame.
 2. Watertight manhole frame and cover assemblies shall be:
 - a. "Ergo" type by EJ, Product No. 00104043L03, or
 - b. Approved equal
- C. Watertight Manhole Hatches
1. Hatches shall come as a complete, attached assembly – hatch shall not be separate from frame.
 2. Watertight manhole hatches shall be:
 - a. EJ Product No. 00831300, or
 - b. Approved equal
- D. Brick
1. Sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer.
 2. In accordance with ASTM C32, Red Sewer Brick Only Grade SS.
 3. In accordance with AASHTO M91-42, Red Sewer Brick Only Grade SS.
 4. Reject brick shall be immediately removed from the work.
- E. Mortar for Brickwork
1. Composed of Portland cement, hydrated lime, and sand in which the volume of sand shall not exceed three times the sum of the volume of cement and lime.
 2. The proportions of cement and lime shall be 1:1/4.
 3. Cement shall be Type II Portland cement in accordance with Specification SECTION 03300.
 4. Hydrated lime shall be Type S conforming to ASTM C207.

5. Hydrated lime shall be "Mortaseal" manufactured by U.S. Gypsum or
6. "4X Hydrate" manufactured by the New England Lime Company or
7. An acceptable equivalent product.
8. The sand shall conform to ASTM C144.

2.04 STUBS IN MANHOLES

- A. The stubs shall be of PVC pipe and shall have PVC stoppers sealed with pre-molded gasket joints in accordance with Specification SECTION 02622.
- B. Lengths as indicated on the Drawings.

2.05 DROP INLETS

- A. Construct with pipe as specified in SECTION 02622 or with precast concrete sections provided by the manhole manufacturer with all materials conforming to this Specification.

PART 3 EXECUTION

3.01 INSTALLATION

A. Manhole Sections

1. Set so as to be vertical and with sections and steps in true alignment.
2. Rubber gaskets shall be installed in all joints in accordance with the manufacturer's recommendations.
3. All holes in sections used for their handling shall be thoroughly plugged with rubber plugs made specifically for this purpose or with mortar. The mortar shall be one part cement to 1-1/2 parts sand, mixed slightly damp to the touch (just short of "balling"), hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

B. Rubber and/or Butyl Resin Gaskets (between manhole sections)

1. In accordance with manufacturers recommendation.
2. Install in all joints between precast sections.

C. Brickwork

1. Only clean bricks shall be used.
2. Bricks shall be moistened by suitable means, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

3. Each brick shall be laid in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and shall be thoroughly bonded.
- D. Plastering And Curing Brick Masonry
1. Outside faces of brick masonry adjustment courses shall be plastered with mortar to a thickness of 1/2-inch.
 2. If required, the masonry shall be properly moistened prior to application of the mortar.
 3. The plaster shall be carefully spread and troweled. After hardening, the plaster shall be carefully checked by being tapped for bond and soundness.
 4. Unbonded or unsound plaster shall be removed and replaced.
 5. Brick masonry and plaster shall be protected from too rapid drying by the use of burlaps kept moist, or by other suitable means, and shall be protected from the weather and frost, to insure maximum strength.
- E. Bituminous Coating
1. The exterior surfaces of all manholes shall be given two coats of bituminous waterproofing material.
 2. The waterproofing material shall be applied by brush or spray and in accordance with the instructions of the manufacturer.
 3. Time shall be allowed between coats to permit sufficient drying so that the application of the second coat has no effect on the first coat.

3.02 SETTING MANHOLE FRAMES AND COVERS

- A. Manhole frames shall be set with the tops conforming accurately to the grade of the pavement or finished ground surface or as indicated on the drawings or directed. Frames shall be set concentric with the top of the masonry and in full bed of mortar so that the space between the top of the manhole masonry and the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry shall be placed all around and on the top of the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.
- B. Manhole covers shall be left in place in the frames on completion of work at the manholes.

3.03 INSTALLING STUBS IN MANHOLES

- A. Stubs shall be set accurately to the required line and elevation and shall be installed in the manhole as indicated on the drawings and in accordance with Specification SECTION 02622.

3.04 DROP INLETS

A. Construct to the required line and elevations as indicated on the Drawings.

3.05 CLEANING

A. Manholes to be free of construction debris prior to final inspection.

END OF SECTION

SECTION 02611

EPOXY LINING FOR MANHOLES AND CULVERTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements for work, materials, equipment, tools, and application equipment for installation and testing of a monolithic lining system.
2. Requirements for specialized application equipment and rigorous surface preparation requirements used to apply the surfacing system without the use of solvents.
3. Product application requirements and procedures, including surface preparation, mixing, application, material handling and storage, qualification of Application Contractor and application quality control.

B. Related Sections:

1. Section 02149 - Maintaining Existing Flow
2. Section 02610 - Manhole Rehabilitation

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.
2. D638 - Standard Test Method for Tensile Properties of Plastics.
3. D695 - Standard Test Method for Compressive Properties of Rigid Plastics.
4. D790 - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
5. D2240 - Standard Test Method for Rubber Property - Durometer Hardness, Type D.
6. D2584 - Standard Test Method for Ignition Loss of Cured Reinforced Resins.
7. D4414 - Standard Practice for Measurement of Wet Film Thickness by Notch Gages
8. D4541 - Standard Test Method for Pull-off Strength of Coatings Using a Portable Adhesion Tester.

B. NACE - The published standards of National Association of Corrosion Engineers (NACE International), Houston, TX.

1.03 SUBMITTALS

- A. In accordance with Section 01300, submit the following:
 - 1. Product data and manufacturer's application instructions.
 - 2. Samples
 - a. Colors as required.
 - 3. Quality Assurance Submittal:
 - a. Submit documentation stating the Application Contractor is an approved installer and licensed by the epoxy system manufacturer and specialized equipment supplier.
 - b. Submit documentation stating the Application Contractor's experience, listing at least 5 past clients to verify previous satisfactory performance on projects of similar or greater size and difficulty factor. Submitted documentation shall include the project type, total value of the contract, date of project completion, as well as Owner and Engineer contact information, including names, addresses, and telephone numbers.
 - c. Submit documentation from the monolithic surfacing manufacturer listing at least 5 previous installations of the product including installation dates, description of work performed, contact names and telephone numbers.

1.04 QUALITY ASSURANCE

- A. Application Contractor must be established in the epoxy lining industry, have at least 5 years of experience in the epoxy lining of structures, and have coated a minimum of 6,000 structures. The Application Contractor cannot share the experience of the manufacturer.
- B. Application Contractor shall initiate and enforce quality control procedures consistent with applicable ASTM and NACE standards together with pull testing and vacuum testing to assure a high quality project.
- C. Application Contractor shall use an adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts. These workmen shall be completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section. The supervisor and foreman must have a minimum of 5 years' experience in epoxy restoration via plural component spray application with 100% solid epoxy.
- D. Application Contractor shall use approved specialty equipment adequate in size, capacity and number sufficient to accomplish the work of this Section in a timely manner.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading

1. In accordance with manufacturer's recommendations.
2. Protective coating materials are to be handled according to their material safety data sheets.

B. Acceptance at Site

1. Products to be delivered to site in sealed, labeled and unopened containers.
2. Labels to include Name, type, code, coverage, surface preparation, drying time, color, clean up procedure, and mixing and reducing instructions.
3. Remove unacceptable products immediately.

C. Storage and Protection

1. Materials are to be kept dry, protected from weather, stored under cover, and stored between 50 deg F and 90 deg F. Do not store near flame, heat or strong oxidants.

PART 2 PRODUCTS

2.01 MANUFACTURERS AND EQUIPMENT SUPPLIERS

- A. Epoxy lining materials and appropriate application equipment shall be by Warren Environmental, Inc., Carver, MA or approved equal.

2.02 REPAIR MATERIALS

- A. Repair materials must be accepted and approved by the specifying engineer and must be compatible with the specified epoxy system. No cementitious repair materials will be allowed. Only 100% solids epoxy mastic repair materials shall be used to profile or build out deteriorated walls.

2.03 STRUCTURAL EPOXY LINING AND REPAIR SYSTEM

- A. A non-toxic, 100% solids, solventless epoxy resin system as applied according to the manufacturer's requirements, and a non-toxic, 100% solids epoxy mastic repair resin system applied by hand and/or trowel, exhibiting the following characteristics:

Product	Structural Epoxy
Product type	cycloaliphatic cured novalac-epoxy resin
Color	White (resin coating) / Light Grey (mastic)
Solids Content (vol %)	100%
Compressive Strength	ASTM D695 11,000 p.s.i.
Flatwise Tensile Strength Of Sandwich Constructions	ASTM C297 2,608 p.s.i.

Tensile Strength	ASTM D638	6,000 p.s.i.
Tensile Elongation	ASTM D638	4%
Flexural Strength	ASTM D790	11,000 p.s.i.
Flexural Modulus	ASTM D790	500,000 p.s.i.
Bond Strength – Concrete	ASTM D4541	Concrete Failure
Chemical Resistance to:		
Sulfuric Acid, 70%	ASTM D543	Immersion Service
Sodium Hydroxide, 20%	ASTM D543	Immersion Service

- B. The monolithic lining system shall be continuously bonded to all brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside the structure according to ASTM D4541. Coating thickness shall be designed for application intended as indicated on the Drawings
- C. The cured epoxy will be monolithic with proper sealing to all internal connections and shall be placed and cured in 1 or 2 applications in conformance with the recommendations of the structural epoxy system manufacturer. Recommended thickness of the applied epoxy can vary due to substrate conditions and will be applied per the recommendations of the coating manufacturer as approved by the Engineer.
- D. When cured, the system shall form a continuous, tight-fitting, hard, impermeable surfacing that is suitable for sewer system service and chemically resistant to any chemicals, bacteria or vapors normally found in domestic or industrial sewage
- E. The system shall effectively seal the interior surfaces of the structure and prevent any penetration or leakage of groundwater (infiltration).
- F. The system shall be compatible with the thermal conditions of the existing sewer structure.

2.04 STRUCTURAL EPOXY APPLICATION EQUIPMENT

- A. Heated, plural component, specially designed equipment for use in the spray or spincast application of the specified system approved for use and as designed and developed by the structural epoxy manufacturer. The product may also be hand troweled.

PART 3 EXECUTION

3.01 PRE-COAT INSPECTION

- A. All structures to be coated shall be readily accessible to the Application Contractor.

- B. Appropriate actions shall be taken to comply with local, state and federal regulatory and other applicable agencies with regard to environment, health and safety.
- C. Active flows shall be diverted with flow through plugs or bypass pumped, in accordance with Section 02149 of the Specifications, as required to ensure that the liquid flow is maintained off the surfaces to be lined.
- D. Installation of the protective coating shall not commence until the concrete substrate has properly cured a minimum cure of 28 days for new concrete.

3.02 SURFACE PREPARATION

- A. Application Contractor shall inspect all surfaces specified to receive the monolithic surfacing system prior to surface preparation. Application Contractor shall notify Engineer of any noticeable disparity in the surfaces that may interfere with the proper preparation or application of the monolithic surfacing system.
- B. All concrete that is not sound or has been damaged by chemical exposure shall be removed to a sound concrete surface. All contaminants including: oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants must be removed.
- C. Surface preparation method(s) shall be based upon the conditions of the substrate and the requirements of the monolithic surfacing system to be applied.
- D. Quick setting high strength concrete with latex or curing agent additives cannot be used to re-profile the surface to be epoxy lined. Proper surface preparation procedures must be followed to ensure adequate bond strength to any surface to be coated. New cement must cure at least 30 days prior to coating.
- E. Existing coatings should be removed or thoroughly abraded to provide adequate surface profile for mechanical bond by the new system. Application Contractor is to maintain strict adherence to the monolithic surfacing system manufacturer's recommendations with regard to proper surface preparation and compatibility with restoration and structural liner materials.
- F. Surfaces to receive protective coating shall be cleaned and abraded to produce a sound surface with adequate profile and porosity to provide a strong bond between the epoxy surfacing system and the substrate. The first procedure upon entering each structure will be to blast all specified surfaces by low pressure water cleaning. When all loose and /or contaminated debris has been removed, the surface shall be water blasted by the use of a hand held wand again. The wash water shall include a dilute solution of chlorine to diminish bacterial growth and to kill any bacteria residing on or in the surface. The surface will be tested at this point to ensure that the pH is within acceptable limits (not to exceed 8.5). These tests will be performed with litmus paper on various areas within the structure.

- G. Surfaces that require additional cleaning or profiling will be prepared by abrasive blast or water blasting at 4,000 to 10,000 psi in order to rough the surface sufficient to obtain and ensure adequate bonding of the system. A minimum surface profile of 8-10 mils must be achieved to assure proper adhesion. Detergent water cleaning and hot water blasting may be necessary to remove oils and grease from the concrete or brick. Whichever methods are used, they shall be performed in a manner that provides a uniform, sound clean surface that is not excessively damaged.
- H. Active water infiltration shall be stopped by using approved cementitious water plug or hydroactive grout that is compatible and suitable for topcoating with the specified epoxy surfacing system. Latex base products cannot be used, - NO exception.
- I. All surfaces shall be inspected during and after preparation and prior to application of the monolithic surfacing system. Any evidence of remaining contamination or residuals shall be removed by additional water or abrasive blast, or other approved method before proceeding with application of the monolithic surfacing system.

3.03 APPLICATION OF REPAIR MATERIALS

- A. Areas where reinforcing steel has been exposed or removed shall be repaired by replacing spent rebar with new rebar to match existing. All new rebar will be embedded in 1 ½ inch of epoxy mastic.
- B. Repair materials shall meet the specifications of this Section. The materials shall be trowel or spray applied utilizing proper equipment on to specified surfaces. The material thickness shall be specified by the Engineer according to Owner's requirements and manufacturer's recommendations.
- C. All surfaces shall be inspected during and after preparation and prior to application of the monolithic surfacing system. Any evidence of remaining contamination or latence shall be removed by additional water or abrasive blast, or other approved method before proceeding with application of the monolithic surfacing system.
- D. Approved repair materials, shall be trowelled to provide a smooth surface with an average profile equivalent to coarse sandpaper to receive the protective coating. No bugholes or honeycomb surfaces should remain after the final trowel procedure of the repair epoxy mortar.
- E. The repair materials shall be permitted to cure according to manufacturer recommendations. Curing compounds may not be used unless approved by the monolithic surfacing system manufacturer for compatibility with the specified system.

- F. Application procedure of the repair materials, if not performed by the monolithic surfacing system applicator, should be observed by the Applicator's representative to ensure proper finishing for suitability to receive the specified epoxy liner.
- G. All surfaces shall be sufficiently smooth and even, to ensure good flow handling characteristics when coated with epoxy materials.

3.04 STRUCTURAL EPOXY REHABILITATION SYSTEM

- A. Application procedures shall conform to the recommendations of the structural epoxy manufacturer, including material handling, mixing, and environmental controls during application, safety, and equipment.
- B. The equipment shall be specially designed to accurately ratio and apply the specified materials and shall be regularly maintained and in proper working order.
- C. The specified materials must be applied by an approved installer.
- D. All specified surfaces will be lined with the structural epoxy system to provide a minimum total thickness of 250 mils for rehab structures and 125 mils for new concrete. The epoxy liner shall be monolithic with proper sealing of connections to all unsurfaced areas and shall be placed and cured in one to two applications, depending on the existing structure's conditions.

3.05 TESTING AND INSPECTION

- A. A wet film thickness gauge, such as those available through Paul N. Gardner Company, Inc. meeting ASTM D4414, shall be used to ensure a monolithic coating and uniform thickness during application.
- B. After the system has set hard to the touch it shall be inspected by the Engineer verifying the following:
 - 1. The Engineer will measure the system-cured thickness from a specimen retrieved by the Application Contractor. Retrieval can be made by physically cutting through the epoxy liner (by drilling or coring) or a suitable non-destructive type of thickness measurement may also be used, (e.g. ultrasonic).
 - 2. Groundwater infiltration of the system shall be zero.
 - 3. All pipe connections shall be open and clear.
 - 4. No cracks, voids, pinholes, uncured spots, dry spots, lifts, delamination or other type defects shall be evident in the system.
- C. All lined surfaces will be tested with high-voltage holiday detection equipment. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the pinhole. All detected pinholes shall be marked and repaired by abrading the lined surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional system

material can be hand applied to the repair area. All touch-up/repair procedures shall follow the monolithic surfacing system manufacturer's recommendations.

- D. Measurement of bond strength of the system to the substrate can be made at regular intervals and along different sections of the structure (i.e. corbel, wall, and bench). Bond strength can be measured in accordance with ASTM D4541. Any areas detected to have inadequate (less than 300 p.s.i. or 80% substrate failure to concrete) bond strength shall be evaluated by the Engineer. Further bond tests may be performed in that area to determine the extent of potentially deficient bonded area and repairs shall be made by the Application Contractor in strict accordance with the manufacturer's recommendations.
- E. A final visual inspection shall be made by the Engineer and the Application Contractor. Any deficiencies in the finished system shall be marked and repaired according to the procedures set forth herein by the Application Contractor.
- F. The system may be put back into operational service as soon as the final inspection has taken place.
- G. After two days cure time, the structures can be vacuum tested and repaired, if necessary, at the contractor's expense.

