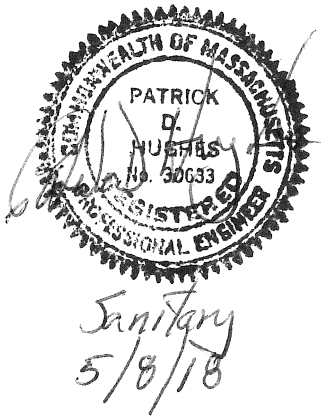
INVITATION FOR BID
CITY OF NEW BEDFORD
Department of Public Infrastructure

High Hill Reservoir Rehabilitation

New Bedford, Massachusetts

Bid No. 18450518



MAY 2018

Jonathan F. Mitchell
Mayor

Dept. of Public Infrastructure
1105 Shawmut Avenue
New Bedford, MA 02746

Copy No._____

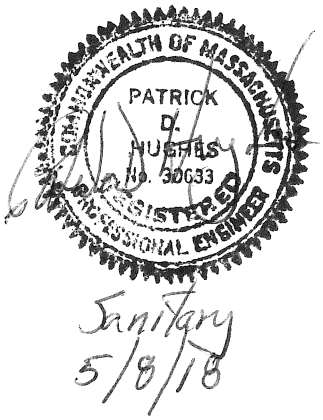
CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

PROJECT MANUAL
FOR
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

MAY 2018

MAYOR
HONORABLE JONATHAN F. MITCHELL

DEPARTMENT OF PUBLIC INFRASTRUCTURE – COMMISSIONER
JAMIE PONTE



CDM Smith

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CONSULTING ENGINEERS
PROVIDENCE, RHODE ISLAND

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
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WATER SYSTEM IMPROVEMENTS
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BID NO. 18450518

INVITATION TO BID

Sealed Bids for construction of the High Hill Reservoir Rehabilitation project will be received by the City of New Bedford, Massachusetts, acting through its Department of Public Infrastructure, at the office of the Purchasing Department, Room 208, City Hall, 133 William Street, New Bedford, Massachusetts 02740 until 3:00 PM prevailing time on Wednesday, June 6, 2018 and at that time and place bids will be publicly opened and read aloud in The Ashley Room. If at the time of the scheduled bid opening City Hall is closed due to uncontrolled events such as fire, snow, ice or building evacuations, the bid opening will be postponed until 3:00 PM on the next normal business day and bids will be accepted until that date and time.

The work of this project at High Hill Reservoir includes but is not limited to furnishing all labor, materials, equipment, tools, and incidentals required to remove and replace existing 24-, 36- and 42-inch water transmission main valves; install a new 24-inch water main; remove and replace existing sluice gates in the inlet structure with new valves; remove and replace existing valves in the outlet structure with new valves; dewater and drain the reservoir to facilitate replacement of all sluice gates and valves and for structural inspections and repairs to the reservoir and its roof; removing and disposing of accumulated sediment on the reservoir floor; cleaning the entire reservoir; repairing the reservoir's roof; performing structural repairs to the reservoir; cleaning and disinfecting the reservoir; all required site work and cleanup; and all other related and required work for successful completion of the project.

The Contract Time shall be 1,095 Calendar Days commencing twenty days following the Effective Date of the Agreement.

Contract Documents are available electronically by emailing purchasing@newbedford-ma.gov during normal business hours (8:00 AM to 4:00 PM) on or after Thursday, May 10, 2018 at 3:00 PM.

A pre-bid conference will be held for this project at the City of New Bedford Wastewater Treatment Plant, 1000 Rodney French Boulevard, New Bedford, Massachusetts at 10:00 AM prevailing time on Thursday, May 24, 2018.

A deposit of $100.00 in the form of a bank or certified check payable to the City of New Bedford will be required for each set of the Contract Documents. Up to two complete sets of Contract Documents will be available to General Bidders. A refund of the deposit will be made for such Documents returned in good condition within 30 days after the Bids are received. Additional sets may be purchased by bidders. Any person requesting more than two sets of Contract Documents is required to pay a non-refundable fee of $75.00 for each set in the form of a separate bank or certified check made payable to the City of New Bedford.

Each Bid shall be submitted in accordance with the Instructions to Bidders and shall be accompanied by a Bid Security in the amount of five percent of the Bid.

Bidders may not withdraw their Bids for a period of thirty days, excluding Saturdays, Sundays, and legal holidays after the actual date of the opening of the Bids.

The Successful Bidder must furnish a 100 percent Performance Bond and a 100 percent Payment Bond with a surety company acceptable to the Owner.

Complete instructions for filing Bids are included in the Instructions to Bidders.

Minimum Wage Rates as determined by the Commissioner of the Department of Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Section 26 to 27H, 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 tradespeople 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.

The bidding and award of this Contract will be under the provisions of M.G.L. Chapter 30, Section 39M.

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

The work under this Contract is funded in part by the Massachusetts Division of Water Pollution Abatement Trust (the "Trust").

Disadvantaged Business Enterprise (DBE) goals of the Commonwealth of Massachusetts are applicable to the total dollars paid to the construction contract. The Commonwealth of Massachusetts goals for this project are a minimum of 4.20 percent D/MBE participation and 4.50 percent D/WBE participation by certified DBEs. Bidders shall submit all required completed Massachusetts Department of Environmental Protection DBE forms (EEO-DEP-190C, EEO-DEP-191C and the DBE Certification of United States Citizenship form) with their bid. 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).

This Project requires compliance with the Department of Environmental Protection's (DEP) Diesel Retrofit Program by use of after-engine emission controls that are EPA certified, or their equivalent, on all of the off-road (non-registered) diesel vehicles/equipment, and vehicles greater than 50 brake horsepower, which will be used in the performance of the work.

The City encourages D/MBEs and D/WBEs to submit Bids.

SUSAN BRUCE
DIRECTOR OF PURCHASING
CITY OF NEW BEDFORD, MASSACHUSETTS

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WATER SYSTEM IMPROVEMENTS
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INSTRUCTIONS TO BIDDERS

ARTICLE 1. QUALIFICATIONS OF BIDDERS

1.1 Bidders may be investigated by OWNER to determine if they are qualified to perform the Work. All Bidders shall be prepared to submit within five days of OWNER's or ENGINEER's request, written evidence of such information and data necessary to make this determination.

1.2 The investigation of a Bidder will seek to determine whether the organization is adequate in size, is authorized to do business in the jurisdiction where the project is located, has had previous experience and whether available equipment and financial resources are adequate to assure OWNER that the Work will be completed in accordance with the terms of the Agreement. The amount of other work to which the Bidder is committed may also be considered.

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

1.4 OWNER reserves the right to reject any Bid if the evidence submitted by, or the investigation of, such Bidder fails to satisfy OWNER that such Bidder is properly qualified to carry out the obligations of the Contract Documents and to complete the Work contemplated therein.

ARTICLE 2. COPIES OF CONTRACT DOCUMENTS

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

2.2 OWNER and ENGINEER in making copies of Contract 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 CONTRACT DOCUMENTS AND SITE

3.1 Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may in any manner affect cost, progress or performance of the Work, (c) 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 (d) study and carefully correlate Bidder's observations with the requirements of the Contract Documents.

3.2 Before submitting a Bid, Bidders may, at their own expense, make such additional investigations and tests as they may deem necessary to determine their Bid for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

3.3 On request, OWNER will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for the submission of a Bid. See Section 01014 for additional information regarding the site conditions and for OWNER contact information for site access.

3.4 The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by CONTRACTOR in performing the Work are identified in the Supplementary Conditions, General Requirements or on the Drawings.

3.5 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 Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

ARTICLE 4. INTERPRETATIONS

4.1 All questions about the meaning or intent of the Contract Documents shall be received in writing by CDM Smith, 260 West Exchange Street, Suite 300, Providence, Rhode Island 02903 Attn: Matthew P. Gallant, P.E., gallantmp@cdmsmith.com, at least ten days before the date set herein for the opening of bids. Bidders are responsible for verifying that their questions are received.

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 mailed via certified mail or sent by delivery service with delivery confirmation and return receipt requested, or sent electronically to all parties recorded as having received the Contract 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 be held for this project at the City of New Bedford Wastewater Treatment Plant, 1000 Rodney French Boulevard, New Bedford, Massachusetts at 10:00 AM prevailing time on Thursday, May 24, 2018 to discuss the project and the requirements of the Contract Documents. Bidders are encouraged to attend the pre-bid conference.

ARTICLE 6. BID SECURITY

6.1 Each Bid must be accompanied by cash, bid bond, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to OWNER. The Bid Security shall be in the amount stated in the Invitation to Bid. Bid Security shall be sealed in a separate envelope from the Bid and then attached to the envelope containing the Bid. All Bid Securities except those of the three lowest responsible and eligible Bidders will be returned within five days, Saturdays, Sundays, and legal holidays excluded, after opening of the Bids. All Bid Securities will be returned on the execution of the Agreement or if no award is made, within thirty days, excluding Saturdays, Sundays and legal holidays after the actual date of opening of the Bids, unless forfeited under the conditions herein stipulated.

6.2 In case a party to whom a Contract is awarded shall fail or neglect to execute the Agreement and furnish the satisfactory bonds within the time specified, OWNER may determine that the Bidder has abandoned the Contract, and thereupon the Bid Forms and acceptance shall be null and void and the Bid Security accompanying the Bid Form shall be forfeited to OWNER as liquidated damages for such failure or neglect and to indemnify said OWNER for any loss which may be sustained by failure of the Bidder to

execute the Agreement and furnish the bonds as aforesaid, provided that the amount forfeited to OWNER shall not exceed the difference between the Bid Price of said Bidder and that of the next lowest responsible and eligible bidder and provided further that, in case of death, disability, or other unforeseen circumstances affecting the Bidder, such Bid Security may be returned to the Bidder. After execution of the Agreement and acceptance of the bonds by OWNER, the Bid Security accompanying the Bid Form of the Successful Bidder will be returned.

ARTICLE 7. PERFORMANCE, PAYMENT AND OTHER BONDS

7.1 Performance, Payment and other Bonds shall be provided in accordance with Article 5 of the Conditions of the Contract.

7.2 All Bonds required as Contract Security shall be furnished with the executed Agreement.

ARTICLE 8. BID FORM

8.1 Each Bid shall be submitted on the Bid Form on the pages appended to the Project Manual. The Bid Form shall be removed and submitted separately. All blank spaces for Bid prices must be filled in with the unit price for the item or the lump sum for which the Bid is made.

8.2 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. If unit prices are required on the Bid Form, discrepancies between unit prices and their respective total amounts will be resolved in favor of the unit prices. 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.

8.3 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.

8.4 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.

8.5 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.

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

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

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

8.9 One copy of each Bid shall be submitted in a sealed opaque envelope bearing on the outside the Bidder's name, address, and the Project Title for which the Bid is submitted. (If forwarded by mail, Bid and sealed envelope marked as described above shall be enclosed in another envelope with the notation

"BID ENCLOSED" on the face and addressed as indicated in the Invitation to Bid.) The Bid Security shall be submitted in a separate envelope from the Bid and attached to the envelope containing the Bid.

ARTICLE 9. RECEIPT OF BIDS

9.1 Sealed Bids for the work of this Contract will be received at the time and place indicated in the Invitation to Bid.

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

9.3 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 mail and/or delivery services, of any nature.

9.4 Bidders submitting the BID FORM shall complete and submit the following attachments with their Bids (Note – the following is provided for informational use of the Bidder. It is the responsibility of the Bidder to determine and submit all forms that are required with the bid.):

BID FORM
DIESEL RETROFIT PROGRAM (MDRP) FORM (DEP-DMS-P&S-21)
SCHEDULE OF PARTICIPATION FOR SRF CONSTRUCTION (EEO-DEP-190C)
LETTER OF INTENT FOR SRF CONSTRUCTION (EEO-DEP-191C)
DBE CERTIFICATION OF UNITED STATES CITIZENSHIP
DBE SUBCONTRACTOR PARTICIPATION FORM
CITY OF NEW BEDFORD NON-COLLUSION AND TAX COMPLIANCE FORM
CITY OF NEW BEDFORD VOTE OF CORPORATION
OSHA CERTIFICATION REQUIREMENT
CONTRACTOR CERTIFICATION

ARTICLE 10. MODIFICATION AND WITHDRAWAL OF BIDS

10.1 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.