3.06 CLEANING

- A. Trash and loose debris shall not be permitted to accumulate at the project site. All items shall be regularly removed and disposed of at an approved site in accordance with applicable regulatory agencies.

END OF SECTION

SECTION 02613

CORRUGATED POLYETHYLENE PIPE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements for furnishing and installing corrugated polyethylene pipe (CPP) of all sizes and types, including but not limited to couplings, cleanouts, adapters and any additional fittings required to completely install the drainage pipe as indicated on the drawings.
2. The work shall include but not be limited to all excavation, pipe placement, backfill and compaction, and installation of all drain line connections as depicted on the plans or as directed by the Engineer.

B. Related Sections

1. Section 02200 - Earth Excavation, Backfill, Fill and Grading.

1.02 QUALITY ASSURANCE

- A. Corrugated polyethylene pipe (CPP) shall be made by a manufacturer of established good reputation in the industry and in a plant adapted to meet the design requirements of the pipe.

1.03 REFERENCES

- A. Materials and construction methods shall conform, insofar as applicable, to the requirements of the most recent edition of the Standard Specifications for Highways and Bridges of the Department of Public Works of the Commonwealth of Massachusetts, together with all errata, addenda, additional revisions, and supplemental specifications, all of which are hereinafter referred to as the Massachusetts Standard Specifications.
- B. Materials and construction methods shall conform to all applicable manufacturer's instructions and recommendations.

1.04 SUBMITTALS

- A. In accordance with Section 01300 submit for review drawings showing the pipe dimensions, joints, gaskets and other details for each type and class of pipe to be

furnished for the project. All pipe furnished under the contract shall be manufactured only in accordance with the specifications and the reviewed drawings.

PART 2 PRODUCTS

2.01 PIPE

- A. In all cases, materials shall conform to the appropriate section of the Massachusetts Standard Specifications.
- B. CPP and polyethylene fittings for stormwater system applications shall be solid pipe (non-perforated), dual wall, smooth interior watertight pipe as manufactured by ADS (type N-12 WT/IB), or approved equal.
- C. Specials, if required, shall conform to the specifications for straight pipe insofar as applicable. Special design or construction necessary for specials shall be subject to acceptance by the Engineer.
- D. Use of pipe from alternate manufacturer(s) shall be subject to acceptance by the Engineer. Pipes not meeting all of the standards of the specified ADS pipe shall not be considered.

2.02 JOINTS

- A. Materials shall conform to the appropriate section of the Massachusetts Standard Specifications.
- B. All joints shall be gasketed and watertight.
- C. All CPP pipe installed in areas with suspected petroleum-derived contaminated soil or groundwater, as indicated on the plans by a dashed region between select stations entitled "Areas of Concern", or as directed by the Engineer shall have flouroelastomer (FKM) gaskets, such as Viton gaskets, as manufactured by DuPont, Nitrile gaskets (Buna-N), or an acceptable equivalent.

2.03 INSPECTION, TESTS AND ACCEPTANCE

- A. Acceptance will be on the basis of tests of materials, absorption tests, plant load-bearing tests, pressure tests, and inspection of the complete product. The required tests are enumerated hereinafter. The quality of all materials used in the pipe, the process of manufacture, and the finished pipe shall be subject to inspection by the Engineer. Inspection may be made at the place of manufacture, or on the work site after delivery, or both, and the pipe shall be subject to rejection at any time due to failure to meet any of the specification requirements, even though sample pipe units

may have been accepted as satisfactory at the place of manufacture. All pipe which is rejected shall be immediately removed from the project site by the Contractor.

- B. Tests and certified copies in triplicate of test results will be required for the materials and the finished pipe units as described herein. If less than 100 units of a given size and class of pipe are required, the Contractor may submit certified copies of tests made on identical pipe units made by the same manufacturer within the past year. If more than 100 units of a given size and class of pipe are required, the Contractor shall, at his own expense, engage the services of an acceptable independent testing laboratory to perform or witness all tests, other than mill tests on reinforcing steel and cement, and certify the results. In addition, the Owner reserves the right to have any or all pipe units inspected or tested, or both, by an independent testing laboratory at either the manufacturer's plant or elsewhere. Such additional inspection and/or tests shall be at the Owner's expense and shall be the test results of record.
- C. All pipe units to be tested shall be selected at random by the Engineer. Unless otherwise permitted, all load-bearing tests on pipe units shall be made in the presence of the Engineer.
- D. All tests shall be made in accordance with the latest applicable ASTM specifications.

PART 3 EXECUTION

3.01 HANDLING PIPE

- A. Each pipe unit shall be handled into its position in the trench only in such manner and by such means as is acceptable to the Engineer. In no case shall pipes be dropped or otherwise subjected to impact forces in the course of unloading or installation.
- B. The Contractor will be required to furnish suitable devices to permit satisfactory support of all parts of the pipe unit when it is lifted.

3.02 INSTALLATION

- A. Installation shall conform to the appropriate section of the Massachusetts Standard Specifications and the manufacturer's recommendations.
- B. In no case shall the pipe be installed at less than the manufacturer's minimum recommended depth for H-25 loading.

- C. Each pipe unit shall be inspected before being installed. Any pipe discovered to be defective, either before or after installation, shall be removed and replaced with a sound pipe.
- D. Except as otherwise indicated on the drawings, the pipe shall be supported by compacted crushed stone. No pipe or fitting shall be permanently supported on saddles, blocking, or stones unless otherwise directed. Screened gravel shall be as specified under Aggregate Materials.
- E. When applicable, suitable bell holes shall be provided, so that after placement only the barrel of the pipe receives bearing pressure from the supporting material.
- F. All pipe units shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.
- G. Pipe and fittings shall be installed to the lines and grades indicated on the drawings or as required by the Engineer. Care shall be taken to ensure true alignments.
- H. Before any joint is made the unit shall be checked to assure that a close joint with the next adjoining unit has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber, or other unyielding object.
- I. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe unit together so that they will fit with a minimum open recess inside and outside and have tightly seated joints. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends. Joints shall not be pulled or cramped without the permission of the Engineer.
- J. Immediately after the pipe joint is completed, the position of the gasket in the joint shall be inspected using a suitable feeler gage furnished by the Contractor, to be sure it is properly put together and is tight. Joints in which the gasket is damaged or not properly positioned shall be pulled apart and remade using a new gasket.
- K. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units and new gaskets.
- L. Details of gasket installation and joint assembly shall follow the directions of the manufacturer of the joint materials and of the pipe, all subject to acceptance by the Engineer. The resulting joints shall be watertight and flexible.

- M. After each pipe to be supported on crushed stone has been properly bedded, enough gravel shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment. Bell holes provided for jointing shall be filled with screened gravel and compacted, and then screened gravel shall be placed and compacted to complete the pipe bedding, as indicated on the drawings.
- N. The Contractor shall take all necessary precautions to prevent flotation of the pipe in the trench prior to backfilling.
- O. At all times when pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs or by other suitable means. If water is in the trench when work is to be resumed, the plug shall not be removed until all conditions are suitable to prevent water, earth, or other material from entering the pipe.
- P. Pipelines shall not be used as collectors or conductors for trench or other drainage during construction.

3.03 CLEANING

- A. Care shall be taken to prevent earth, water, and other materials from entering the pipeline. As soon as possible after the pipe, basins and manholes are completed, the Contractor shall clean out pipelines, basins and manholes, being careful to prevent soil, water, and debris from entering any existing pipe.
- B. All material and debris removed from pipes, basins and manholes shall be removed from the site and legally disposed of, and shall not be used in any other portion of the construction.

END OF SECTION

SECTION 02618

DUCTILE-IRON PIPE AND FITTINGS FOR BURIED SERVICE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements to furnish, lay, joint, and test ductile-iron pressure pipe, fittings (including special castings), and appurtenant materials and equipment indicated on the Drawings and specified in this Section.

1.02 REFERENCES

- A. American Water Works Association (AWWA)/American National Standards Institute (ANSI)
 - 1. C104/A21.4, Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
 - 2. C105/A21.5, Polyethylene Encasement for Ductile Iron Pipe Systems
 - 3. C110/A21.10, Ductile-Iron and Gray-Iron Fittings, 3-inch. through 48-inch., for Water and Other Liquids.
 - 4. C111/A21.11, Rubber-Gasket Joints for Ductile-Iron and Pressure Pipe and Fittings.
 - 5. C115/A21.15, Flanged Ductile Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
 - 6. C150/A21.50, Thickness Design of Ductile-Iron Pipe.
 - 7. C151/A21.51, Ductile-Iron Pipe, Centrifugally Cast for Water.
 - 8. C153/A21.53, Ductile-Iron Compact Fittings, 3 inches through 24 inches, and 54 inches through 64 inches for Water Service
 - 9. C600, Installation of Ductile-Iron Water Mains and Their Appurtenances
 - 10. C65I, Disinfecting Water Mains
- B. American Society of Testing and Materials (ASTM)
 - 1. A536, Standard Specification for Ductile Iron Castings

1.03 REQUIREMENTS

- A. Ductile iron pipe used for water mains shall be double cement lined thickness Class 52 push-on joint, size as indicated on the drawings.
- B. For sewer pipeline use class as indicated.
- C. Location of restrained joints shall be based on Thrust Restraint Design for Ductile Iron Pipe (Second Edition), published by Ductile Iron Pipe Research Association.

1.04 SUBMITTALS

- A. In accordance with SECTION 01300 submit the following:
- B. Shop Drawings
 - 1. American Iron and Steel certification.
 - 2. Piping layouts in full detail.
 - 3. Location and type of backup block or device to prevent separation.
 - 4. Schedules of all pipe, fittings, special castings, couplings, expansion joints, restrained joints and other appurtenances.
- C. Certificates
 - 1. Sworn certificates of shop tests showing compliance with specified standard.
- D. Manufacturer's Literature
 - 1. Catalog cuts of joints, couplings, harnesses, expansion joints, restrained joints gaskets, fasteners and other accessories.
 - 2. Brochures and technical data of coatings and lining's and proposed method of application.

1.05 QUALITY ASSURANCE

- A. Pipe and fittings shall be inspected and tested at the foundry as required by the corresponding standards listed in Article 1.02 of this specification.
- B. Owner reserves right to inspect and/or test by independent service at manufacturer's plant or elsewhere at his own expense.

PART 2 PRODUCTS

2.01 PIPE

- A. Ductile-Iron Pipe
 - 1. Designed in accordance with AWWA/ANSI C150/ A21.50.
 - 2. Manufactured in accordance with AWWA/ANSI C151/A21.51.
 - 3. Unless otherwise indicated or specified, ductile-iron pipe shall be at least thickness Class 52.
 - 4. Pipe for use as water main shall be double cement lined.
- B. Pipe For Use With Couplings
 - 1. As specified above except that the ends shall be plain (without bells or beads) cast or machined at right angles to the axis.

2.02 FITTINGS

- A. General

1. Push-on or mechanical-joint fittings shall be all-bell fittings unless otherwise indicated or specified.
2. In accordance with AWWA/ANSI C110/A21.10.
 - a. Pipe 24-inches in diameter and less shall be pressure Class 350.
 - b. Pipe 30-inches to 48-inches in diameter shall be at least pressure Class 250.

Or

3. Compact fittings in accordance with AWWA/ANSI C153/A21.53 and shall have a working pressure rating of 350 psi

B. Nonstandard Fittings

1. Fittings having nonstandard dimensions and cast especially for this project shall be of acceptable design.
2. Manufactured to meet the requirements of these specifications and shall have the same diameter and thickness as standard fittings, but their laying lengths and types of ends shall be determined by their positions in the pipelines and by the particular piping to which they connect.

2.03 ADAPTERS

- A. Where it is necessary to joint pipes of different type, furnish and install the necessary adapters unless solid sleeves are indicated on the drawings or permitted. Adapters shall have ends, conforming to the above specifications for the appropriate type of joint, to receive the adjoining pipe. Adapters joining two classes of pipe may be of the lighter class provided that the annular space in bell-and-spigot type joints will be sufficient for proper jointing.

2.04 JOINTS

A. Push-On and Mechanical

1. In accordance with AWWA/ANSI C111/A21.11.
2. The plain end of push-on pipe shall be factory machined to a true circle and chamfered to facilitate fitting the gasket.
3. Push-on and mechanical-joint pipe and fittings shall be provided with sufficient quantities of accessories conforming to AWWA/ANSI C111/A21.11.

B. Restrained

1. Restraining glands will be required on all fittings.
2. Pipe, fittings and appurtenances for restrained joints shall be in accordance with AWWA/ANSI C110/A21.10 for full body fittings or AWWA/ANSI C153/A21.53 for compact fittings. Only restraining glands which impart multiple wedging action against the pipe increasing its pressure as the pipe pressure increases will be allowed. Flexibility of the joint shall be maintained after burial. Glands shall be manufactured of ductile iron conforming to ASTM A536. Twist off nuts shall be used to insure proper actuating of the restraining device.
3. Mechanical joint restraint shall have a working pressure rating of at least 250 psi.
4. Manufactured by EBAA Iron, Inc., Eastland, Texas, or equal.

C. Gaskets

1. Gaskets shall be of a composition suitable for exposure to the product which the pipe is intended.
2. All ductile iron pipe installed in areas with suspected petroleum-derived contaminated soil or groundwater, as indicated on the plans by a dashed region between select stations entitled "Areas of Concern", or as directed by the Engineer shall have flouroelastomer (FKM) gaskets, such as Viton gaskets, as manufactured by DuPont, or an acceptable equivalent.

2.05 COUPLINGS

A. Flexible Connections

1. Where flexible connections in the piping are specified or indicated on the drawings, they shall be obtained by the use of sleeve-type couplings, split couplings, or mechanical-joint pipe and/or fittings as herein specified.

B. Steel Sleeve Couplings

1. Pressure rating at least equal to that of the pipeline in which they are to be installed.
2. Provide style 38 or 138, made by Dresser Mfg. Div., Bradford, Pa.; or be acceptable equivalent products.
3. Provided with galvanized-steel bolts and nuts, unless noted otherwise.
4. Provided with gaskets of a composition suitable for exposure to the liquid within the pipe.
5. Provided gaskets with metallic tips for electrical continuity through joints.

C. Solid Sleeve Couplings

1. Solid sleeve couplings and accessories shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed.
2. Couplings shall be ductile iron with gaskets of a composition suitable for exposure to the liquid within the pipe.

2.06 ACCESSORIES

A. Tapped Connections

1. Tapped connections in pipe and fittings shall be made in such manner as to provide a watertight joint and adequate strength against pullout. The maximum size of taps in pipe or fittings without bosses shall not exceed the listed size in the appropriate table of the Appendix to the above-mentioned ANS A21.51 based on 3 full threads for cast iron and 2 full threads for ductile iron.
2. Where the size of the connections exceeds that given above for the pipe in question, a boss shall be provided on the pipe barrel, the tap shall be made in the flat part of the intersection of the run and branch of a tee or cross, or the connection shall be made by means of a tapped tee, branch fitting and tapped

plug or reducing flange, or tapping tee and tapping valve, all as indicated or permitted by the Engineer.

3. All drilling and tapping of cast-iron pipe shall be done normal to the longitudinal axis of the pipe; fitting shall be drilled and tapped similarly, as appropriate. Drilling and tapping shall be done only by skilled mechanics. Tools shall be adapted to the work and in good condition so as to produce good, clean-cut threads of the correct size, pitch, and taper.

2.07 FINISHES

A. Lining

1. Inside of pipe and fittings shall be coated with double thickness cement lining and bituminous seal coat conforming to AWWA/ANSI C104/A21.4.

B. Coating

1. Outside of pipe and fittings shall be coated with the standard bituminous coating conforming to AWWA/ANSI C151/A21.51
2. Outside surfaces of castings to be encased in concrete shall not be coated.
3. Machined surfaces shall be cleaned and coated with a suitable rust-preventative coating at the shop immediately after being machined.

2.08 POLYETHYLENE ENCASEMENT

1. In accordance with AWWA C105

2.09 INSULATION

A. Insulation for Buried and Exposed Water Main

1. All locations with exposed water main or water main approved for burial with less than 5 ft of cover, as shown on the plans or as directed by the Engineer, shall be insulated.
2. Insulation shall be a foamed in place closed cell polyurethane manufactured by Tricon Piping Systems, or approved equal and consist of the following components:
 - (a) Insulation
 - (b) Exterior casing (Jacketing)
3. Insulation shall have the following properties and specifications:
 - (a) Material: Rigid polyurethane foam
 - (b) Insulation Thickness: 2" (min.)
 - (c) Density: (ASTM D 1622), 2.0 lb/ft³ (min.)
 - (d) Closed Cell Content: (ASTM D-2856), 90% (min.)
 - (e) Water Absorption: (ASTM C272), 1% (max.)