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

10.3 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 11. AWARD OF CONTRACT

11.1 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.

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

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

11.4 OWNER also reserves the right to reject the Bid of any Bidder that OWNER considers to be unqualified relative to Article 1 above.

11.5 If the Contract is to be awarded, OWNER will give the Successful Bidder a Notice of Award within thirty days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids. All bids shall remain open for thirty days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids but OWNER may, at OWNER's sole discretion, release any Bid and return the Bid Security prior to that date.

ARTICLE 12. EXECUTION OF AGREEMENT

12.1 When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by at least six unsigned copies of the Agreement and all other applicable Contract Documents. Within five days, excluding Saturdays, Sundays and legal holidays, after the date of receipt of such notification CONTRACTOR shall execute and return all copies of the Agreement and all other applicable Contract Documents to OWNER. Within ten days thereafter OWNER will deliver one fully signed copy to CONTRACTOR.

ARTICLE 13. SAFETY AND HEALTH REGULATIONS

13.1 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 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.

13.2 The Successful Bidder shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 (PL-91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL-91-54).

13.3 The Successful Bidder shall have a competent person or persons, as required under the Occupational Safety and Health Act, on the Site to inspect the Work and to supervise the conformance of the Work with the regulations of the Act.

ARTICLE 14. FEDERAL WAGE RATES

14.1 Davis Bacon (DB) Prevailing Wage Requirements

14.1.1 The following clauses shall apply to 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 Appropriation Act:

(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)(l)(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 mechanic's 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)(l)(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.

(ii)(A) The Owner(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 Owner(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 Owner(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 Owner(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)(l)(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 Owner(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

l(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)(l)(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 l(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 Owner, 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 Owner 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)(l) 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 http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Owner(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 Owner(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 a different practice prevails for the applicable trainee classification which provides for less than full fringe benefits for trainees. 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)(l) through (10) and such other clauses as the EPA determines may by 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 Owner(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)(l).

(11)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)(l).

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

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

(a) Contract Work Hours and Safety Standards Act. The following clauses set forth in paragraphs (a)(l), (2), (3), and (4) of this section in full shall apply to 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 apply in addition to the clauses required by Item 1, 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)(l) 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)(l) 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)(l) of this section.

(3) Withholding for unpaid wages and liquidated damages. The Owner, 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)(l) 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)(l) through (4) of this section.

(b) In addition to the clauses contained in Item 1, 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 Owner 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 Owner 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.

14.1.3 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 http://www.dol.gov/esa/contacts/whd/america2.htm.

14.2 It is the responsibility of the Contractor before the bid opening to request, if necessary, any additional information on Federal Wage Rates for those tradespeople who are not covered by the applicable Federal Wage Determination, but who may be employed for the proposed work under this Contract.

14.3 All construction associated with this contract will be governed by Heavy and Highway Rates.

ARTICLE 15. MANUFACTURER'S EXPERIENCE

15.1 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.

ARTICLE 16. ACCESS TO WORK

16.1 Representatives of the Commonwealth and any local agencies having a direct interest in the Work shall have access to the Work under this contract wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access and inspection.

ARTICLE 17. CHANGE ORDERS

17.1 Change orders will be processed in accordance with the "Change Order Forms" which are included in Part II of the Supplementary Conditions.

ARTICLE 18. SALES TAX

18.1 The material and supplies to be used in the Work will be subject to the requirements of Paragraph 6.10 of the Conditions of the Contract.

ARTICLE 19. UTILITY UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

19.1 All excavations within public or private ways are subject to the requirements of Massachusetts General Law, Chapter 82, Section 40 included in Part II of the Supplementary Conditions.

ARTICLE 20. WAGE RATES

20.1 Minimum Wage Rates as determined by the Commissioner of the Department of Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Section 26 to 27H, 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 tradespeople 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.

20.2 Both Federal and State schedules of minimum wage rates are included in Part II of the Supplementary Conditions. Where rates differ, the higher rate shall be considered as the minimum rate.

ARTICLE 21. COMPETITIVE BIDDING

21.1 The bidding and award of the Contract shall be in full compliance with Section 39 M inclusive of Chapter 30 of the General Laws of the Commonwealth of Massachusetts as last revised.

ARTICLE 22. PRICE ADJUSTMENTS

22.1 Due to the uncertainty of prices for certain materials (liquid asphalt, Portland cement, diesel fuel and gasoline, structural steel and reinforcing steel) price adjustments will be in accordance with Appendix H, which is included in Part 2 of the Supplementary Conditions. The base price for each material shall be the period price in effect at the time the project is advertised. The price adjustment clause shall provide for a contract adjustment to be made on a monthly basis when the monthly cost change exceeds plus or minus 5 per cent. Period prices can be found at the Massachusetts Department of Transportation (MassDOT) website at http://www.mhd.state.ma.us/default.asp?pgid=content/fuelPrices&sid=about.

ARTICLE 23. ELIGIBILITY

23.1 The work of this Contract is funded in part by the Commonwealth of Massachusetts Department of Environmental Protection, Division of Municipal Services, Drinking Water State Revolving Fund (DWSRF) program. Neither the Commonwealth of Massachusetts nor the Division of Municipal Services is a part to this Contract.

ARTICLE 24. GUARANTEE

24.1 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 minimum (unless otherwise specified in other sections for materials and/or services) 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 minimum from the date fixed for such acceptance. Refer to Section 00800 and technical specification sections for additional information related to work/equipment warrantees.

24.2 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, corrections or replacements. If the Contractor neglects to commence making such repairs, corrections or replacements to the satisfaction of the Owner within seven 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, corrections or replacements, and charge the costs, including compensation for additional professional services, to the Contractor.

ARTICLE 25. DEPARTMENT OF ENVIRONMENTAL PROTECTION'S (DEP) DIESEL RETROFIT PROGRAM

25.1 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. Additional requirements are included in Part II of the Supplementary Conditions.

ARTICLE 26. SUSPENSE AND DEBARMENT

26.1 Bidders must fully comply with Subpart C of 2 CFR Part 108 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.sam.gov are not eligible for award of any contracts funded by the Massachusetts State Revolving Fund.