- (f) Thermal Conductivity (K Factor): (ASTM C-177), 0.19 BTU-in./hr.ft²°F (max.)
- (g) Compressive Strength: (ASTM D-1621): 25 psi (min.)
- (h) Service Temperature Range: -30°F to 212 °F

B. Exterior Casing

1. All insulation on buried pipeline shall be covered and secured in place with a protective exterior casing (jacketing).
 - (a) Jacketing shall be a factory installed HDPE exterior casing manufactured by Tricon Piping Systems, or approved equal, or, a field installed exterior casing consisting of the following properties:
 - (b) C.I. 50 Wrap manufactured by Foster Products, or approved equal.
2. All insulation on exposed pipe shall be covered and secured in place with a protective exterior casing (jacketing).
 - (a) Jacketing on new ductile iron insulations shall be factory installed HDPE exterior casing manufactured by Tricon Piping Systems, or approved equal.
 - (b) Jacketing installed on existing ductile iron or cast iron water main shall be aluminum roll jacketing manufactured by ITW Insulation System, or approved equal. Aluminum jacketing shall be secured with stainless steel clamps.

C. Insulation of Joints

1. All field joints, including mechanical joints and bell and spigot connections are to be insulated.
 - (a) Joints with an HDPE exterior casing shall be covered with a wrap of Polyken Tape and covered with a HDPE rockshield, as manufactured by Tricon Piping Systems
 - (b) All joints on field applied exterior casings shall be insulated with prefabricated polyurethane molds, secured with stainless steel strapping or Polyken Tape, or approved equal.

PART 3 EXECUTION

3.01 HANDLING

A. Pipe and Fittings

1. Every care shall be taken in handling and laying pipe and fittings to avoid damaging the pipe, scratching or marring machined surfaces, and abrasion of the pipe coatings.

2. Any fitting showing a crack and any pipe or fitting which has received a severe blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the Work.
3. In any pipe showing a distinct crack and in which it is believed there is no incipient fracture beyond the limits of the visible crack, the cracked portions, if so approved, may be cut off by and at the expense of the Contractor before the pipe is laid so that the pipe used is perfectly sound. The cut shall be made in the sound barrel at a point at least 12-inches from the visible limits of the crack.

3.02 CUTTING

A. Pipe

1. Except as otherwise approved, all cutting shall be done with a machine having rolling wheel cutters, knives, or saws adapted to the purpose. Hammer and chisel or so-called wheel span cutters shall not be used to cut pipe. All cut ends shall be examined for possible cracks caused by cutting.
2. Cut ends to be used with push-on joints shall be carefully chamfered to prevent cutting the gasket when the pipe is laid or installed.

3.03 INSTALLATION

A. Pipe and Fittings

1. No defective pipe or fittings shall be laid or placed in the piping, and any piece discovered to be defective after having been laid or placed shall be removed and replaced by a sound and satisfactory piece.
2. Each pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work.
3. Pipe and fittings shall be laid accurately to the lines and grades indicated on the drawings or required. Care shall be taken to ensure a good alignment both horizontally and vertically.
4. Pipe shall have a firm bearing along its entire length.
5. The deflection of alignment at a joint shall not exceed the appropriate permissible deflection as specified in the tabulation titled PIPE DEFLECTION ALLOWANCES.

PIPE DEFLECTION ALLOWANCES

Maximum permissible deflection, in.*

<u>Size of push-on pipe, in.</u>	<u>joint</u>	<u>Mechanical joint</u>
4	19	31
6	19	27
8	19	20

10	19	20
12	19	20
14	11	13-1/2
16	11	13-1/2
18	11	11
20	11	11
24	11	9
30	11	9
36	11	8
42	7-1/2	7-1/2
48	7-1/2	7-1/2
54	5-1/2	--

*Maximum permissible deflection for 18-ft. lengths; maximum permissible deflections for other lengths shall be in proportion of such lengths to 18 ft.

6. When mechanical joint, push-on joint or similar pipe is laid, the bell of the pipe shall be cleaned of excess tar or other obstructions and wiped out before the cleaned and prepared spigot of the next pipe is inserted into it. The new pipe shall be shoved firmly into place until properly seated and held securely until the joint has been completed.

B. Castings

1. Castings to be encased in masonry shall be accurately set with the bolt holes, if any, carefully aligned.
2. Immediately prior to being set, castings shall be thoroughly cleaned of all rust, scale and other foreign material.

C. Temporary Plugs

1. At all times when pipe laying is not actually in progress, the open ends of pipe shall be closed by temporary watertight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

D. Appurtenances

1. Valves, fittings and appurtenances shall be set and jointed as indicated on the drawings.

3.04 ASSEMBLING

A. Push-On Joints

1. Make up by inserting the gasket into the groove of the bell and applying a thin film of special nontoxic gasket lubricant uniformly over the inner surface of the gasket which will be in contact with the spigot end of the pipe.
2. The chamfered end of the plain pipe shall be inserted into the gasket and then forced past it until it seats against the bottom of the socket.

B. Bolted Joints

1. Before the pieces are assembled, rust-preventive coatings shall be removed from machined surfaces.
2. Pipe ends, sockets, sleeves, housings, and gaskets shall be thoroughly cleaned and all burrs and other defects shall be carefully smoothed.

C. Mechanical Joints

1. Surfaces against which the gasket will come in contact shall be thoroughly brushed with a wire brush prior to assembly of the joint. The gasket shall be cleaned. The gasket, bell, and spigot shall be lubricated by being washed with soapy water.
2. The gland and gasket, in that order, shall be slipped over the spigot, and the spigot shall be inserted into the bell until it is correctly seated.
3. The gasket shall then be seated evenly in the bell at all points, centering the spigot, and the gland shall be pressed firmly against the gasket.
4. After all bolts have been inserted and the nuts have been made up finger tight, diametrically opposite nuts shall be progressively and uniformly tightened all around the joint to the proper tension, preferably by means of a torque wrench.
5. The correct range of torque as indicated by a torque wrench and the length wrench (if not a torque wrench) used by an average man to produce such range of torque, shall not exceed the values specified in the tabulation titled TORQUE RANGE VALUES.

TORQUE RANGE VALUES

Nominal pipe size, <u>in.in.</u>	Bolt diameter, <u>ft.-lb.</u>	Range of torque, <u>in.</u>	Length of wrench,
3	5/8	40-60	8
4 thru 24	3/4	60-90	10
30, 36	1	70-100	12
42, 48	1-1/4	90-120	14

If the effective sealing of the joint is not attained at the maximum torque indicated above, the joint shall be disassembled and thoroughly cleaned, then reassembled. Bolts shall not be over stressed to tighten a leaking joint.

D. Restrained Joints

1. Install in accordance with manufacturers written instructions.

2. Do not exceed manufacturer's permissible pipe deflection allowance.

E. Sleeve-Type Couplings

1. Prior to the installation of sleeve-type couplings, the pipe ends shall be cleaned thoroughly for a distance of 8-inches
2. Soapy water may be used as a gasket lubricant.
3. A follower and gasket, in that order, shall be slipped over each pipe to a distance of about 6-inches from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint.
4. The other pipe end shall be inserted into the middle ring and brought to proper position in relation to the pipe already laid.
5. The gaskets and followers shall then be pressed evenly and firmly into the middle ring flares.
6. After the bolts have been inserted and all nuts have been made up finger tight, diametrically opposite nuts shall be progressively and uniformly tightened all around the joint, preferably by use of a torque wrench of the appropriate size and torque for the bolts. The correct torque as indicated by a torque wrench shall not exceed the manufacturers recommended values
7. After assembly and inspection and before being backfilled, all exterior surfaces of buried sleeve-type couplings, including the middle and follower rings, bolts, and nuts, shall be thoroughly coated with an approved heavy-bodied bituminous mastic. Care shall be taken and appropriate devices used to ensure that the undersides, as well as the more readily accessible parts, are well coated.

3.05 POLYETHYLENE ENCASEMENT

- A. When required, install in accordance with AWWA C105.

3.06 INSULATION

- A. Prior to the installation, the pipe shall be cleaned to allow for the installation of the insulation around the diameter of the pipe.
- B. Pipe insulation shall be installed in the dry.

3.07 PIPING SUPPORT

- A. Where necessary, bends, tees, and other fittings in pipelines buried in the ground may be backed up with Class B concrete placed against undisturbed earth where firm support can be obtained. If the soil does not provide firm support, then restraining devices shall be provided.

3.08 CLEANING

- A. Prior to the pressure and leakage tests, thoroughly clean piping of all dirt, dust, oil, grease and other foreign material. This work shall be done with care to avoid damage to linings and coatings.

3.09 TESTING

- A. Except as otherwise directed, pipelines shall be given combined pressure and leakage tests in sections of approved length.
- B. Furnish and install suitable temporary testing plugs or caps; all necessary pressure pumps, pipe connections, meters, gages, relief valves, other necessary equipment; and all labor required.
- C. Subject to approval and provided that the tests are made within a reasonable time considering the progress of the project as a whole, and the need to put the section into service, the Contractor may make the tests when he desires.
- D. However, pipelines to be embedded in concrete shall be tested prior to placing of the concrete and exposed piping shall be tested prior to field painting.
- E. Unless it has already been done, the section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If hydrants or blow offs are not available at high points for releasing air the Contractor shall make the necessary excavations and do the necessary backfilling and make the necessary taps. After completion of the tests, if directed by the Engineer, remove corporations and plug said holes.
- F. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.
- G. The pressure and leakage test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the gage location) to a pressure in pounds per square inch numerically equal to the pressure rating of the pipe but not to exceed 200 psi. Do not apply this pressure to items of equipment known to be incapable of withstanding such pressure.
- H. If the Contractor cannot achieve the specified pressure and maintain it for a period of one hour with no additional pumping, the section shall be considered as having failed to pass the test.
- I. If the section fails to pass the pressure and leakage test, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, or joint, all at his own expense and without extension of time for completion of the work. Additional tests and repairs shall be made until the section passes the specified test and is considered acceptable by the Engineer.
- J. If, in the judgment of the Engineer, it is impracticable to follow the foregoing procedure exactly for any reason, modifications in the procedure may be made as required and approved by the Engineer, but in any event the Contractor shall be fully responsible for the ultimate tightness of the line within the above leakage and pressure requirements.
- K. All testing to be witnessed by the Engineer.

3.10 DISINFECTING AND FLUSHING

- A. The Contractor shall disinfect the lines carrying potable water.
- B. Furnish all equipment and materials necessary to do the work of disinfecting, and shall perform the work in accordance with the procedure outlined in the AWWA Standard C651 except as otherwise specified herein.
- C. During the disinfection period, care shall be exercised to prevent contamination of water in existing mains.
- D. The dosage shall be such as to produce a chlorine concentration of not less than 10 PPM (mg/l) after a contact time of not less than 24 hours.
- E. After treatment, the main shall be flushed with clean water until the residual chlorine content does not exceed 0.2 PPM (mg/l).
- F. Before disposing of the water used in disinfecting and flushing water mains thoroughly neutralize it through the application of a reducing agent, as referenced in AWWA C651.
- G. Dispose of the water used in disinfecting and flushing in an approved manner.
- H. Bacteriological sampling and testing shall be done in accordance with AWWA C651 for each main and each branch. Sampling shall be accomplished with sterile bottles treated with sodium thiosulfate, as required by Standard Methods. No hose or fire hydrants shall be used in collection of samples. A corporation stop installed on the main, with a removable copper tube gooseneck assembly, is the recommended method.
- I. Testing shall be done by a laboratory approved by the Engineer, in accordance with Standard Methods, and shall show the absence of coliform organisms. A standard plate count (HPC) and residual chlorine test is also required. The analytical results for the samples will be compared to the maximum allowable limits for each parameter as shown in Table 1. If the parameters are satisfactory for the sets of water samples, then the water main is considered passing and can be opened for service at the direction of the Owner/Engineer.
- J. The cost for chlorination, flushing, sampling and analysis shall be paid for by the Contractor.

Table 1- Water Quality Standards

Parameter	Standard
Total Coliform Bacteria	0 or Negative
HPC	<500 CFU/mL
Residual Chlorine	<0.2 mg/L

END OF SECTION

SECTION 02622

POLYVINYL CHLORIDE GRAVITY PIPE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for furnishing, installing and testing polyvinyl chloride (PVC) gravity pipe and fittings.

B. Related Sections

1. Section 02200 - Earthwork
2. Section 02215 - Aggregate Materials

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM) Publications

1. D3034, Specification for Type PSM Poly (vinyl chloride) (PVC) Sewer Pipe and Fittings.
2. D3212, Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastometric Seals.
3. F477, Specification for Elastometric Seals (Gaskets) for Joining Plastic Pipe.
4. F679, Specification for Poly (vinyl chloride) (PVC) Large - Diameter Plastic Gravity Sewer Pipe and Fittings.

1.03 SUBMITTALS

A. Shop Drawings

1. In accordance with SECTION 01300 - SUBMITTALS.
2. Submit for review shop drawings showing pipe dimensions, joints, joint gaskets, and other details for each size of pipe to be furnished for the project.
3. All pipe furnished under the contract shall be manufactured only in accordance with the Specifications and the reviewed drawings.

B. Samples

1. Submit samples of products if requested by the Engineer.

1.04 QUALITY ASSURANCE

A. Certifications

1. All pipe delivered to the job site shall be accompanied by test reports certifying that the pipe and fittings conform to the herein-mentioned ASTM specifications.
2. Pipe shall be subject to thorough inspection and tests, the right being reserved for the Engineer to apply such tests as he deems necessary.
3. All tests shall be made in accordance with the methods prescribed by the herein-mentioned ASTM specifications, and the acceptance or rejection shall be based on the test results.
4. Assist the Engineer in inspecting the pipe upon delivery.
5. Pipe not conforming to the requirements of this contract will be rejected and shall be immediately removed from the site by the Contractor.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Storage and Protection

1. All pipe shall be stored at the site until installation in accordance with the manufactures recommendations.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pipe, Fittings, And Specials

1. All gravity pipe shall be a minimum of 4 inches in diameter.
2. Pipe 15" in diameter and smaller shall be PVC SDR 35, in conformance with ASTM D3034 unless otherwise directed.
3. Pipe 18" in diameter and larger shall be PVC C905, DR 32.5, in conformance with ASTM F679 unless otherwise directed.

B. Straight Pipe

1. Lengths of not more than 13 ft..

C. Y-branches

1. Lengths of not more than 3 ft., unless otherwise permitted by the Engineer.
2. Saddle Y-branches will not be allowed.

D. Specials

1. Conform to the specifications for straight pipe as applicable and to the details indicated on the drawings or bound into the back of the specifications.

E. Joints

1. Conforming to ASTM D3212.
2. Push-on bell and spigot joints using elastomeric ring gaskets

F. Gaskets

1. Conforming to ASTM F477.
2. Securely fixed into place in the bells so that they cannot be dislodged during joint assembly.
3. Composition and texture which is resistant to common ingredients of sewage and industrial wastes, including oils and groundwater, and which will endure permanently under the conditions of the proposed use.

G. Lubricant

1. In accordance with manufacturers requirements.

PART 3 EXECUTION

3.01 PREPARATION

A. Inspection of Pipe

1. Inspect each pipe unit before being installed.
2. No single piece of pipe shall be laid unless it is generally straight and undamaged.
3. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16 in. per ft. of length.
4. If a piece of pipe fails to meet this required check for straightness, it shall be rejected and removed from the site.
5. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit.

B. Handling of Pipe

1. Each pipe unit shall be handled into its position in the trench, by such means as acceptable to the Engineer. Care shall be taken to avoid damaging the pipe and fittings.

3.02 INSTALLATION

A. Placement

1. Except as otherwise indicated on the drawings, support pipe with compacted crushed stone in accordance with Specification SECTION 02215. No pipe or fitting shall be permanently supported on saddles, blocking, or stones.
2. Provide suitable depressions in crushed stone to accept pipe bells, so that after placement, only the barrel of the pipe receives bearing pressure from the supporting material.

3. Clear pipe and fittings of debris, dirt, etc., before being installed, keep clean until accepted in the completed work.
4. Install pipe and fittings to the lines and grades indicated on the drawings or as required by the Engineer. Care shall be taken to ensure true alignments and gradients. Unless otherwise instructed, minimum acceptable pipe slope shall be as follows:

Pipe Size	Slope
8" or smaller	0.0040 ft/ft
10"	0.0028 ft/ft
12"	0.0022 ft/ft
15"	0.0017 ft/ft
18"	0.0012 ft/ft
24"	0.0008 ft/ft
36"	0.0005 ft/ft

B. Joining Pipe

1. Before any joint is made, the previously installed unit shall be checked to assure that a close joint with the adjoining unit has been maintained and that the inverts are matched and conform to the required grade.
2. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber or other unyielding object.
3. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation.
4. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket.
5. Suitable devices shall be used to force the pipe units together so that they will fit with a minimum open recess inside and outside and have tightly sealed joints.
6. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends.
7. Joints shall not be "pulled" or "cramped" unless permitted by the Engineer.
8. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units.
9. Gasket installation and joint assembly shall follow the directions of the manufacturers of the joint material and of the pipe, all subject to review by the Engineer. The resulting joints shall be watertight and flexible.
10. Open ends of pipe and branches shall be closed with polyvinyl chloride stoppers secured in place in an acceptable manner.