ARTICLE 27. MASSACHUSETTS GENERAL LAWS AND REGULATIONS

27.1 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 exists, the more stringent requirement shall apply.

ARTICLE 28. AMERICAN IRON AND STEEL REQUIREMENT

28.1 This project is subject to the American Iron and Steel Requirements of P.L. 113-76, the Consolidated Appropriations Act of 2014.

ARTICLE 29. CITY OF NEW BEDFORD REQUIREMENTS

29.1 Forms required with the bid submittal and Contract are included in the bid form and Agreement respectively. Failure to include fully completed forms required with the bid submittal may be deemed to render the bid non-responsive.

SUSAN BRUCE
DIRECTOR OF PURCHASING
CITY OF NEW BEDFORD, MASSACHUSETTS

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BID FORM
TO
CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

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 Contract Documents as prepared by CDM Smith, 260 West Exchange Street, Suite 300, Providence, Rhode Island 02903 and dated May 2018 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 done, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Bid Form is a part.

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 approved is required, the time period for holding bids is 30 days, Saturdays, Sundays and holidays excluded after Federal approval.

The Bid Security accompanying this Bid shall be in the amount of five percent of the Bid.

If a Notice of Award accompanied by at least six unsigned copies of the Agreement and all other applicable Contract Documents is delivered to the undersigned within thirty days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids, the undersigned will within five days, excluding Saturdays, Sundays, and legal holidays, after the date of receipt of such notification, execute and return all copies of the Agreement and all other applicable Contract Documents to Owner. The premiums for all Bonds required shall be paid by Contractor and shall be included in the Contract Price. The undersigned Bidder further agrees that the Bid Security accompanying this Bid shall become the property of Owner if the Bidder fails to execute the Agreement as stated above.

The Bid Security shall be sealed in a separate envelope from the Bid and then attached to the envelope containing the Bid.

The undersigned hereby agrees that the Contract Time shall commence twenty days following the Effective Date of the Agreement and to fully complete the Work within 1,095 Calendar Days and in accordance with the terms as stated in the Agreement. The undersigned further agrees to pay OWNER, as liquidated damages, $2,000 per day for each calendar day beyond the Contract Time Limit or extension thereof that the Work remains incomplete, in accordance with the terms of the Agreement.

The undersigned acknowledges receipt of addenda numbered:

_____

In accordance with the above understanding, the undersigned proposes to perform the Work, furnish all materials and complete the Work in its entirety in the manner and under the conditions required at the prices listed as follows:

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
1	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and install new valves for Valve Work Area No. A on Drawing C-3 (Englarged Plan "A" on Drawing C-4).		
		_____ Lump Sum	N/A	$ _____
2	1 Lump Sum	Furnish and install all work (excluding line stops but including all materials, tools, equipment, labor and all other incidentals and required work) to construct and remove and replace valves for Valve Work Area No. B on Drawing C-3 (Englarged Plan "B" on Drawing C-4).		
		_____ Lump Sum	N/A	$ _____
3	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and install the new 24-inch water main from the existing 36-inch High Hill Reservoir inlet bypass main to the existing 24-inch water main downstream of the reservoir (Drawing C-3) and to remove and replace valves for Valve Work Area No. C on Drawing C-3 (Englarged Plan "C" on Drawing C-5).		
		_____ Lump Sum	N/A	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
4	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and remove and replace valves for Valve Work Area No. D on Drawing C-3 (Englarged Plan "D" on Drawing C-5).		
		_____ Lump Sum	N/A	$ _____
5	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and remove and replace valves for Valve Work Area No. E on Drawing C-3 (Englarged Plan "E" on Drawing C-5).		
		_____ Lump Sum	N/A	$ _____
6	2 each	Furnish and install 36-inch line stops with concrete thrust blocks as shown on the Drawings to facilitate installation of new work and remove line stops at completion of new work.		
		_____ each	$ _____	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
7A	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work but exluding restoration of the Inlet Structure Floor) to construct all work and replace all valves for the High Hill Reservoir Inlet Structure Modifications as shown on Drawing M-1.		
		_____ Lump Sum	N/A	$ _____
7B	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to remove and replace existing floor of the High Hill Reservoir Inlet Structure.		
		Seventy Thousand Dollars Lump Sum	N/A	$70,000.00
8	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct all work, replace all valves, and replace the existing floor for the High Hill Reservoir Outlet Structure Modifications as shown on Drawings M-2, S-5 thru S-7.		
		_____ Lump Sum	N/A	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
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BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
9	1 Lump Sum	Dewater and drain High Hill Reservoir (both north and south basins and the outlet structure) to facilitate construction of new work, including all materials, tools, equipment, labor and all other incidentals and required work; all required dechloramination/dechlorination; and all work required for dewatering in compliance with all federal, state and local regulations, laws, ordinances, and requirements.		
		_____ Lump Sum	N/A	$ _____
10	1 Lump Sum	Clean High Hill Reservoir (north and south basins and inlet and outlet structures) as specified and as shown on the Drawings.		
		_____ Lump Sum	N/A	$ _____
11	4,000 cubic yards	Remove and dispose of accumulated sediment on the floor of High Hill Reservoir as specified and in accordance with all federal, state and local regulations, laws, ordinances, and requirements.		
		_____ Lump Sum	N/A	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
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BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
12	1 Lump Sum	Make all structural repairs and modifications to High Hill Reservoir as shown on Drawings S-1, S-2, S-3, and S-4 (Detail L) including all materials, tools, equipment, labor and all other incidentals and required work to complete all repairs and modifications as required (excluding repairs noted with unit price items).		
		_____ Lump Sum	N/A	$ _____
13A	100 square feet	Repair cracked/spalled/void/unsound concrete at reservoir wall up to 6-inches deep, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per square foot	$ _____	$ _____
13B	275 linear feet	Epoxy adhesive injection repair of concrete cracks in columns, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$ _____	$ _____

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
13C	40 square feet	Repair cracked/spalled/void/unsound concrete in columns up to 2-inches deep, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per square foot	$_____	$_____
13D	80 linear feet	Repair of exposed rebar at columns, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$_____	$_____
13E	30,000 linear feet	Repair cracks in concrete floor and wall liner using injection gel epoxy, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$_____	$_____
13F	60,000 linear feet	Remove and replace sealant at construction joints, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$_____	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
13G	2,000 linear feet	Replacement of the eave closure around the roof edge of High Hill Reservoir to completely seal the reservoir where it meets the side wall.		
		_____ per linear foot	$_____	$_____
14	1 Lump Sum	Disinfect High Hill Reservoir (both north and south basins and the inlet and outlet structures) in accordance with AWWA C652 to reactivate High Hill Reservoir following construction work.		
		_____ Lump Sum	N/A	$_____
15A	50 cubic yards	Rock excavation		
		_____ per cubic yard	$_____	$_____
15B	50 cubic yards	Boulder excavation		
		_____ per cubic yard	$_____	$_____
15C	75 cubic yards	Excavating below normal grade including gravel refill		
		_____ per cubic yard	$_____	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
16A	150 cubic yards	Controlled Density Fill (CDF)/Controlled Low Strength Material (CLSM) for miscellaneous purposes as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
16B	150 cubic yards	Screened gravel for miscellaneous purposes as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
17	150 cubic yards	Miscellaneous concrete for miscellaneous purposes as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
18	150 cubic yards	Test pits as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
19	1 Lump Sum	Miscellaneous work and clean-up		
		_____ Lump Sum	N/A	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
20	1 Lump Sum	Mobilization (no more than 5% of the Base Bid Price)		
		_____ Lump Sum	N/A	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

SUBTOTAL PAGE 00300-2:	$ _____
SUBTOTAL PAGE 00300-3:	$ _____
SUBTOTAL PAGE 00300-4:	$ _____
SUBTOTAL PAGE 00300-5:	$ _____
SUBTOTAL PAGE 00300-6:	$ _____
SUBTOTAL PAGE 00300-7:	$ _____
SUBTOTAL PAGE 00300-8:	$ _____
SUBTOTAL PAGE 00300-9:	$ _____
SUBTOTAL PAGE 00300-10:	$ _____
TOTAL BASE BID PRICE	**$** _____

The undersigned agrees that extra work, if any, will be performed in accordance with Article 10 of the Conditions of the Contract and will be paid for in accordance with Article 11 of the Conditions of the Contract.

The bidding and award of this Contract will be in accordance with M.G.L. Chapter 30, Section 39M.

The undersigned must furnish a 100 percent Performance Bond and a 100 percent Payment Bond with a surety company acceptable to Owner.

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, bailing, shoring, removal, overhead, profit, insurance and incidentals required to complete the Work.

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. In the case of a corporation, see Article 8.3 of the Instructions to Bidders, in the case of a limited liability company (LLC), see Article 8.4 of the Instructions to Bidders, in the case of a partnership, see Article 8.5 of the Instructions to Bidders.)

_____

_____

_____

The attached forms must be completed and submitted as part of the Bid Proposal:

DIESEL RETROFIT PROGRAM (MDRP) FORM (DEP-DMS-P&S-21)
SCHEDULE OF PARTICIPATION FOR SRF CONSTRUCTION (EEO-DEP-190C)
LETTER OF INTENT FOR SRF CONSTRUCTION (EEO-DEP-191C)
DBE CERTIFICATION OF UNITED STATES CITIZENSHIP
DBE SUBCONTRACTOR PARTICIPATION FORM
CITY OF NEW BEDFORD NON-COLLUSION AND TAX COMPLIANCE FORM
CITY OF NEW BEDFORD VOTE OF CORPORATION
OSHA CERTIFICATION REQUIREMENT
CONTRACTOR CERTIFICATION

Pursuant to M.G.L. Ch. 62C, sec. 49A, 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.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

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The undersigned bidder hereby certifies he/she will comply with the specific affirmative action steps contained in the Equal Employment Opportunity/Affirmative Action (EEO/AA) provisions of this Contract, including compliance with the Disadvantaged Business Enterprise provisions as required under these contract provisions. The attached DBE Forms must be completed and submitted as part of the Bid Proposal. 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.

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.epls.gov are not eligible for award of any contracts funded by the Massachusetts State Revolving Fund.

The undersigned hereby certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the word "person" shall mean any natural person, joint venture, partnership, corporation, limited liability company, or other business or legal entity. 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.

_____
Social Security Number
or Federal Identification
Number

_____
Signature of Individual or
Corporate Name

By: _____
Corporate Officer (if applicable)

Notice of acceptance should be mailed, faxed, or delivered to the following:

_____
(Name)

By: _____
(Title)

_____
(Business Address)

_____
(City and State)

Date:_____

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

APPENDIX B
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 calendars days from the date such Diesel Construction Equipment is brought on site;

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

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.

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 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 DEP'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)**

APPENDIX B (cont.)

DIESEL RETROFIT PROGRAM CONTRACTOR CERTIFICATION

Each Contractor and its Subcontractor(s) must sign and submit this form to DEP DMS project engineer, 5th Floor, MassDEP, One Winter Street, Boston, MA 02108 and the Municipality within 10 days after the Contractor is notified that it is awarded the Contract.

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.

APPENDIX B (cont.)

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: _____

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 corporation
[ ] Other (explain): _____
[ ] A partnership
[ ] A joint venture with: _____

° 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 ADDRESS:	(Authorized Original Signature) Date 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

CITY OF NEW BEDFORD
MASSACHUSETTS

NON-COLLUSION AND TAX COMPLIANCE FORM

CERTIFICATE OF NON-COLLUSION

The undersigned certified under penalties of perjury that this bid has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity or group of individuals.

_____
Signature of individual submitting bid

_____
Name of business/organization

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, §49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes reporting of employees and contractor, and withholding and remitting child support.

_____
Signature of person submitting bid

_____
Name of business

CITY OF NEW BEDFORD
MASSACHUSETTS

VOTE OF CORPORATION AUTHORIZING
EXECUTION OF CORPORATE AGREEMENTS

At a meeting of the Board of Directors of _____duly called and held on _____, 20_____ at which a quorum was present and acting throughout, the following vote was duly adopted.