C. Rejecting Pipe

1. Pipe of a particular manufacturer may be rejected if there are more than five unsatisfactory joint assembly operations or "bell breaks" in 100 consecutive joints, even though the pipe and joint conform to the appropriate ASTM Specifications as hereinbefore specified. If the pipe is unsatisfactory, as determined above, the Contractor shall, if required, remove all pipe of that manufacturer of the same shipment from the work and shall furnish pipe from another manufacturer which will conform to all of the requirements of these specifications.

D. Bedding Pipe

1. After each pipe has been properly placed, enough crushed stone shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment.
2. Bell holes (depressions) , provided for jointing, shall be filled with crushed stone and compacted, and then crushed stone shall be placed and compacted to complete the pipe bedding, as indicated on the drawings.

E. Protecting Pipe

1. Take all necessary precautions to prevent flotation of the pipe in the trench.
2. Close the open ends of the pipe with temporary watertight plugs, at all times pipe installation is not in progress.
3. If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe.
4. Pipelines shall not be used as conductors for trench drainage during construction.

F. Backfilling Pipelines

1. In accordance with SECTION 02200.

3.03 ALLOWABLE PIPE DEFLECTION

- A. Pipe provided under this specification shall be installed not exceeding a maximum deflection of 7.5 percent. Deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
- B. Upon completion of a section of sewer, including placement and compaction of backfill, the Contractor shall measure the amount of deflection by pulling a specially designed gauge assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be acceptable to the Engineer.

- C. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem as the Engineer may require without additional compensation.

3.04 CLEANING

- A. Care shall be taken to prevent earth, water, and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, clean out the pipeline and manholes, being careful to prevent soil, water, and debris from entering any existing sewer.

3.05 FIELD QUALITY CONTROL

A. Pipeline Flushing

1. Care shall be taken to prevent earth, water, and other materials from entering the pipe. As soon as possible after the pipe and manholes are completed on any street, flush out the new pipeline, using a rubber ball ahead of the water, flushing water or debris will not be permitted to enter any existing sewer.

B. Flow Testing and TV Inspection

1. Following pipe flushing, all pipes shall be flow tested. This test shall consist of running water from the upstream manhole to the downstream manhole and checking for standing water in pipes and manholes.
2. Following pipe and manhole installation, but prior to installation of manhole inverts, all pipes shall be TV inspected, and their condition recorded, to ensure correct installation of the pipe. Inspection shall be done in accordance with Specification Section 02674.

C. Leakage Tests

1. The pipeline shall be made as nearly watertight as practicable, and leakage tests and measurements shall be made after the pipeline has been backfilled.
2. Where the groundwater level is more than 1 ft. above the top of the pipe at its upper end, the Contractor shall conduct either infiltration tests or low pressure air tests.
3. Where the groundwater level is less than 1 ft. above the top of the pipe at its upper end, conduct either exfiltration tests or low-pressure air tests.
4. At the time of the test, determine the groundwater elevation from observation wells, excavations or other means, all subject to review by the Engineer.
5. For making the infiltration and exfiltration tests, furnish suitable test plugs, water pumps, and appurtenances, and all labor required to properly conduct the tests on sections of acceptable length.
6. The sewers shall be tested before any connections are made to buildings.

7. Provide all instruments, weirs, bulkheads, water and equipment required to test the sewer.
8. Should the sections under test fail to meet the requirements, the Contractor shall do all work of locating and repairing leaks and retesting as the Engineer may require without additional compensation.
9. If, in the judgment of the Engineer, it is impracticable to follow the procedures specified in this Specification for any reason, acceptable modifications in the procedures shall be made as required, but in any event, the Contractor shall be responsible for the ultimate tightness of the line.

D. Low Pressure Air Test

1. For making the low-pressure air tests, use equipment specifically designed and manufactured for the purpose of testing sewer pipelines using low-pressure air. The equipment shall be provided with an air regulator valve or air safety so set that the internal air pressure in the pipeline cannot exceed 8 psig.
2. The leakage test using low pressure air shall be made on each manhole-to-manhole section of pipeline after placement of the backfill.
3. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be tested. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
4. All air used shall pass through a single control panel.
5. Low-pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psig. greater than the maximum pressure exerted by the groundwater that may be above the invert of the pipe at the time of the test. However, the internal air pressure in the sealed line shall not be allowed to exceed 8 psig. When the maximum pressure exerted by the groundwater is greater than 4 psig., conduct only an infiltration test.
6. At least two minutes shall be allowed for the air pressure to stabilize in the section under test. After the stabilization period, the low-pressure air supply hose shall be quickly disconnected from the control panel. The time required in minutes for the pressure in the section under test to decrease from 3.5 to 2.5 psig (greater than the maximum pressure exerted by groundwater that may be above the invert of the pipe) shall not be less than that shown in the following table:

<u>Pipe diameter in inches</u>	<u>Minutes</u>	<u>Pipe diameter in inches</u>	<u>Minutes</u>
6	3.0	18	9.0
8	4.0	21	10.0
10	5.0	24	11.5
12	5.5	27	13.0
15	7.5		

E. Infiltration Test

1. For making the infiltration tests, underdrains, if used, shall be plugged and other groundwater drainage shall be stopped to permit the groundwater to return to its normal level insofar as practicable.
2. Upon completion of a section of the sewer, dewater it and conduct a satisfactory test to measure the infiltration for at least 24 hours. The amount of infiltration, including manholes, tees, and connections, shall not exceed 200 gal. per inch diameter per mile of sewer per 24 hours.

F. Exfiltration Test

1. For making the exfiltration tests, the sewers shall be subjected to an internal pressure by plugging the pipe at the lower end and then filling the pipelines and manholes with clean water to a height of 2 ft. above the top of the sewer at its upper end. Where conditions between manholes, may result in test pressures which would cause leakage at the stoppers in branches, provisions shall be made by suitable ties, braces, and wedges to secure the stoppers against leakage resulting from the test pressure.
2. The rate of leakage from the sewers shall be determined by measuring the amount of water required to maintain the level 2 ft. above the top of the pipe.
3. Leakage from the sewers under test shall not exceed the requirements for leakage into sewers as hereinbefore specified.

END OF SECTION

SECTION 02623

POLYVINYLCHLORIDE SERVICE PIPE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for furnishing, and installing new service piping and connecting to existing piping.

B. Related Sections

1. Section 02200 – Earth Excavation, Backfill, Fill, and Grading
2. Section 02215 – Aggregate Materials
3. Section 02622 – Polyvinylchloride Gravity Sewer Pipe

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM) Publications

1. D1785, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
2. D3034, Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
3. D3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
4. F477, Specification for Elastometric Seals (Gaskets) for Joining Plastic Pipe.
5. F679, Specification for Polyvinyl chloride (PVC) Large - Diameter Plastic Gravity Sewer Pipe and Fittings.

1.03 SUBMITTALS

A. Shop Drawings

1. In accordance with Section 01300.
2. Submit for review shop drawings showing pipe dimensions, and connection fittings.
3. All pipe furnished under the contract shall be manufactured only in accordance with the Specifications and the reviewed drawings.

B. Samples

1. Submit samples of products if requested by the Engineer.

1.04 QUALITY ASSURANCE

A. Certifications

1. All pipe, fittings and couplings delivered to the job site shall be accompanied by test reports certifying that the pipe and fittings conform to the herein-mentioned ASTM specifications.
2. Materials shall be subject to thorough inspection and tests, the right being reserved for the Engineer to apply such tests as he deems necessary.
3. All tests shall be made in accordance with the methods prescribed by the herein-mentioned ASTM specifications, and the acceptance or rejection shall be based on the test results.
4. Assist the Engineer in inspecting the pipe and couplings upon delivery.
5. Materials not conforming to the requirements of this contract will be rejected and shall be immediately removed from the site by the Contractor.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Storage and Protection

1. All materials shall be stored at the site until installation in accordance with the manufactures recommendations.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pipe, Fittings, And Specials

1. Diameters 4-inch through 15-inch, in conformance with ASTM D3034
2. The pipe shall have pipe diameter to wall thickness ratio (SDR) of a maximum of 35, unless otherwise indicated and/or approved by the Engineer.

B. Straight Pipe

1. Lengths of not more than 13 ft.

C. Y-branches

1. Lengths of not more than 3 ft., unless otherwise permitted by the Engineer.
2. Saddle Y-branches will not be allowed.

D. Joints

1. Conforming to ASTM D3212.
2. Push-on bell and spigot joints using elastomeric ring gaskets

E. Gaskets

1. Conforming to ASTM F477.
2. Securely fixed into place in the bells so that they cannot be dislodged during joint assembly.
3. Composition and texture which is resistant to common ingredients of sewage and industrial wastes, including oils and groundwater, and which will endure permanently under the conditions of the proposed use.

F. Lubricant

1. In accordance with manufacturers requirements.

G. Sleeve-Type Couplings

1. To ensure correct fitting of pipe and couplings, all sleeve-type couplings and accessories shall be furnished by the supplier of the pipe and shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed.
2. Sleeve-type couplings shall be
 - a. Style 501, made by ROMAC Industries, Inc.
 - b. Style 421, made by Smith-Blair,
 - c. or acceptable equivalent products.
3. The couplings shall be provided with galvanized-steel bolts and nuts, unless noted otherwise.
4. All couplings shall be furnished with the pipe stop removed.
5. All couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.
6. All gaskets provided with metallic tips for electrical continuity through joints.

PART 3 EXECUTION

3.01 PREPARATION

A. Inspection of New Pipe

1. Inspect each pipe unit before being installed.
2. No single piece of pipe shall be laid unless it is generally straight and undamaged.
3. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit.

B. Handling of New Pipe

1. Each pipe unit shall be handled into its position in the trench, by such means as acceptable to the Engineer. Care shall be taken to avoid damaging the pipe and fittings.

C. Preparation of Existing Pipe

1. Existing pipe shall be exposed to a sound durable section and cut clean

3.02 INSTALLATION

A. Placement

1. Except as otherwise indicated on the drawings, support pipe with compacted crushed stone in accordance with specification Section 02215. No pipe or fitting shall be permanently supported on saddles, blocking, or stones.
2. Provide suitable depressions in crushed stone to accept pipe bells, so that after placement, only the barrel of the pipe receives bearing pressure from the supporting material.
3. Clear pipe and fittings of debris, dirt, etc., before being installed; keep clean until accepted in the completed work.
4. Install pipe and to the lines and grade required to connect to existing sewer service pipe. Care shall be taken to ensure true alignments and gradients.

B. Joining Pipe

1. Before any joint is made, the previously installed wye shall be checked to assure that the inverts are matched and conform to the required grade.
2. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber or other unyielding object.
3. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation.
4. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket.
5. Suitable devices shall be used to force the pipe units together so that they will fit with a minimum open recess inside and outside and have tightly sealed joints.
6. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends.
7. Joints shall not be "pulled" or "cramped" unless permitted by the Engineer.
8. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units.

9. Gasket installation and joint assembly shall follow the directions of the manufacturers of the joint material and of the pipe, all subject to review by the Engineer. The resulting joints shall be watertight and flexible.
10. Open ends of pipe and branches shall be closed with polyvinylchloride stoppers secured in place in an acceptable manner.

C. Bedding Pipe

1. After each pipe has been properly placed, enough gravel shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment.
2. Bell holes (depressions), provided for jointing, shall be filled with crushed stone and compacted, and then crushed stone shall be placed and compacted to complete the pipe bedding, as indicated on the drawings.

D. Protecting Pipe

1. Take all necessary precautions to prevent flotation of the pipe in the trench.
2. Close the open ends of the pipe with temporary watertight plugs, at all times pipe installation is not in progress.
3. If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe.
4. Pipelines shall not be used as conductors for trench drainage during construction.

E. Sleeve-Type Couplings

1. Prior to the installation of sleeve-type couplings, the pipe ends of the new pipe and the existing service pipe shall be cleaned thoroughly for a distance of 8-inches
2. Soapy water may be used as a gasket lubricant.
3. A follower and gasket, in that order, shall be slipped over each pipe to a distance of about 6-inches from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint.
4. The other pipe end shall be inserted into the middle ring and brought to proper position in relation to the pipe already laid.
5. The gaskets and followers shall then be pressed evenly and firmly into the middle ring flares.
6. After the bolts have been inserted and all nuts have been made up finger tight, diametrically opposite nuts shall be progressively and uniformly tightened all around the joint, preferably by use of a torque wrench of the appropriate size and torque for the bolts.

7. The correct torque as indicated by a torque wrench shall not exceed the values indicated in the tabulation titled TORQUE.

<u>TORQUE</u>		
Nominal pipe size, <u>in.</u>	Bolt diameter, <u>in.</u>	Maximum torque, <u>ft.-lb.</u>
3-24	5/8	75
30-36 (1/2 in. mid ring)	5/8	65
30-36 (3/8 in. mid. ring)	5/8	70
30-48	3/4	80
48-72	3/4	70

8. After assembly and inspection and before being backfilled, all exterior surfaces of buried sleeve-type couplings, including the middle and follower rings, bolts, and nuts, shall be thoroughly coated with an approved heavy-bodied bituminous mastic. Care shall be taken and appropriate devices used to ensure that the undersides, as well as the more readily accessible parts, are well coated.

F. Backfilling Pipelines

1. In accordance with Section 02200.

END OF SECTION

SECTION 02626

HIGH DENSITY POLYETHYLENE (HDPE) PIPE FOR PRESSURE SERVICE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements to furnish, install, and test high density polyethylene (HDPE) pressure pipe, fittings, and appurtenant materials.

B. Related Sections

1. Section 02200 - Earth Excavation, Backfill, Fill and Grading.
2. Section 02215 - Aggregate Materials
3. Section 02619 - Underground Utility Marking Tape

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM).

1. D1248, Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.
2. D3261, Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
3. D3350, Specification for Polyethylene Plastics Pipe and Fittings Materials.
4. F714, Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

1.03 SUBMITTALS

A. Submit in accordance with SECTION 01300.

1. Pipe Installation Plan
 - a. The plan shall address temporary pipe storage, method of assembly, methods of installation, methods of fusion and qualifications of personnel performing the Work, pipe and joint inspection, and the hydrostatic pretest.
2. Shop Drawings
 - a. Showing pipe and fitting dimensions, schedules and other details for each size of pipe to be furnished for the project.
3. Samples
 - a. Samples of products if requested by the Engineer.

1.04 SITE CONDITIONS

A. Subsurface Data

1. Subsurface explorations have been completed and the logs are included in these Specifications as “**Appendix A – Boring Logs**”. The data shown is for general bidding information. Bidders are expected to examine the site and exploration logs to evaluate the character of subsurface conditions. No warranty, express or implied, is made concerning the accuracy of the subsurface data. Soil samples from the explorations are available for examination at the office of the Engineer.
2. The contractor shall notify the Engineer immediately if subsurface conditions encountered during construction are different from those encountered in the explorations.
3. Upon notification to the Owner, bidders will be allowed to perform additional subsurface explorations to satisfy themselves of the existing subsurface conditions.

B. Existing Utilities

1. Verify all existing utilities in accordance with Section 00700, 1.08.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pipe and Fittings

1. Pipe and fittings shall be made of virgin material. No rework except that obtained from the manufacturer's own production of the same formulation shall be used.
2. Materials used for the manufacture of polyethylene pipe and fittings shall be PE3408 high density polyethylene meeting cell classification 345444C or 345444E per ASTM D3350; and meeting Type III classification, per ASTM D 1248; and shall be Listed in the name of the pipe and fitting Manufacturer in PPI (Plastic Pipe Institute) TR-4, Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds, with a standard grade rating of 1600 psi at 73 °F.
3. The Manufacturer shall certify that the materials used to manufacture pipe and fittings meets the above requirements.

2.02 METHOD OF MANUFACTURE

A. Pipe

1. Pipe shall be homogenous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other faults.
2. Polyethylene pipe have a minimum SDR of 17 and shall be manufactured in accordance with ASTM F714, and shall be so marked.
3. Each production lot of pipe shall be tested for (from material or pipe) melt index, density, % carbon, (from pipe) dimensions and ring tensile strength.