VOTED: That _____, the_____ of the corporation, be and hereby is authorized to affix the Corporate Seal, sign and deliver in the name and behalf of the corporation contract documents with the City of New Bedford, the above mentioned documents to include but not be limited to Bids, Proposals, Deeds, Purchase and Sales Agreements, Agreements, Contracts, Leases, Licenses, Releases and Indemnifications; and also to seal and execute, as above, surety company bonds to secure bids and proposals and the performance of said contract and payment for labor and materials, all in such form and on such terms and conditions as he/she, by the execution thereof, shall deem proper. A true copy

ATTEST:

_____
Name (printed)

_____ (Affix Corporate Seal)
Signature

_____ _____
Title Date

OSHA CERTIFICATION REQUIREMENT

Effective **July 1, 2006**, all employees of a contractor to be employed on **public building and public works** worksites must have successfully completed at least a 10 hour course in construction safety and health approved by OSHA at the time the employee begins work.

I, _____, as _____, of the
(Print Name) (Position with the entity submitting bid)

joint venture/corporation/partnership or other legal entity submitting this bid for a public works project falling under §39M of Chapter 30 of the Massachusetts General Laws and Chapter 149 of the same, do hereby certify that any and all employees found on my worksite for this project have, or will have by the start of their work on the project, successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that was at least 10 hours in duration.

A copy of the OSHA completion cards for each employee must be submitted to the City of New Bedford before work on this project is to begin and must be supplemented as new employees are hired or contracted to work on this project.

_____, as
Signature

_____, of
Position

_____, on
Company/Corporation/Joint Venture/Partnership/Etc.

_____
Date

CONTRACTOR CERTIFICATION

As evidenced by the signature of the Contractor's Authorized signatory below, the Contractor certifies under the pains and penalties of perjury that the Contractor shall not knowingly use undocumented workers in connection with the performance of any City contract; that pursuant to federal and state requirements, the Contractor shall verify the immigration status of all workers assigned to such contracts without engaging in unlawful discrimination; and that the Contractor shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker(s). The Contractor understands and agrees that breach of any of these terms during the period of each contract may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.

_____
Contractor Authorized Signature

_____
Printed Name

_____
Date

Title: _____ Telephone: _____

Fax: _____ Email: _____

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

AGREEMENT

THIS AGREEMENT made as of the _____ day of _____ in the year 2018 by and between the City of New Bedford, Massachusetts acting through its Department of Public Infrastructure hereinafter called OWNER and _____ with legal address and principal place of business at _____ hereinafter called CONTRACTOR. OWNER and CONTRACTOR in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

1.1 CONTRACTOR shall perform the Work as specified or indicated in the Contract Documents. The Work is as described in SECTION 01010.

ARTICLE 2. ENGINEER.

2.1 The Project has been designed by CDM Smith Inc., 260 West Exchange Street, Suite 300, Providence, Rhode Island 02903 who will act as ENGINEER in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIME.

3.1 The Contract Time shall be 1,095 Calendar Days commencing twenty days following the Effective Date of this Agreement.

3.2 CONTRACTOR agrees that the Work shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract Time stated above. It is expressly understood and agreed, by and between CONTRACTOR and OWNER that the Contract Time is reasonable for the completion of the Work, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

ARTICLE 4. CONTRACT PRICE.

4.1 OWNER will pay CONTRACTOR for performance of the Work in accordance with the Contract Documents in current funds at the Contract Price agreed upon in the CONTRACTOR's Bid Form attached to this Agreement.

4.2 As per DEP's Policy Memorandum No.10 - the agreed upon DIRECT LABOR MARKUP (percentage) for Change Orders on this project shall be _____ percent.

ARTICLE 5. APPLICATIONS FOR PAYMENT

5.1 CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the Conditions of the Contract. Applications for Payment will be processed by ENGINEER as provided in the Conditions of the Contract.

ARTICLE 6. PROGRESS AND FINAL PAYMENTS

6.1 OWNER will make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, monthly during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values provided for in Paragraph 14.01 of the Conditions of the Contract.

6.2 OWNER will make progress and final payments as provided in Article 14 of the Conditions of the Contract and in accordance with the applicable Massachusetts General Law.

6.3 Prior to Substantial Completion, OWNER shall retain from progress payments five percent of the value of Work completed. OWNER shall also retain five percent of the value of stored materials and equipment.

ARTICLE 7. LIQUIDATED DAMAGES

7.1 OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the Contract Time specified in Article 3 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER $2,000 per day for each calendar day of delay until the Work is complete.

7.1.1 OWNER shall recover such liquidated damages by deducting the amount owed from the final payment or any retainage held by OWNER.

7.2 Provided, that CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is for reasons included in Paragraph 12.03 of the General Conditions.

7.3 Provided, further, that CONTRACTOR shall furnish OWNER the required notification of such delays in accordance with Paragraph 12.02 of the General Conditions.

ARTICLE 8. ASSURANCE

8.1 CONTRACTOR has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.

8.2 CONTRACTOR has made or caused to be made examinations, investigations and tests and studies of such reports and related data as CONTRACTOR deems necessary for the performance of the Work at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the

Contract Documents; and no additional examinations, investigations, tests, reports or similar data are or will be required for such purposes.

8.3 CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.

8.4 CONTRACTOR has given ENGINEER written notice of any conflict, error or discrepancy that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

8.5 CONTRACTOR agrees that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

ARTICLE 9. CONTRACT DOCUMENTS.

9.1 The Contract Documents which comprise the Contract between OWNER and CONTRACTOR are attached hereto and made a part hereof and consist of the following:

9.1.1 Invitation To Bid.

9.1.2 Instructions To Bidders.

9.1.3 Bid Form.

9.1.4 This Agreement.

9.1.5 Performance Bond, EJCDC Document C-610, 2013 edition, Payment Bond, EJCDC Document C-615, 2013 edition, and other required Bonds.

9.1.6 General Conditions, EJCDC Document No. C-700, 2007 edition.

9.1.7 Supplementary Conditions Parts I and II.

9.1.8 Specifications (as listed in Table of Contents). Appendices Volume 1 are part of the Contract Documents (Appendices Volume 2 are not part of the Contract Documents and are provided solely for Contractor's convenience).

9.1.9 Drawings dated May 2018.

9.1.10 Addenda numbers _____ to _____, inclusive.

9.1.11 Any modification, including Change Orders, duly delivered after execution of Agreement.

ARTICLE 10. MISCELLANEOUS

10.1 Terms used in this Agreement which are defined in Article 1 of the Conditions of the Contract shall have the meanings assigned in the Conditions of the Contract.