B. Fittings and Custom Fabrications

1. General

- a. Molded or fabricated by the pipe manufacturer.
 - b. Butt fusion outlets shall be made to the same outside diameter, wall thickness, and tolerances as the mating pipe.
 - c. Fully rated for the same internal pressure as the mating pipe.
 - d. Pressure de-rated fabricated fittings are prohibited.
2. Molded Fittings.
 - a. Manufactured in accordance with ASTM D3261, and shall be so marked.
 - b. Each production lot of molded fittings shall be subjected to the tests required under ASTM D3261.
 3. Fabricated Fittings.
 - a. Manufactured by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings.
 - b. Fully rated for internal pressure service at least equal to the full service pressure rating of the mating pipe.
 - c. Part drawings shall be submitted for the approval of the Project Engineer

2.03 UNDERGROUND UTILITY MARKING

- A. In accordance with Specification SECTION 02629.

PART 3 EXECUTION

3.01 PROTECTION OF EXISTING STRUCTURES, UTILITIES, AND PAVEMENT

- A. Maintain all excavations, and dewatering systems to protect existing structures, utilities, and other facilities that are to remain in service.
- B. Obtain utility locations from the Owner and protect all existing utilities so that no damage occurs from construction. The contractor shall be solely responsible for all damage to utilities. Observe all rules and regulations governing utilities and notify utility owners in advance of all intended work involving or affecting utilities.

C. Test Pits:

1. Where determination of the exact location of pipe or other underground structure is necessary for doing the work properly, the Contractor may be required to excavate test pits to determine such locations.
2. When such test pits may be properly considered as incidental to other excavation, the Contractor shall receive no additional compensation, the work being understood to be included as part of the excavation.
3. When the Engineer orders test pits beyond the limits of excavation he considers a part of the work, such test pits shall be paid for as specified in SECTION 01025.

3.02 ASSEMBLY

- A. The pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak proof joint.
- B. Threaded or solvent-cement joints and connections are not permitted.
- C. Equipment and procedures shall be used in strict compliance with the manufacturer's recommendations.
- D. The butt-fused joint shall be true alignment and shall have uniform roll-back beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure.
- E. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe.

3.03 INSPECTION

- A. Provide inspection of each joint.
- B. Defective joints shall be cut out and replaced at no cost to the Owner.
- C. Joints rejected by the Engineer shall be repaired in accordance with the manufacturer's recommendation at Contractor's expense.

3.04 REPAIR

- A. Repair or replace all damaged pipe. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness, shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedures stated above. In addition, any section of the pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, pitting, variable

wall thickness or any other defect of manufacturing or handling as determined by the Engineer shall be discarded and not used.

3.05 INSTALLATION

- A. Pipe shall be handled into its position in the trench only in such a manner, and by means as acceptable to the Engineer. Care shall be taken to avoid damaging the pipe fittings.
- B. Pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work.
- C. Except as otherwise indicated on the Drawings, the pipe shall be supported along its entire length by compacted screened gravel. No pipe or fitting shall be permanently supported on saddles, blocking, or stones. Screened gravel shall be as specified under SECTION 02215.
- D. If cutting is necessary the pipe shall be cut by means of a conventional hand or power saw or an acceptable pipe cutter in accordance with the recommendations of the manufacturer. All field cut ends shall be square and beveled to duplicate the machining of the factory ends as closely as possible in accordance with the recommendations of the manufacturer.
- E. Branch Connections
 - 1.
- F. Bedding Pipe
 - 1. After the pipe has been properly placed, enough screened gravel shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment.
- G. Protection of Pipe
 - 1. The Contractor shall take all necessary precautions to prevent flotation of the pipe in the trench.
 - 2. At all times pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs, or by other acceptable means.
 - 3. If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe.
 - 4. Pipelines shall not be used as conductors for trench drainage during construction.
- E. Backfilling Pipelines
 - 1. In accordance with SECTION 02200.

3.06 FIELD QUALITY CONTROL

- A. Provide qualified, certified fusion technicians to perform the work.
- B. Technical support, tools and required support systems used during the installation operation shall be provided by the Contractor.
- C. Butt Fusion Testing.
 - 1. On every day butt fusions are to be made, the first fusion of the day shall be a trial fusion. The trial fusion shall be allowed to cool completely, and then fusion test straps shall be cut out. The test strap shall be 12 inches (min) or 30 times the wall thickness in length with the fusion in the center, and 1 inch (min) or 1.5 times the wall thickness in width. Bend the test strap until the ends of the strap touch. If the fusion fails at the joint, a new trial fusion shall be made, cooled completely and tested. Butt fusion of pipe to be installed shall not commence until a trial fusion has passed the bent strap test.
 - 2. Perform butt fusion joints in the presence of the Engineer. Record the temperature and corresponding time for each fusion joint.
- D. Pressure and Leakage Tests
 - 1. Except as otherwise directed, all pipelines shall be given combined pressure and leakage tests in sections of suitable length.
 - 2. The Contractor shall furnish and install suitable temporary testing plugs or caps; all necessary pressure pumps, pipe connections, meters, gages, relief valves, and other necessary equipment: and all labor required.
 - 3. Subject to the permission of the Engineer and provided that the tests are made with a reasonable time considering the progress of the project as a whole, and the need to put the section into service, the Contractor may make the tests when he desires.
 - 4. Unless it has already been done, the section of pipe to be tested shall be filled with water of acceptable quality, and all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high points for releasing air the Contractor shall make the necessary taps at such points and shall plug said holes after completion of the test.
 - 5. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied. The pressure and leakage test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the gage location) to a pressure in pounds per square inch numerically equal to the pressure rating of the pipe but not to exceed 160 psi. Care shall be taken not to apply this pressure to items of equipment known to be incapable of withstanding such pressure.
 - 6. If the Contractor cannot achieve the specified pressure and maintain it for a period of one hour with no additional pumping, the section shall be considered as having failed to pass the test.

7. If the section fails to pass the pressure and leakage test, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, or joint, all at his own expense and without extension of time for completion of the work. Additional tests and repairs shall be made until the section passes the specified test and is considered acceptable by the Engineer.
8. If, in the judgment of the Engineer, it is impracticable to follow the foregoing procedure exactly for any reason, modifications in the procedure may be made as required and permitted by the Engineer, but in any event the Contractor shall be fully responsible for the ultimate tightness of the line within the above leakage and pressure requirements.

END OF SECTION

SECTION 02627

POLYVINYL CHLORIDE PIPE FOR LOW PRESSURE SERVICE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements to furnish, install, and test polyvinyl chloride (PVC) pressure pipe, fittings, and appurtenant materials to be used as pressure pipe.

B. Related Sections

1. Section 02200 - Earth Excavation, Backfill, Fill and Grading
2. Section 02215 - Aggregate Materials
3. Section 02629 - Underground Utility Marking Tape

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. D1784, Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
2. D2241, Specifications for Poly (Vinyl Chloride) (PVC) Pressure Rated Pipe (SDR-Series).
3. D3139, Specification for Joints for Plastic Pressure Pipe Using Flexible Elastometric Seals.

1.03 SUBMITTALS

A. Submit in accordance with SECTION 01300.

1. Shop Drawings

- a. Drawings showing pipe dimensions, joints, joint gaskets, restraintment and other details for each size of pipe to be furnished for the project.
- b. Submit lay schedule delineating types and locations of restraintment.

2. Samples

- a. Submit samples of products if requested by the Engineer.

1.04 QUALITY ASSURANCE

A. Certifications

1. All pipe delivered to the job site shall be accompanied by test reports certifying that the pipe and fittings conform to the referenced ASTM specifications.

B. Testing

1. The pipe shall be subject to thorough inspection and tests, the right being reserved for the Engineer to apply such tests as he deems necessary.
2. All test shall be made in accordance with the methods prescribed by the herein - mentioned ASTM specifications, and the acceptance or rejection shall be based on the test results.

1.05 DELIVERY, STORAGE AND PROTECTION

- A. Pipe will be inspected upon delivery, and such as does not conform to the requirements of this Contract shall be rejected and shall immediately be removed by the Contractor.
- B. Store pipe at the site until installation, in accordance with the manufacturer's recommendations.

1.06 PROJECT/SITE CONDITIONS

A. Existing Conditions

1. Verify that field measurements and elevations are as indicated.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pipe

1. Polyvinyl Chloride (PVC) pressure pipe shall conform to the requirements of ASTM D2241 for Class 200, SDR 21 pipe.
2. Manufactured from clean, virgin, approved Class 12454-B compounds, conforming to ASTM D1784, with an established hydrostatic design minimum of 2,000 psi for water at 73 degrees. F.
3. Pipe shall be furnished in maximum 20 foot laying lengths with integral bell joints formed so as to contain a rubber sealing gasket.
4. Joints to be Push-on bell and spigot conforming to the requirement of ASTM D3139.

B. Fittings

1. Fittings for use with polyvinyl chloride (PVC) pressure pipe shall be push on joint, conforming to ASTM D3139.
2. Joints shall conform to the requirements of ASTM D3139.
3. Fittings shall be of a pressure classification at least equal to that of the piping with which they are to be used.
4. Fittings related to low pressure sewer structures shall be as detailed on the Drawings.

C. Gaskets

1. Composition and texture which is resistant to common ingredients of sewage and industrial wastes, including oils and groundwater, and which will endure permanently under the conditions of the proposed use.

D. Lubricants

1. In accordance with manufacturers requirements.

E. Marking

1. All pipe shall be properly marked by the manufacturer in accordance with ASTM D2241. Markings shall be spaced at intervals of not more than five feet and shall include the following:
 - a. Nominal pipe size
 - b. Type of material with designation code
 - c. Pipe diameter to wall thickness ratio
 - d. ASTM designation with which pipe complies
 - e. Manufacturer's name or trademark and code

2.02 UNDERGROUND UTILITY MARKING

- A. In accordance with Specification SECTION 02629.

PART 3 EXECUTION

3.01 INSTALLATION

A. Inspection of Pipe

1. No defective pipe or fittings shall be laid or placed in the piping, and any piece discovered to be defective after having been laid or placed shall be removed and replaced by a sound and satisfactory piece.

B. Handling

1. Each pipe shall be handled into its position in the trench only in such a manner, and by means as acceptable to the Engineer. Care shall be taken to avoid damaging the pipe fittings.

C. Installation

1. Each pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work.
2. In buried pipelines, each pipe shall have a firm bearing along its entire length.
3. Except as otherwise indicated on the drawings, the pipe shall be supported by compacted screened gravel. No pipe or fitting shall be permanently supported on saddles, blocking, or stones. Screened gravel shall be in accordance with SECTION 02215.
4. Suitable bell holes shall be provided, so that after placement, only the barrel of the pipe receives bearing pressure from the supporting material.
5. If cutting is necessary the pipe shall be cut by means of a conventional hand or power saw or an acceptable pipe cutter in accordance with the recommendations of the manufacturer. All field cut ends shall be square and beveled to duplicate the machining of the factory ends as closely as possible in accordance with the recommendations of the manufacturer.
6. Restrain as required to keep joints from separating under working and test pressure.

D. Joining the pipe

1. Before any joint is made, the previously installed unit shall be checked to assure that a close joint with the adjoining unit has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber or other unyielding object.
2. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation. Each pipe unit shall be then carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe units together so that they will fit with a minimum open recess inside and outside and have tightly sealed joints. Care shall be taken not to use such force as to wedge apart and split the bell or spigot ends.
3. Joints shall not be "pulled" or "cramped" unless permitted by the Engineer.
4. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units and new gaskets.
5. Details of gasket installation and joint assembly shall follow the directions of the manufacturer, all subject to review by the Engineer.

E. Bedding Pipe

1. After each pipe has been properly placed, enough gravel shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment.
2. Bell holes (depressions), provided for jointing, shall be filled with screened gravel and compacted, and then screened gravel shall be placed and compacted to complete the pipe bedding, as indicated on the Drawings.

F. Protection of Pipe

1. Take all necessary precautions to prevent flotation of the pipe in the trench.
2. At all times pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs, or by other acceptable means.
3. If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe.
4. Pipelines shall not be used as conductors for trench drainage during construction.

G. Backfilling Pipelines

1. In accordance with SECTION 02200.

3.02 FIELD QUALITY CONTROL

A. Pressure and Leakage Tests

1. Except as otherwise directed, all pipelines shall be given combined pressure and leakage tests in sections of suitable length.
2. Furnish and install suitable temporary testing plugs or caps; all necessary pressure pumps, pipe connections, meters, gages, relief valves, and other necessary equipment: and all labor required.
3. Subject to the permission of the Engineer and provided that the tests are made with a reasonable time considering the progress of the project as a whole, and the need to put the section into service, the Contractor may make the tests when he desires.
4. Fill the section of pipe to be tested with water of acceptable quality. All air shall be expelled from the pipe. If blowoffs are not available at high points for releasing air then make the necessary taps at such points. Plug said holes after completion of the test.
5. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied. The pressure and leakage test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the gage location) to a pressure in pounds per square inch numerically equal to the pressure rating of

the pipe but not to exceed 160 psi. Care shall be taken not to apply this pressure to items of equipment known to be incapable of withstanding such pressure.

6. If specified pressure cannot achieve and maintained for a period of one hour with no additional pumping, the section shall be considered as having failed to pass the test.
7. If the section fails to pass the pressure and leakage test, locate, uncover, and repair or replace the defective pipe, fitting, or joint, all at the Contractors expense and without extension of time for completion of the work. Additional tests and repairs shall be made until the section passes the specified test and is considered acceptable by the Engineer.
8. If, in the judgment of the Engineer, it is impracticable to follow the foregoing procedure exactly for any reason, modifications in the procedure may be made as required and permitted by the Engineer, but in any event the Contractor shall be fully responsible for the ultimate tightness of the line within the above leakage and pressure requirements.

3.03 CLEANING

- A. Prior to the pressure and leakage tests, the piping shall be thoroughly cleaned of all dirt, dust, oil, grease and other foreign material. This work shall be done with care to prevent soil, water and debris from entering any existing sewer.

3.04 UNDERGROUND UTILITY MARKING TAPE

- A. Install as detailed in the Contract Documents.

END OF SECTION

SECTION 02629

UNDERGROUND UTILITY MARKING TAPE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for furnishing and installing metallic (detectable) and non-metallic (non-detectable) marking tape over buried pipelines and conduits.

1.02 REFERENCES

- A. A.P.W.A. - American Public Works Association

1.03 SUBMITTALS

- A. Shop Drawings

- 1. Submit in accordance with SECTION 01300 - SUBMITTALS

- B. Samples

- 1. Provide samples of submitted products.

1.04 DESCRIPTION

- A. General

- 1. Marking tape to be installed over all pipe lines and conduits installed under this Contract.
- 2. Marking tape for non-ferrous pipe or conduits to be Detectable, magnetic type.
- 3. Marking tape for ferrous pipe or conduits to be Non-detectable, non-magnetic type.
- 4. Tape to be 6-inches wide.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Underground utility marking tape to be:

- 1. Detectable: Magnatec by THOR Enterprises, Inc., Sun Prairie, WI.
- 2. Non-detectable: Shieldtec by THOR Enterprises, Inc., Sun Prairie, WI.
- 3. Or product deemed equal by the Engineer.

2.02 MATERIALS

- A. Detectable Underground Utility marking Tape
1. Minimum overall thickness: 5.0 mil (0.005”).
 2. Aluminum foil core: 35 gauge (0.00035”) minimum.
 3. Foil visible from both sides of tape.
 4. Protective plastic jacket applied to both sides of foil.
 5. Jacket adhesive applied directly to the film and foil.
 6. No printing to extend to the edges of the tape.
 7. No Dilutants, pigments or contaminants in the adhesive.
 8. Adhesive formulated to resist degradation by elements normally found in soil.
- B. Non-detectable Underground Utility marking Tape
1. Minimum overall thickness: 4.0 mil (0.004”).
 2. Polyethylene plastic film: 100% virgin, low density acid and alkali-resistant.
 3. Printing: Permanent, black, environmentally safe.
 4. Coloring: color-fast, lead free, organic pigments suitable for direct burial and prolonged exposure to the elements normally found in soil.
- C. Marking
1. Tape to printed with “BURIED *UTILITY* LINE BELOW”, replacing the word “*UTILITY*” with the word “WATER”, “SEWER”, “DRAIN”, “ELECTRIC”, “GAS”, or otherwise appropriate, repeating continuously every 30-inches max.
- D. Color Code in accordance with A.P.W.A. Standards as follows:
- | | |
|----------------------------------|---|
| 1. Safety Red | Electric power and high voltage lines |
| 2. High Visibility Safety Yellow | Gas and oil distribution/Transmission |
| | Dangerous materials/Steam |
| 3. Safety Alert Orange | Fiber optic/telephone/CATV |
| 4. Safety Precaution Blue | Water and irrigation lines |
| 5. Safety Green | Sewer/storm/sanitary systems, non-potable water |
| 6. Safety Brown | Force mains and effluent lines |
| 7. Alert Purple | Reclaimed and effluent re-use lines |

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install marking tape directly above the pipe line, approximately 24-inches below the proposed finished grade.
- B. Install marking tape in accordance with manufacturers recommendations.
- C. Install marking tape over existing utilities disturbed by the Contractors operation.

END OF SECTION

SECTION 02720

CATCH BASINS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements to construct all catch basins, leaching pits, or drywells as indicated on the drawing and as specified.

B. Related Sections

1. Section 03300 - Cast-In-Place Concrete
2. Section 02215 – Aggregate Materials
3. Section 02272 – Geotextile Materials

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM).

1. A48, Specification for Gray Iron Castings.
2. C32, Specification for Sewer and Manhole Brick (Made from Clay or Shale).
3. C139, Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes.
4. C150, Specification for Portland Cement.
5. C207, Specification for Hydrated Lime for Masonry Purposes.
6. C478, Specification for Precast Reinforced Concrete Manhole Sections.

1.03 DESIGN REQUIREMENTS

- A. Catch basins, leaching pits, or drywells shall conform in shape, size, dimensions, materials, and other respects to the details indicated on the drawings or bound in the specifications or as ordered by the Engineer.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Catch basin walls shall be precast concrete masonry units. The top of the cone (not to exceed 6 inches.) shall be built of brickwork to permit adjustment of the frame to meet the finished surface.

- B. Catch basin sumps shall be one piece precast concrete or concrete masonry units on cast-in-place or precast concrete bases.
- C. The cast-iron frames and grates shall be the standard as indicated on the drawings.
- D. All cast-in-place concrete shall be 4,000 psi and shall conform to the requirements specified under SECTION 03300.

2.02 PRECAST CONCRETE MASONRY UNITS

- A. Precast concrete masonry units shall be machine-made solid segments, conforming to ASTM C139 with the following exceptions and additional requirements:
 - 1. Type II cement shall be used except as otherwise permitted.
 - 2. The width of the units shall be as indicated on the drawings.
 - 3. The inside and outside surfaces of the units shall be curved to the necessary radius and so designed that the interior surfaces of the structures shall be cylindrical, except the top batter courses shall be designed to reduce uniformly the inside section of the structure to the required size and shape at the top.
 - 4. Units shall be designed such that only full-length units are required to lay any one course.
 - 5. Acceptance of the units will be on the basis of material tests and inspection of the completed product.

2.03 PRECAST CONCRETE SUMPS

- A. Precast concrete sumps shall conform to the ASTM C478, with the following exceptions and additional requirements:
 - 1. The wall section shall be not less than 6-inch thick.
 - 2. Type II cement shall be used except as otherwise permitted.
 - 3. Sumps shall be cured by subjecting them to thoroughly saturated steam at a temperature between 100 and 130 degrees. F. for a period of not less than 12 hours or, when necessary, for such additional time as may be needed to enable the sections to meet the strength requirements.
 - 4. No more than two lift holes may be cast or drilled in each sump.
 - 5. Acceptance of the sumps will be on the basis of material tests and inspection of the completed product.
- B. All holes in sumps used for their handling shall be thoroughly plugged with rubber plugs made specifically for this purpose or with mortar. The mortar shall be one part cement to 1-1/2 parts sand, mixed slightly damp to the touch (just short of "balling"), hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

2.04 BRICKS

- A. The brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer. Brick shall conform to ASTM C32 for Grade SS, hard brick, except that the mean of five tests for absorption shall not exceed 8 percent by weight.
- B. Rejected brick shall be immediately removed from the work.

2.05 MORTAR FOR BRICKWORK

- A. The mortar shall be composed of Portland cement, hydrated lime, and sand, in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime. The proportions of cement and lime shall be as directed and may vary from 1:1/4 for dense, hard-burned brick to 1:3/4 for softer brick. In general, mortar for Grade SS Brick shall be mixed in the proportions of 1-1/2:4-1/2.
- B. Cement shall be Type II Portland cement conforming to the ASTM C150.
- C. Hydrated lime shall be Type S conforming to the ASTM C207.
- D. The sand shall comply with the specifications for fine aggregate, specified in Section 03300, except that all of the sand shall pass a No. 8 sieve.

2.06 MORTAR FOR MASONRY UNITS

- A. Mortar shall be composed of one part portland cement and two parts of sand by volume with sufficient water to form a workable mixture. Cement and sand shall be as specified for mortar for brickwork.

2.07 CATCH BASIN FRAMES AND GRATES

- A. Frames and grates shall be as follows:
 - a. Standard Grate – EJ Product No 00552060 or equal
 - b. High-Capacity Grate – EJ Product No 00552084 or equal
 - c. Frame – EJ Product No 00552011 or equal
- B. Castings shall be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sand holes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of grates and frame seats shall be machined to prevent cocking of grates.
- C. All castings shall be thoroughly cleaned and subject to a careful hammer inspection.
- D. Castings shall be at least Class 25 conforming to the ASTM A48.

- E. Unless otherwise specified or indicated on the drawings, castings in paved areas shall be capable of withstanding AASHO H-20 loading and shall meet the requirements of the municipality in which they are installed.

2.08 CATCH BASIN HOOD

- A. Furnish and install all catch basin hoods frames and grates conforming to the details indicated on the drawings and as specified.

PART 3 EXECUTION

3.01 LAYING BRICKWORK AND GRADING RINGS

- A. Only clean bricks and grading rings shall be used. Bricks shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.
- B. Each brick shall be laid in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and shall be thoroughly bonded as directed.
- C. Each grading ring shall be laid in a full bed of mortar and shall be thoroughly bonded.

3.02 PLASTERING AND CURING BRICK MASONRY

- A. Outside faces of brick masonry shall be plastered with mortar from 1/4 in. to 3/8 in. thick. If required, the masonry shall be properly moistened prior to application of the mortar. The plaster shall be carefully spread and troweled. After hardening, the plaster shall be carefully checked by tapping for bond and soundness. Unbonded or unsound plaster shall be removed and replaced.
- B. Brick masonry and plaster shall be protected from too rapid drying by the use of burlaps kept moist, or by other acceptable means, and shall be protected from the weather and frost, all as required.

3.03 CATCH BASINS ADJUSTED TO GRADE

- A. Existing catch basin tops shall be adjusted to line and grade as indicated on the drawings or as directed by the Engineer.
- B. All catch basins adjusted to grade shall be provided with concrete grading rings of brick as specified for new drain catch basins.

END OF SECTION

SECTION 02763

PIPELINE CLEANING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for cleaning in preparation for TV inspection and CIPP lining of sewer pipes.

B. Related Sections

1. Section 02149 - Maintaining Existing Flow
2. Section 02764 - Television Inspection
3. Section 02767 – Disposal of Materials

1.02 REFERENCES

A. National Association of Sewer Service Companies

1. NASSCO Recommended Specifications for Sewer Collection System Rehabilitation.

1.03 CLEANING AND DISPOSAL REQUIREMENTS

- A. The Contractor's attention is directed to the requirements set forth by the Commonwealth of Massachusetts, Department of Environmental Protection (MADEP) regarding "Special Wastes" and the proper disposal thereof. All waste materials and debris, as designated by the Owner and/or Engineer including but not limited to any pump station, sewers and associated structures, or any portions thereof, including but not limited to sludge, grit sediment, dirt, sand, rock, grease, roots and other liquid, solid or slime-solid material contained therein, shall be considered, "Special Wastes".
- B. Remove dirt, grease, rocks, sand, iron tuberculation and other materials and obstructions from the pipeline.
- C. Pipeline Cleaning shall be performed by hydraulically propelled or high velocity jet cleaning equipment. Selection of equipment shall be based on such field conditions as access availability and type of debris to be removed.
- D. Clean pipeline to restore a minimum of 95 percent of the original carrying capacity of the pipe, and suitably to permit lining of the pipeline.

- E. The Contractor is required to test and dispose of any waste material removed from the pipeline in accordance with State and Federal requirements. Testing of waste material will be at the Contractor's expense.
- F. The Contractor shall notify the Engineer of the proposed disposal location and requirements of that disposal facility to allow disposal of waste material.
- G. The Contractor is required to store any waste material until all testing requirements of the proposed facility have been met and shall submit copies of all test results to the Engineer.

1.04 SUBMITTALS

- A. Submit in accordance with Specification Section 01300.

- 1. Provide detailed plans and descriptions outlining cleaning and television inspection procedures and all provisions and precautions regarding the handling of existing sewage flows.

1.05 QUALITY ASSURANCE

- A. Perform general work in accordance with NASSCO recommended specifications for sewer collection system rehabilitation.

1.06 QUALIFICATIONS

- A. Company specializing in performing the work of this section with minimum of three (3) years experience.

1.07 TRAFFIC CONTROL

- A. In accordance with Specification Section 01570.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.01 CLEANING PROCEDURES

- A. Sewer Cleaning

- 1. The designated pipelines shall be cleaned using hydraulically propelled or high velocity jet cleaning equipment.
 - 2. Selection of the equipment used shall be based on the conditions of the lines at the time the work commences.
 - 3. Equipment and methods selected shall be satisfactory to the Engineer.

4. Equipment selected for cleaning shall be capable of removing dirt, grease, rocks, sand, iron tuberculation and other deleterious materials and obstruction from the pipelines.
- B. Material Removal
1. Sludge, dirt, sand rocks, grease and other solid or semi-solid material resulting from the cleaning operation shall be removed at the downstream manhole of the section which could cause line stoppages.
- C. Disposal of Materials
1. Solids or semi-solids resulting from the cleaning operations shall be removed from the site and disposed in accordance with Specification Section 02767.
- D. Cleaning Precautions
1. During all pipeline cleaning operations, satisfactory precautions shall be taken to protect the pipelines from damage that might be inflicted by the improper use of cleaning equipment.
 2. Whenever hydraulically propelled cleaning tools, which depend upon water pressure to provide their cleaning force or any tools which retard the flow of water in the pipeline are used, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to public or private property.
 3. The flow of sewage in the sewer lines shall be utilized to provide necessary pressures by hydraulic cleaning devices whenever possible.
 4. When additional quantities of water from fire hydrants are necessary to avoid delay in normal working procedures, the water shall be conserved and not used unnecessarily.
 5. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant nor shall a hydrant be used for the purpose described unless a vacuum break is provided.
- E. Root Removal:
1. Any visible roots shall be removed as required by the Engineer.
 2. Roots shall be removed in all sections by mechanical methods.
 3. Chemical root treatment shall also be used as approved by the Engineer.
 - a. Herbicide to be EPA approved.
 - b. Herbicide must be integral part of chemical sealant material.
 - c. Application to be done in accordance with manufacturers written instructions.

- d. Any surrounding vegetation damaged due to Contractors operation shall be replaced at no expense to the Owner.
- F. Pumping and flow bypassing
1. The Contractor shall supply the necessary pumps, conduits and other equipment to divert the flow of sewage around the pipeline section in which work is to be performed.
 2. Handling existing sewage flows and bypass pumping shall be in accordance with Specification Section 02149.
- G. Flow Control Precautions
1. Whenever flows in a sewer line are blocked, plugged or bypassed, sufficient precautions must be taken to protect the sewer lines from damage that might be inflicted by excessive sewer surcharging.
 2. Further, precautions must be taken to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.
 3. Coordination with private property owners is required.

3.02 FIELD QUALITY CONTROL

- A. After cleaning, the sewer pipes shall be visually inspected by means of closed-circuit television. The inspection shall be recorded on DVD's and printed TV inspection logs in accordance with Specification Section 02764.
- B. After videotaping the cleaned pipeline any pipe not sufficiently cleaned shall be cleaned again to obtain satisfactory results at no additional cost to the Owner.
- C. Provide two digital video disks (DVDs), one original and one copy to document conditions following completion of the cleaning process.

END OF SECTION

SECTION 02764

TELEVISION INSPECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for television inspection of pipelines.

B. Related Sections

1. Section 01570 - Traffic Regulations
2. Section 02149 - Maintaining Existing Sewage Flow
3. Section 02763 – Pipeline Cleaning

1.02 REFERENCES

A. National Association of Sewer Service Companies

1. NASSCO Recommended Specifications for Sewer Collection System Rehabilitation.

1.03 SUBMITTALS

A. In accordance with Specification Section 01300, submit the following:

1. Outline of the procedures proposed to accomplish the work. Include a detailed description of the methods and equipment to be used for each operation. Outline TV inspection procedures and all provisions and precautions regarding the handling of existing sewage flows.

1.04 QUALIFICATIONS

A. Company specializing in performing the work of this section with minimum five (5) years documented experience.

PART 2 PRODUCTS

A. TV Inspection Logs:

1. Printed location records clearly showing the location, in relation to an adjacent manhole of each infiltration point observed during inspection and other points of significance such as locations of building sewers, unusual conditions, roots, storm sewer connections, broken pipe, presence of scale and corrosion, deposits, and other discernible features.

B. DVD Recordings:

1. Color video and audio record documenting TV inspection of conditions subsequent to cleaning.
2. The purpose of recording shall be to supply a visual and audio record of problem areas of the lines that may be replayed.
3. Video recording playback shall be at the same speed that it was recorded. Slow motion or stop-motion playback features may be supplied at the option of the Contractor.
4. Title to the recording shall remain with the Contractor; however, the Owner reserves the right to purchase any additional DVD's at the completion of the project.
5. Provide two (2) sets of DVD's complete in the required format.

PART 3 EXECUTION

3.01 PREPARATION

- A. Control traffic in accordance with Specification Section 01570.
- B. Bypass sewage flow to allow performance of work. Handling existing sewage flows and bypass pumping shall be as specified in Specification Section 02149.
- C. Clean sewer lines in accordance with Specification Section 02763.

3.02 TV INSPECTION

- A. TV inspect sewer pipes following initial cleaning and following rehabilitation work prior to putting the line back in service.
- B. After cleaning, the sewer pipes shall be visually inspected by means of color closed-circuit television. The inspection shall be recorded on DVD and printed TV inspection logs.
- C. Equipment:
 1. Television Camera to be specifically designed and constructed for such inspection; equipped with a light to allow a clear picture of the entire periphery of the pipe; operative in 100 percent humidity conditions; and equipped with manual or power winch, TV cable, powered rewinds or other devices that do not obstruct the camera view to move the camera through the line.
 2. Camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. In no case will the television camera be pulled at a speed greater than 30 feet per minute. At areas of interest, the camera shall be capable of rotating its lens 360-degrees to obtain a clearer, more direct viewing angle. Manual

winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line.

3. Camera, television monitor, recording device and all other components of the video system shall be capable of producing picture quality acceptable to the Engineer.
 4. TV inspection equipment shall be equipped with a meter device to locate defects by measurement. Marking on the cable, or the like, which would require interpolation for depth of manhole, will not be allowed. Accuracy of the distance meter shall be acceptable to the Engineer.
 5. When manually operated winches are used to pull the television camera through the line, telephones or other suitable means of communication shall be set up between the two manholes of the section being inspected to ensure good communication between members of the crew.
- D. If, during the inspection operation, the television camera will not pass through the entire manhole section, set up equipment so that the inspection can be performed from the opposite manhole.

3.03 FIELD QUALITY CONTROL

A. TV Inspection Records

1. Complete records shall be kept of TV inspection performed in each manhole section. The records shall identify the following information:
 - a. Identification of the manhole section tested.
 - b. Location (footage) of problem.
2. Record on DVD all footage inside the sewer pipe. All DVD's and necessary playback equipment shall be readily accessible for review by the Engineer during the project.

END OF SECTION

SECTION 02766

CURED-IN-PLACE PIPE (CIPP) INSTALLATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for reconstruction of pipelines by installation of resin impregnated flexible felt tube either inverted into the existing pipeline utilizing hydrostatic head and curing by circulating hot water to cure the resin composite or pulling the resin impregnated flexible felt tube into the existing pipeline utilizing a winch and cable or other approved method and using steam pressure to cure the resin composite.
2. The resin composite shall be cured into a hard, impermeable, structurally sound, continuous, tight fitting, water tight pipe within a pipe.

B. Water for Construction

1. The Owner shall supply all water required by the Contractor for the CIPP curing process. The Contractor must coordinate acceptable supply locations and contact the Owner in advance prior to use of any water for the Project.
2. Drawing water from hydrants shall be coordinated with the City of Taunton Water Department.
 - a. Contact information is:
Jon Chase
90 Ingell St, Taunton, MA 02780
(508) 821-1045

C. Related Sections

1. Section 02149 - Maintaining Existing Flow
2. Section 02763 - Pipeline Cleaning
3. Section 02764 - Television Inspection

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. D790 - Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.

2. F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
3. F1743 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP).