10.2 Neither OWNER nor CONTRACTOR shall, without the prior written consent of the other, assign or sublet in whole or in part any interest under any of the Contract Documents; and, specifically but without limitation, CONTRACTOR shall not assign any monies due or to become due without the prior written

consent of OWNER. In case CONTRACTOR assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to CONTRACTOR shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in this Contract.

10.3 OWNER and CONTRACTOR each binds himself, his partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

10.4 The Contract Documents constitute the entire agreement between OWNER and CONTRACTOR and may only be altered, amended or repealed by a Modification.

ARTICLE 11. MASSACHUSETTS EQUAL OPPORTUNITY REQUIREMENTS

11.1 The fair share goals for disadvantaged business enterprise (DBE) participation for this contract are a minimum of 4.20 percent Disadvantaged Minority Business Enterprise D/MBE participation and 4.50 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 these goals, 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 Owner. The CONTRACTOR shall require similar reports from its subcontractors.

11.2 Equal Employment Opportunity/Affirmative Action (EEO/AA) Requirements

During the performance of this Contract, the CONTRACTOR agrees as follows:

1. 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.

2. The CONTRACTOR will, in all solicitations or advertisements 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.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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 a 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].

11.3 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 of 1986, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.

ARTICLE 12. AMERICAN IRON AND STEEL (AIS) REQUIREMENTS

12.1 The Contractor acknowledges to and for the benefit of the City of New Bedford, Massachusetts ("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 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 Contactor 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.

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.

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IN WITNESS WHEREOF, the parties hereto have signed this Agreement in sextuple. Four copies each have been delivered to OWNER and one copy each to CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement shall become effective on _____, 2018.

OWNER City of New Bedford

BY_____
Jonathan F. Mitchell, Mayor

(CORPORATE SEAL)

Attest_____
DPI Commissioner

Address for giving notices
Department of Public Infrastructure
1105 Shawmut Avenue
New Bedford, MA 02746

APPROVED AS TO FORM & LEGALITY

_____
City Solicitor

CONTRACTOR _____

BY _____

(CORPORATE SEAL)

Attest_____

Address for giving notices
_____
_____
_____

PURCHASING DEPARTMENT

_____
Director of Purchasing

Pursuant to M.G.L. Chapter 44 Section 3lc, I certify that an appropriation has been made in the total amount of this contract.

CHIEF FINANCIAL OFFICER

_____
Chief Financial Officer

CITY AUDITOR

_____
City Auditor

Note: If CONTRACTOR is a corporation, an affidavit giving the principal the right to sign the Agreement must accompany the executed Agreement.

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

PERFORMANCE BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

_____ *(seal)*
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ *(seal)*
Surety's Name and Corporate Seal

By: _____
Signature *(attach power of attorney)*

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than

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the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

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EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND

Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
Title	Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond shall arise after the following:

    5.1 Claimants who do not have a direct contract with the Contractor,

        5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2 Pay or arrange for payment of any undisputed amounts.

    7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

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11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. **Definitions**

    16.1 **Claim:** A written statement by the Claimant including at a minimum:

        1. The name of the Claimant;
        2. The name of the person for whom the labor was done, or materials or equipment furnished;
        3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
        4. A brief description of the labor, materials, or equipment furnished;
        5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
        6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
        7. The total amount of previous payments received by the Claimant; and
        8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

    16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

    16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

    16.4 **Owner Default**: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

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This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
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These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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STANDARD GENERAL CONDITIONS OF THE
CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*—The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*—See Paragraph 11.01 for definition.

17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be

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performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*—The individual or entity named as such in the Agreement.

20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*—Sections of Division 1 of the Specifications.

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*—Polychlorinated biphenyls.

31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.

37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work

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and which establish the standards by which such portion of the Work will be judged.

38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.

47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.

48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its

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effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional

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insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a

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workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

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1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

   a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or

   b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

   1. A Field Order;

   2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

   3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

   1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or

   2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to

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use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

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C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

    b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

    a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

    b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

    c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

    a. reviewing and checking all such information and data;

    b. locating all Underground Facilities shown or indicated in the Contract Documents;

    c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and

    d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the

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extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

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

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action,

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if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by

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an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

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

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

   a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

   b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

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

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B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

6. include completed operations coverage:

   a. Such insurance shall remain in effect for two years after final payment.

   b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.

3. include expenses incurred in the repair or replacement of any insured property

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(including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

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B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

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ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be

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submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

    a. in the exercise of reasonable judgment Engineer determines that:

        1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

        2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and

        3) it has a proven record of performance and availability of responsive service.

    b. Contractor certifies that, if approved and incorporated into the Work:

        1) there will be no increase in cost to the Owner or increase in Contract Times; and

        2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

    a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

    b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

    c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.

    d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

        1) shall certify that the proposed substitute item will:

            a) perform adequately the functions and achieve the results called for by the general design,

            b) be similar in substance to that specified, and

            c) be suited to the same use as that specified;

        2) will state:

            a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,

            b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

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c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services; and

4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement,

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shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses,

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and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

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B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

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

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or

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entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

   a. Submit number of copies specified in the General Requirements.

   b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

   a. Submit number of Samples specified in the Specifications.

   b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

   a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

   b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

   c. determined and verified the suitability of all materials offered with respect to the

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indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other

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individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or

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certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

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B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

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ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a

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delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

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9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional

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or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;

2. approve the Claim; or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from

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subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

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

5. Supplemental costs including the following:

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

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

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

    d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

    e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

    f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

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

    h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.

    i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

    1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for

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general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

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

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

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

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances:*

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

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C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

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f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

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13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

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

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop

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the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to

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Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments:*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to

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protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

   a. to supervise, direct, or control the Work, or

   b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

   c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

   d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

   e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the

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representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

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

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. there are other items entitling Owner to a set-off against the amount recommended; or

d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to

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make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

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14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;

   b. consent of the surety, if any, to final payment;

   c. a list of all Claims against Owner that Contractor believes are unsettled; and

   d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and

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accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

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D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

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

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

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B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

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

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION 00800
SUPPLEMENTARY CONDITIONS

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SECTION 00800
SUPPLEMENTARY CONDITIONS

PART I - AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC Document No. C-700, 2007 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

SC-1.01A.42.