1.03 DESIGN REQUIREMENTS

- A. The cured-in-place pipe (CIPP) shall be designed for a Fully Deteriorated design condition in which it is assumed that the existing host pipe provides no structural support. The CIPP shall be designed to carry soil, groundwater, and other superimposed loads.
- B. The CIPP thickness shall be designed in accordance with ASTM F1216 under the following conditions:
 1. Fully deteriorated gravity pipe: Pipe diameters and material type per Contract Drawings
 2. Height of ground water above invert: Assume at ground surface level
 3. Height of soil above top of pipe: Per Contract Drawings
 4. Live load: AASHTO HS-20
 5. Soil Density: 120 lbs/cubic foot
 6. Ovality: 2% to 8%, as applicable per Contract application
- C. The CIPP design will assume no bonding to the original pipe.
- D. Hydraulic Capacity - The hydraulic cross-section of the original pipe shall be maintained as a much as possible. The completed CIPP shall provide a minimum of the full flow capacity of the original pipe before rehabilitation.
- E. Where specified, "non-structural" cured-in-place pipe shall be used. Non-structural CIPP shall be designed for infiltration reduction purposes only, and shall assume that the host pipe is structurally sound.

1.04 SUBMITTALS

- A. Shop Drawings
 1. Submit in accordance with Specification Section 01300
 - a. Description of materials.
 - b. Installation process.
 - c. Long term creep data, testing duration 10,000 hours minimum.
 - d. Wall thickness design calculations prepared by a professional engineer.
 - e. Bypass pumping plan.
 - f. Installer's qualifications and relative experience.
- B. Samples

1. Product samples which indicate conformance with this specification as requested by the Owner/Engineer

1.05 SAFETY REQUIREMENTS

- A. Perform all work in strict accordance with applicable OSHA standards. Particular attention is drawn to those safety requirements involving working with scaffolding and entering confined spaces.

1.06 SCHEDULING

A. Notification

1. Notify all wastewater generators serviced by the sewer main being lined and when the sewer will be off line.
2. Notification to such generators shall be done one week and again at 24-hours prior to the scheduled installation of the liner.
3. Notification shall be done in writing and include contact telephone number.
4. Coordinate schedule with the Owner/Engineer.

1.07 WARRANTY

- A. During the one (1) year Warrantee Period any defects, which may or has affected the integrity and/or strength of the pipe shall be fully repaired at the Contractor's expense, in a manner approved by the Owner/Engineer.

1.08 QUALITY ASSURANCE

- A. Products must have been used in five (5) successful wastewater collection system projects of similar size and scope of the Work and be documented to the satisfaction of the Owner/Engineer.
- B. Furnish reports to the Engineer of third party test data for chemical resistance, physical properties, structural capabilities, performance (both short-term and long-term), and flow coefficient properties.
- C. Installers to be licensed by the patent holder/manufacturer of the cured-in-place inversion and/or pull-in-place process as appropriate, with a minimum of five (5) active years of experience in installing similar size CIPP. Furnish written qualifications of licensed installers.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Inversion or pull-in-place process and materials shall be by Insituform Technologies, Inc., Memphis, TN; Inliner USA, Inc., Houston, TX; Pipeline Products, Mamaroneck, NY. ; or approved equal.

2.02 MATERIALS

- A. CIPP shall conform to the following:

<u>Physical Property</u>	<u>Standard</u>	<u>Minimum Results</u>
Flexural Stress	(Modified ASTM D790)	4,500 psi
Flexural Modulus of Elasticity	(Modified ASTM D790)	250,000 psi

1. Values are for commonly used polyester resins in the United States. Values for non-typical polyesters, vinyl esters and epoxies may be substituted when applicable as approved by the Engineer.
2. Chemically resist internal exposure to domestic sewage in accordance with ASTM F1216 Appendix X.
3. Wall thickness shall be not less than the minimum required by ASTM F1216, Appendix XI.
4. No materials to be included in the tube that may cause de-lamination in cured CIPP.
5. Homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers.
6. No dry or unsaturated layers shall be evident.
7. The CIPP shall not contain fiberglass.
8. Provide uniformed wall thickness during wet-out process that when compressed at installation pressures will meet or exceed the calculated minimum design thickness.

2.03 COMPONENTS

- A. In accordance with ASTM F1216 or ASTM F1743 as appropriate.

B. Felt Tube

1. Sized to tightly fit internal dimensions and overall length of original host pipe when installed.

2. Manufactured to withstand installation pressures.
 3. Overlapping layers of felt in longitudinal seams that may cause lumps in the final product shall not be utilized.
 4. Allow for circumferential stretching during installation including those necessary to accommodate and fit irregular pipe sections.
 5. Provide tube length required to span distance between access points.
 6. Have sufficient strength and capability to bridge areas of missing pipe or portions thereof.
 7. Resin and catalyst system compatible with the inversion or pull-in-place process.
 8. Outside layer of Tube to be coated with impermeable, flexible membrane that will contain resin.
 9. Interior wall color of tube to be light to allow clear detailed examination by closed circuit television (CCTV)
- C. Resin
1. Corrosion resistant polyester or vinyl ester system including all required catalysts, initiators that when cured within the tube create a composition that satisfies the requirements of ASTM F1216 and ASTM F1743, the physical properties specified herein.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify all lengths between manholes, sewer depths and service connection locations prior to insertion of the liner.
- B. Existing record plans for pipes to be CIPP-lined are provided on CD as Appendix C to these Specifications. The record plans are provided for information and convenience only and their accuracy is not guaranteed.

3.02 PREPARATION

- A. Cleaning Pipelines shall be in accordance with Specification Section 02763 with the following additional requirements.
 1. Remove all internal debris from the pipe line prior to inserting the liner utilizing any one or combination of rodding machines, high velocity water jet machines, hydraulically propelled machines, etc.
 2. Selection of the equipment used shall be based on the condition of the existing pipeline at the time the work commences.

3. Methods to be approved by the Owner/Engineer.
 4. Debris resulting from the cleaning operation shall be removed from the downstream manhole of the section being cleaned.
 5. Passing debris from one manhole section to another will not be permitted.
 6. The Contractor shall remove all debris from site during the cleaning operation.
 7. Based on closed circuit television inspection, the Owner/Engineer shall be the sole judge for any final acceptance of the completed pipeline cleaning. Specific areas of pipeline, which have not been cleaned to the satisfaction of the Owner/Engineer shall be re-cleaned and re-inspected as necessary at the Contractor's expense.
- B. Inspection shall be in accordance with Specification Section 02764 with the following additional requirements.
1. Using a "pan & tilt" camera, closed circuit television inspections shall be performed by experienced personnel trained in locating breaks, obstacles and service connections, using equipment specifically designed for this purpose.
 2. Perform a "Before" CIPP liner installation inspection of the pipeline to locate any conditions which may prevent proper CIPP installation into the existing pipeline, and locate and document all existing sewer service lateral connections for future reinstatement.
 3. Perform an "After" CIPP liner installation inspection to inspect the final pipeline condition and confirm the reestablishment of all sewer service connections. Log the location of conditions requiring correction.
 4. Provide Two (2) copies of the DVD's and TV inspection logs to the Owner and the Engineer for record and future reference.
- C. Pumping and flow bypassing
1. Supply the necessary pumps, conduits and other equipment to divert the flow of sewage around the pipeline section in which work is to be performed.
 2. Handling existing sewage flows and bypass pumping shall be in accordance with Specification Section 02149.
- D. Flow Control Precautions
1. Whenever flows in a sewer line are blocked, plugged or bypassed, sufficient precautions must be taken to protect the sewer lines from damage that might be inflicted by excessive sewer surcharging.
 2. Further, precautions must be taken to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.

3. Coordination with private property owners is required.

E. Line Obstructions

1. Clear lines of obstructions such as solids, dropped debris, protruding service connections, pieces of pipe, or other obstructions that may prevent normal installation at no additional cost to the Owner.

3.03 INSTALLATION

A. Staging Area

1. Designate location where the tube will be resin impregnated prior to installation.

B. Inspection

1. Allow Owner/Engineer to inspect materials, wet-out procedures and all operations involved with television inspections, as well as installing and curing the liner.

C. Installation

1. In accordance with ASTM F1216 or ASTM 1743 as applicable.

D. Curing

1. After installation is complete, apply steam or heated water for the curing process.
2. Fit the heat source with suitable sensors to monitor the temperature of the curing medium. Fit another sensor between the impregnated tube and the pipe invert at the termination to monitor curing temperature.
3. Uniformly raise the temperature to a level required to effectively cure the resin as determined by the resin/catalyst system employed.
4. Maintain temperature of the curing medium in tube to the temperature required in accordance to the resin manufacturer's instructions.
5. Initial cure deemed complete when inspection shows exposed portions of the tube to be hard and sound and remote temperature sensor indicates temperature is of a magnitude to realize a cure in the resin.
6. Continue cure period as recommended by the resin manufacturer, as modified for the installation process.

E. Cool Down

1. Cool hardened pipe in accordance with resin manufacturer's requirements.
2. The inversion/cooling water cannot be discharged into any river, stream or wetland.

F. Finish

1. Cut new pipe at suitable location in manhole.
2. The finished pipe shall be continuous and watertight over the total length of the run, and be free from defects, foreign inclusions, dry spots, pin holes, lifts and de-laminations.
3. Remove and replace defective areas.

G. Sealing Pipe at Manhole

1. If due to existing broken or misaligned pipe at the manhole wall, the new pipe fails to make a tight seal, a seal shall be applied using a resin mixture compatible with the pipe.

3.04 SEWER SERVICE LATERAL CONNECTIONS

- A. After the new pipe has been cured-in-place, reestablish all existing active service lateral connections to no less than 95% of the existing pipe diameter at the locations recorded on the DVD's and TV inspection logs.
- B. Reestablish service lateral connections without excavation, and in the case of non man entry pipes, from the interior of the pipe by means of a television camera and remote controlled cutter specifically designed for this purpose.
- C. Openings shall be rough cut then edges ground smooth, conforming to the existing opening.
- D. After reestablishing the service lateral connection, the end of the service lateral connection shall be sealed to prevent infiltration from the edge of the newly lined sewer to a minimum distance of eight inches (8") up the service lateral connection utilizing a lateral packer and an acrylamide base gel chemical sealing material compatible with the liner and the existing pipe.
 1. Seal all service lateral connections unless directed otherwise by the Engineer after review of the post lining television inspection recordings. Lateral connections in oval pipes and round pipes of greater than 24" diameter shall not be sealed.
 2. Lateral packer shall be 2001L Lateral Packer by Logiball, Inc. or a product deemed equal by the Engineer.
 3. Chemical sealing material shall be AV100 Grout by Avanti International, Webster, TX, or a product deemed equal by the Engineer.

3.05 FIELD QUALITY CONTROL

A. Site Tests

1. The water-tightness of the pipe shall be gauged while curing under positive head, or other method approved by the Engineer.
 2. Provide samples and testing of physical properties in accordance with ASTM F1216 and ASTM F1743.
 3. Additional testing if required will be by the Owner.
- B. Final Inspection and Acceptance
1. Provide the Owner and Engineer each with two (2) properly labeled DVD's and corresponding TV inspection logs containing a complete record of the televised internal pipe inspection demonstrating Contract compliance of the completed work, corrected conditions and reestablished sewer service lateral connections.

3.06 CLEANING AND SITE RESTORATION

- A. Upon acceptance of the CIPP installation and any testing associated therewith, restore the project area affected during the operation to a condition at least equal to that which existing prior to the work.

END OF SECTION

SECTION 02767

DISPOSAL OF MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for disposal of materials resulting from the cleaning of sewer pipes.

1.02 SUBMITTALS

- A. In accordance with Specification Section 01300, submit the following
 1. Outline of the procedures proposed to accomplish the work.
 2. Include a detailed description of disposal methods and locations of disposal.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.01 DISPOSAL PROCEDURES

- A. Material encountered in the cleaning of sewer lines is considered "Special Waste" by the Commonwealth of Massachusetts, Department of Environmental Protection (MADEP). The materials include sludge, sand, grit, debris, etc.
- B. The Contractor is required to test and dispose of any waste material removed from pipeline, manholes, etc. within the project area in accordance with State and Federal requirements. Testing of waste material will be at the Contractor's expense.
- C. The materials being removed from the pipelines and manholes during the cleaning process shall be deposited in such a manner as to not endanger the public, plant personnel or persons performing the work. Such debris deposits may be of such nature, high in biological organic contents, or chemically aggressive that they will require proper disposal in a safe, health risk free, environment. The Contractor shall contact the Owner and Engineer and all agencies having jurisdiction thereof, for approval of debris disposal methods and locations of disposal, prior to disposing of any or all debris removed from pipe cleaning methods. All solids or semi-solids resulting from the cleaning operations shall be removed and satisfactorily disposed of off-site at the Contractor's expense.
- D. Debris must be transported in a watertight vehicle. The Contractor must ensure that no water leaks from the vehicle in any manner during the transportation. The Contractor is solely responsible for any cleanup of debris on route to disposal at a licensed disposal facility. The Contractor is also responsible for the payment of any

finer that are incurred as a result of any incident which occurs during the transportation and/or disposal of the contents of the vehicle.

- E. Disposal must be at a licensed facility that is regulated to accept and properly dispose of the debris that is normally expected to be in a wastewater collection system.

END OF SECTION

DIVISION 03

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for furnishing and installing forms, reinforcing steel, concrete and expansion and/or construction joints

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. A185, Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
2. A615, Specification for deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
3. C31, Practice for Making and Curing Concrete Test Cylinders in the Field.
4. C33, Specification for Concrete Aggregates.
5. C39, Test Method for Compressive Strength of Cylindrical Concrete Specimens.
6. C42, Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
7. C94, Specification for ready Mixed Concrete.
8. C143, Test Method for Slump of Hydraulic Cement Concrete.
9. C150, Specification for Portland Cement.
10. C172, Practice for Sampling Freshly Mixed Concrete.
11. C231, Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
12. C260, Test Method for Air-Entraining Admixtures for Concrete.
13. C494, Specification for Chemical Admixtures for Concrete.
14. C920, Specification for Elastomeric Joint sealants.
15. D994, Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)
16. D1056, Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
17. D1751, Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

B. American Concrete Institute (ACI):

1. ACI 301, Specification for Structural Concrete for Buildings.
2. ACI 304, Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
3. ACI 305, Recommended Practice for Hot Weather Concreting.
4. ACI 306, Recommended Practice for Cold Weather Concreting.
5. ACI 315, Building Code Requirements for Reinforced Concrete.
6. ACI 347, Guide to Formwork for Concrete.

C. Concrete Reinforcing Steel Institute (CRSI):

1. Manual of Standard Practice.

1.03 SUBMITTALS

A. Submit Shop Drawings in accordance with SECTION 01300 for the following:

1. Reinforcing Steel
 - a. Furnish in detail and completeness that all fabrication and placement at the site can be accomplished without the use of contract drawings for reference.
 - b. Include number of pieces, sizes, and grade of reinforcing steel, accessories, and any other information required for fabrication and placement.
 - c. Show joint layout and design
 - d. Check structural and site drawings for anchor bolts, anchors, inserts, conduits, sleeves, and any other items which are required to be embedded in concrete, and make necessary provisions as required so that reinforcing steel will not interfere with the placement of such embedded items.
2. Concrete mix designs.
3. Grout manufacturer/design mix (if included in this section)
4. Manufacturer's data for ancillary materials such as joint fillers and sealants, epoxy bonding compound.

1.04 QUALITY ASSURANCE

A. Selection of testing laboratory in accordance with SECTION 01410.

B. Sample and Test Concrete as follows:

1. Test Specimens: Make, cure and have tested, a minimum of one set of four test specimens from the concrete of each day's pour and for each fifty cubic yards of concrete cast in accordance with ASTM C172, C31 and C39. One cylinder shall be broken after seven days and three cylinders after twenty-eight day.
2. Slump: A slump test shall be made for each truckload of concrete in accordance with ASTM C143. Slumps greater than design mix limit will be grounds for rejection of the concrete.
3. Air Content: An air content test shall be made from each day's pour of concrete by the pressure method in accordance with ASTM C231. Air contents above or below the limits specified will be grounds for rejection of the concrete.
4. In the event the compressive strength of the cylinders, when tested, is below the specified minimum, the Engineer may require test cores of the hardened structure to be taken by the Testing Laboratory in accordance with ASTM C42. If such test indicates that the core specimen is below the required strength, the concrete in question shall be removed and replaced without cost to the Owner. Any other work damaged as a result of this concrete removal shall be replaced with new materials to the satisfaction of the Engineer at no additional cost to the Owner. The cost of coring will be deducted from the contract amount. Where the Testing Laboratory has taken core cylinders and the concrete proves to be satisfactory, core holes shall be filled in a manner satisfactory to the Engineer at no additional cost to the Owner.
5. The Contractor shall coordinate the date and location of tests with the Engineer before any concrete work is started.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Reinforcing steel.

1. Transport to the site, store, and cover in a manner which will ensure that no damage shall occur to it from moisture, dirt, grease, or any other cause that might impair bond to concrete or chip protective epoxy coating.
2. Store on the site at all times, a supply of approved reinforcing steel to ensure that there will be no delay of the work.
3. Identification of steel shall be maintained after bundles are broken.

PART 2 PRODUCTS

2.01 MATERIALS

A. Portland Cement.

1. In accordance with ASTM C150, Type II of U.S. manufacture.
2. Only one brand of cement shall be used on the project.

B. Aggregates.

1. Fine aggregate, in accordance with ASTM C33, clean and graded from 1/4 inch to fines.
2. Coarse aggregate, in accordance with ASTM C33, clean and graded from 1/4 inch to maximum sizes hereinafter specified.

C. Air Entraining Agent.

1. In accordance with ASTM C260.

D. Water Reducing Agent.

1. In accordance with ASTM C494 Type A.

E. Microsilica Admixture.

1. Packaged in easily dispersing form.

F. Water.

1. Clean and potable,
2. Free of impurities detrimental to concrete.

G. Reinforcing Bars.

1. New, deformed billet steel bars, in accordance with ASTM A615, Grade 60.

H. Welded Wire Fabric

1. In accordance with ASTM A185.

I. Accessories.

1. Reinforcement accessories, consisting of spacers, chairs, ties, and similar items shall be provided as required for spacing, assembling, and supporting reinforcement in place.
 2. All accessories shall be dielectric coated steel or approved plastic accessories, conforming to the applicable requirements of the CRSI Standards.
- J. Tie wire.
1. 16 gauge or heavier black annealed wire.
- K. Form Ties and Spreaders.
1. Standard metal form clamp assemble and plastic cone, of type acting as spreaders and leaving no metal within 1 inch of concrete face.
 2. Provide form tie with water stop for all walls to be in contact with earth or liquid.
 3. Inner tie rod shall be left in concrete when forms are removed.
 4. No wire ties or wood spreaders will be permitted. Use ½" x 1" C.T. plastic cones for sinkages.
- L. Form Coatings.
1. Non-grain raising and non-staining type that will not leave residual matter on surface of concrete or adversely affect proper bonding of subsequent application of other material applied to concrete surface.
 2. "Nox-Crete Form Coating" as manufactured by Nox-Crete Company, or approved equal.
 3. Coatings containing mineral oils or the non-drying ingredients will not be permitted.
- M. Grout.
1. High-strength, non-shrink grout with saltwater resistance.
 2. Five Star Special Grout 120 or equivalent.

2.02 CONCRETE STRENGTHS AND PROPORTIONS

- A. Cast-in-place concrete shall have the minimum compressive strength at 28 days as indicated on the Drawings.
- B. The exact proportions for the mix, including amounts admixture (if any), and water, shall be determined by the concrete supplier.
- C. The proportions of aggregate to cement for any concrete shall be such as to produce a mixture which will work readily into the corners and angles of the forms and around reinforcement with the method of placing employed not he work, but without permitting the materials to segregate or excess free water to collect on the surface.
- D. Air-Entrainment: The air content in all concrete shall be maintained at 5 to 7 percent.

2.03 PREMOLDED JOINT FILLER

- A. Bituminous Type.

1. In accordance with ASTM D994 or D1751.
- B. Sponge Rubber Type.
 1. Neoprene, closed-cell, expanded in accordance with ASTM D1056, Type 2C5, with a compression deflection, 25 percent deflection (limits), 17 to 24 psi (119 to 168 kPa) minimum.

2.04 POURABLE JOINT FILLERS

- A. Filler for Nonpotable Water Structures
 1. Specific Gravity: Greater than 1.0 for cured, in-place filler.
 2. Vertical and Sloped Joints: Furnish gun grade material that will remain as placed in joints and will not run down slope.
 3. Suitable for continuous immersion and exposure to liquid being contained in the structure.

2.05 JOINT SEALANTS

- A. In slabs.
 1. In accordance with ASTM C920 for poured 2-component polyurethane sealant.
 2. Sikaflex-2c, as manufactured by Sika Corporation or approved equivalent.
- B. In walls.
 1. Type II, Class A, compound conforming to Interim Federal Specification TT-S-00227E (3) (COM-NBS) for Sealing Compound; Elastomeric Type, Multi-Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures).
 2. Sikaflex-1a, as manufactured by Sika Corporation or approved equivalent.

2.06 EPOXY BONDING COMPOUND

- A. The epoxy bonding compound shall be a three-component, solvent-free, moisture-tolerant, epoxy modified, cementitious product specifically formulated as a bonding agent and anti-corrosion coating. The product shall have suitable contact time, fluidity, and application temperature for this type of application.

PART 3 EXECUTION

3.01 FORMWORK

- A. Falsework for Forms
 1. Build and maintain necessary false work for the forms.
- B. Construction of Forms
 1. General
 - a. Construct in accordance with ACI 347.
 - b. Construct of sound material, to the correct shape and dimensions, mortar tight, of sufficient strength, and so braced and tied together that the movement of

men, equipment, materials, or placing and vibrating the concrete will not throw them out of line or position.

2. Embedded Items
 - a. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.
 - b. Do not embed wood, other than necessary nailing blocks, in concrete.
 - c. Extended complete cooperation to suppliers of embedded items in their installation.
 - d. Secure information for embedded items from other trades as required.
 - e. Securely anchored embedded items in correct location and alignment prior to placing concrete.
3. Openings for Items Passing Through Concrete
 - a. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.
 - b. Coordination work of this nature in order that there will be no unnecessary cutting and patching of concrete.
 - c. Cutting and repairing of concrete as a result of failure to provide for such openings shall be paid for by the Contractor at no additional expense to the Owner.

C. Removing Forms and False work

1. Forms shall not be removed for at least 72 hours after concrete has been placed.
2. Forms shall not be removed until the concrete has attained sufficient strength to insure stability.

3.02 REINFORCING STEEL

A. General

1. Place reinforcing steel in accordance with the drawings and approved shop drawings and the applicable requirements of the CRSI, Manual of Practice.
2. Install reinforcement accurately and secure against movement, particularly under the weight of workmen and the placement of concrete.

B. Reinforcing Steel Supports

1. Support bars on approved plastic or dielectric-coated metal chairs or spacers, accurately placed and securely fastened to forms or steel reinforcement in place.
2. Supply additional bars, whether specifically shown on the drawings or not, where necessary to securely fasten reinforcement in place.
3. Support legs of accessories in forms without embedding in form surface.

4. Spacing of chairs and accessories shall conform to CRSI, Manual of Standard Practice. Accurately space hoops and stirrups and wire to the reinforcement.
5. Permit no loose wood inside forms.
6. Lifting of welded wire fabric into proper position while concrete is being poured rather than supporting fabric on chairs will not be permitted.

C. Placing and Tying

1. Set in place, space, and rigidly and securely tie or wire with tie wire at all splices and at all crossing points and intersections in the positions shown, or as directed.
2. Rebending of bars on the job to accommodate the job to accommodate existing conditions will not be permitted without the written approval of the Engineer
3. Points ends of wire ties away from forms.

D. Spacing

1. Minimum center to center distance between parallel bars shall be in accordance with the details on the drawings, or, where not shown, the clear spacing shall be 2 times the bar diameter but in no case less than 1½ inches or less than 1½ times the maximum size aggregate.

E. Splices

1. Maximum 50% of steel spliced occurring within lap length.
2. Top bars shall be 1.3 times values given in 3.01.D.5.c.
3. Splice lengths.
 - a. #6 bars and smaller: 50-bar diameter
 - b. #7 bars and larger: 60-bar diameter

F. Concrete Covering

1. In accordance with ACI 315, except where shown otherwise on drawings.

3.03 CONCRETE

A. Mixing of Concrete

1. All concrete shall be ready-mixed concrete, and shall be mixed and delivered in accordance with ASTM C 94. The batch plant of the concrete producer shall be certified for compliance with the standards established by the National Ready-Mixed Concrete Association.
2. In the event concrete is mixed at a central batching plant, the delivery shall be arranged so that intervals between batches are kept to a minimum, and in any event not more than thirty (30) minutes. Trucks shall be in first class condition and kept in constant rotation during delivery.
3. Concrete shall be placed within 90 minutes after cement has been mixed with aggregate or 45 minutes after addition of water and admixtures.
4. No admixtures, except those mentioned in paragraph 2.1 shall be used. Calcium chloride will not be permitted.

5. Truck delivery slips of all concrete delivered to the job shall indicate the quantity and quality of concrete, additives, date and time of batching and delivery, and the location of placement. Delivery slips shall be forwarded to the Engineer at the end of each pour.

B. Cold Weather Concreting.

1. In accordance with ACI 306.
2. Concrete shall not be mixed or placed when the temperature is below 40 degrees F, or when conditions indicate that the temperature will fall below 40 degrees F within 72 hours unless precautions are taken to protect the concrete.
3. Concrete temperature shall be maintained, when deposited, at not less than 60 degrees F. Reinforcement, forms, and ground which concrete will contact must be completely free of frost.
4. Concrete and formwork must be kept at a temperature of not less than 50 degrees F. for not less than 96 hours after placing.
5. Calcium chloride shall not be used.

C. Hot Weather Concreting.

1. In accordance with ACI 305.
2. The maximum temperature of the concrete, when deposited, shall be 85 degrees F. If the weather causes the placing temperature to exceed 85 degrees F., the mix shall be cooled by methods approved by the Engineer.
3. No concrete shall be deposited when the air temperature is greater than 90 degrees F.

D. Conveying and Placing Concrete.

1. In accordance with ACI 304.
2. Notification: Before placing concrete, forms shall be thoroughly inspected. All chips, dirt, etc., shall be removed, all temporary bracing and cleats taken out, all openings for pipes, etc., properly boxed, all forms properly secured in their correct position and made tight, all reinforcement, anchors, and embedded items secured in their proper places. Concrete which may be on the forms or reinforcement, and which is set and dry, shall be cleaned off, and the forms and steel washed off before proceeding. Remove all foreign matter from forms and excavations.
3. Water shall be removed from place of deposit before concrete is placed unless otherwise permitted by the Engineer. Any flow of water into an excavation shall be diverted through proper side drains into a sump, or shall be removed by other approved methods which will avoid washing away the freshly deposited concrete.
4. Soil on which concrete will be poured shall be thoroughly wetted (except in freezing weather).

5. Anchors and Embedded Items: Anchors, bolts, sleeves, inserts, wood blocking, and any other items to be embedded in concrete shall be accurately secured in position before the concrete is placed. Aluminum shall not be embedded in concrete.

6. Handling and Depositing

- a. Before any concrete is placed, notify all whose work is in any way connected with or influenced by the concrete work, and give them reasonable time to complete all portions of their work that must be completed before concrete is deposited.
- b. Immediately before concrete is placed, inspect all forms to insure that they are in proper position, sufficiently rigid, thoroughly clean, properly oiled and free from foreign materials, and that all reinforcement is in proper position.
- c. Concreting, once started, shall be carried on as a continuous operation until the section of approved size and shape is completed.
- d. Concrete shall be conveyed as rapidly as practicable from the mixer to the place of final deposit by methods that prevent the separation or loss of ingredients. It shall be deposited, as nearly as practicable, in its final position to avoid rehandling or flowing.
- e. Concrete shall not be dropped freely where reinforcement will cause segregation, nor shall it be dropped freely more than six (6) feet. Concrete shall be deposited to maintain a plastic surface approximately horizontal.
- f. Concrete that has partially hardened shall not be deposited in the work.

7. Pumping

- a. Concrete may be placed by pumping if first approved in writing by the Engineer for the location proposed.
 - b. Equipment for pumping shall be of such size and design as to ensure a practically continuous flow of concrete at the delivery end without separation of materials.
 - c. The concrete mix shall be designed to the same requirements as herein before specified, and may be richer in lubricating components in order to allow proper pumping.
 - d. Concrete shall not be pumped through aluminum pipes.
8. Vibrating and Compacting

- a. All concrete shall be thoroughly consolidated and compacted by suitable means during the operation of placing, and shall be thoroughly worked around reinforcement, embedded items, and into the corners of the forms. All concrete against forms shall be thoroughly spaded. Internal vibrators shall be used under experienced supervision, and shall be kept out of contact with reinforcement and wood forms. Vibrators shall not be used in a manner that forces mortar between individual form members.
- b. Vibrators shall be flexible electric type or approved compressed air type, adequately powered and capable of transmitting to the concrete not less than seven thousand (7,000) impulses per minute. Vibration shall be sufficiently intense to cause the concrete to flow or settle readily into place without separation of the ingredients. A sufficient number of vibrators shall be employed so that complete compaction is secured throughout the entire volume of each layer of concrete. At least one (1) vibrator shall be kept in readiness as a spare for emergency use. Vibrators shall be such that the concrete becomes uniformly plastic with their use.
- c. Vibration shall be close to the forms but shall not be continued at one spot to the extent that large areas of grout are formed or the heavier aggregates are caused to settle. Care shall be taken to not disturb concrete that has its initial set.

- d. Where conditions make compacting difficult, or where the reinforcement is congested, batches of mortar containing the same proportions of cement to sand as used in the concrete shall first be deposited in the forms, to a depth of at least on inch.
- e. The responsibility for providing fully filled out, smooth, clean, and properly aligned surfaces free from objectionable pockets shall rest entirely with the Contractor.

3.04 CONSTRUCTION JOINTS

- A. Construction joints shall be located a maximum of 40 feet apart. If, for any reason, the contractor feels a change is necessary, he shall prepare a placing plan and submit it to the Engineer for approval.
- B. Where a joint is to be made, the surface of the concrete shall be sandblasted or thoroughly picked, thoroughly cleaned, and all laitance removed. In addition to the foregoing, joints shall be thoroughly wetted, but not saturated, and slushed with a coat of grout immediately before the placing of new concrete.
- C. Approved keys shall be used at all joints, unless detailed otherwise.
- D. Forms shall be retightened before placing of concrete is continued. There shall be an interval of at least 48 hours between adjacent pours.
- E. Bonding Concrete at Construction Joints
 1. To new concrete construction joints:
 - a. Thoroughly clean and saturate joint with water.
 - b. Cover horizontal wall surfaces as specified in this Section, and immediately place concrete.
 - c. Limit concrete lift placed immediately on top of bonding compound to 12 inches thick.
 - d. Thoroughly vibrate to mix and consolidate bonding compound and concrete together.
- F. Bonding new concrete to old concrete:
 1. Mechanically roughen existing concrete surfaces to a clean, rough surface using appropriate mechanical means to remove the existing concrete surface, and provide a minimum roughness profile of ¼-inch.
 2. Saturate surface with water for 24 hours, cover with epoxy bonding compound and place concrete as specified for new concrete.
- G. Expansion Joints
 1. Expansion joints shall be located as shown on contract drawings.
 2. The joint shall include a joint filler, a bond breaker and joint sealant and installed as indicated on contract drawings.
- H. Joint Sealants.
 1. Prepare surface in accordance with manufacturers directions.
 2. Apply primer as recommended by sealant manufacturer.

3. Install sealant with the proper tools and methods as directed by the sealant manufacturer.

I. Patching

1. Immediately after stripping forms, patch minor defects, form-tie holes, honeycombed areas, etc., before concrete is thoroughly dry.
2. Repair gravel pockets by cutting out to solid surface, form key, and thoroughly wet before placing patching mortar consisting of 1 part cement to 2 parts fine sand; compact into place and neatly finish. Honeycombed areas or gravel pockets which, in the Engineer's opinion are too large and unsatisfactory for mortar patching as described above, shall be cut out to solid surface, keyed, and packed solids with matching concrete to produce firm bond and surface.
3. The Contractor shall do all the cutting as required by himself or other trades. All such work shall be of the minimum size required. No excessive cutting will be permitted, or shall any structural members or reinforcement be cut.
4. The Contractor shall do all patching after work by other trades has been installed, where required, using Portland Cement Mortar 1:2 mix.

J. Protection and Curing

1. Protect concrete from injurious action of the elements and defacement of any nature during construction operations.
2. Keep concrete in a thoroughly moist condition from the time it is placed until it has cured, for at least (7) days.
3. Carefully protect exposed concrete corners from damage.
4. Allow no slabs to become dry at any time until curing operations are complete. In general, slabs shall be cured with non-staining curing paper, hosing or fog spray; vertical surfaces shall be curing with Burlene or fog spray or an approved curing compound.
5. Protect fresh concrete from drying winds, rain, damage, or spoiling. Curing paper shall be lapped 4 inches minimum at joints and sealed with waterproof tape.

K. Concrete Finishes

1. Unexposed Surfaces: All unexposed surfaces shall have any form finish, at the Contractor's option.
2. Wearing Surface Finish: Float the surface by hand using a wooden or magnesium float. Finish with a flexible bristle broom. Permit surface to harden sufficiently to retain the scoring or ridges. Broom transverse to traffic or at right angles to the

slope of the slab.

3. Addition of Material: The addition of cement, sand, water, or mortar to slab surfaces while finishing concrete is strictly prohibited.
- L. Defective Work
1. The following concrete work shall be considered defective and may be ordered by the Engineer to be removed and replaced at Contractor's expense:
 - a. Incorrectly formed.
 - b. Not plumb or level.
 - c. Not specified strength.
 - d. Containing rock pockets, voids, honeycomb, or cold joints.
 - e. Containing wood or foreign matter.
 - f. Otherwise not in accordance with the intent of the Drawings and Specifications.

END OF SECTION