Delete paragraph 1.01A.42. of the General Conditions in its entirety and replace with the following:

Specifications - Sections included under Division 1 through Division 3 of the Project Manual.

SC-1.01A.44.

Insert the following at the beginning of the definition before the words "The time at….."

The Work required by the Contract has been completed except for work having a Contract Price of less than one per cent of the then adjusted total contract price, or

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01B.

Delete paragraph 2.01B. of the General Conditions in its entirety and replace with the following:

B. Before any Work at the site is started, Contractor shall deliver to Owner, with copies to Engineer and each additional insured identified in Article 5 of the Supplementary Conditions, certificates of insurance (and other evidence requested by Owner) which Contractor is required to purchase and maintain in accordance with the requirements of Article 5.

SC-2.02A.

Delete "ten" in the first line and replace with "six".

SC-2.03A.

Delete paragraph 2.03A of the General Conditions in its entirety and replace with the following:

A. The Contract Time will commence to run on the twentieth day following the Effective Date of the Agreement.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01C.

Add the following new paragraph immediately after Paragraph 3.01C. of the General Conditions which is to read as follows:

D. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

SC-4.01A.

Add the following new paragraph immediately after paragraph 4.01A. of the General Conditions which is to read as follows:

1. If all lands and rights-of-way are not obtained as herein contemplated before construction begins, Contractor shall begin the Work upon such land and rights-of-way as Owner has previously acquired.

SC-4.03C.3.

Add the following new paragraph immediately after paragraph 4.03C.3. of the General Conditions which is to read as follows:

D. Adjustments resulting from subsurface or latent physical conditions will be in accordance with Massachusetts General Law Chapter 30, Section 39N included in PART II of the Supplementary Conditions.

SC-4.05A.

Add the following new paragraph immediately after paragraph 4.05A of the General Conditions which is to read as follows:

B. Engineer may check the lines, elevations, reference marks, batter boards, etc., set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate construction of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.

ARTICLE 5 - BONDS AND INSURANCE

SC-5.01A.

Delete the third sentence in paragraph 5.01A of the General Conditions and replace with the following.

Contractor shall also furnish Efficiency Guarantee Bonds in accordance with Article entitled MANUFACTURER'S EXPERIENCE in the Instructions to Bidders and executed on forms approved by the Owner.

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SC-5.03E

Add 2 new paragraphs immediately after paragraph 5.03E of the General Conditions which are to read as follows:

F. Contractor shall provide evidence of its insurance coverage on the ACORD certificate of insurance form and shall include the following statement in its entirety in the section of the form entitled "Description of Operations/Locations/Vehicles/Special Items".

The City of New Bedford, Massachusetts and CDM Smith, and their officers, directors, partners, employees and other consultants and subcontractors are named as additional insureds with respect to the insured's Commercial General Liability and Automobile Liability Insurance Policies. All insurers waive all rights of subrogation against the City of New Bedford, Massachusetts and CDM Smith, their officers, directors, partners, employees and other consultants and subcontractors. All insurance is primary for all claims covered thereby. Commercial General Liability Insurance includes contractual liability coverage.

SC-5.04A.

The limits of liability for the insurance required by paragraph 5.04A. of the General Conditions shall provide coverage for not less than the following amounts or greater where required by law:

5.04.A.1 and 5.04.A.2 Workers' Compensation

(1) Worker's Compensation	in accordance with M.G.L. c.149, Sect. 34A. Minimum $100,000	
(2) Employer's Liability	$500,000	Each Occurrence
	$500,000	Disease per employee

5.04A.3., 5.04A.4., and 5.04A.5. Commercial General Liability including Premise/Operations; Explosion, Collapse and Underground Property Damage; Products/Completed Operations, Broad Form Contractual, Independent Contractors; Broad Form Property Damage; and Personal Injury liabilities:

(1) Bodily Injury:	$1,000,000	Each Occurrence
	$1,000,000	Annual Aggregate
(2) Property Damage:	$1,000,000	Each Occurrence
	$1,000,000	Annual Aggregate
(3) Personal Injury:	$1,000,000	Annual Aggregate

5.04A.6. Comprehensive Automobile Liability including all owned (private and others), hired and non-owned vehicles:

(1) Bodily Injury	$1,000,000	Each Person
	$1,000,000	Each Accident

(2)	Property Damage	$1,000,000	Each Occurrence

SC 5.04B.1.

Delete paragraph 5.04B.1. of the General Conditions in its entirety and replace with the following:

1. The insurance required by paragraph 5.04A.3 through 5.04A.6 inclusive will provide primary coverage for all claims covered thereby. With respect to insurance required by Paragraph 5.04.A.6 include as additional insured Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds

SC-5.04B.6.

Add two new paragraphs immediately after paragraph 5.04.B.6.b. of the General Conditions which is to read as follows:

7. Contractor may purchase and maintain excess liability insurance in the umbrella form in order to satisfy the minimum amounts required for the insurance to be purchased and maintained in accordance with paragraph 5.04. Evidence of such excess liability insurance shall be delivered to Owner in accordance with paragraph 2.01B. in the form of a certificate indicating the policy numbers and minimum coverage amounts of all underlying insurance. The umbrella liability insurance shall have a combined single limit of not less than $5,000,000.

8. All policies required by this paragraph 5.04 shall contain provisions to the effect that the insurer(s) waive all right of subrogation against the Owner, Engineer and their officers, directors, partners, employees and other consultants and subcontractors of each and any of them.

SC-5.05A.

Delete paragraph 5.05A. of the General Conditions in its entirety and replace with the following:

A. Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insured. This insurance shall provide coverage for not less than the following amounts:

5.05A.1.	Bodily Injury	$1,000,000	Each Occurrence
5.05A.2.	Property Damage	$1,000,000	Each Occurrence
		$1,000,000	Annual Aggregate

SC-5.05A

Add the following new paragraph immediately after paragraph 5.05.A.2 of the General Conditions which is to read as follows:

B. All policies required by this paragraph 5.05 shall contain provisions to the effect that the insurer(s) waive all rights of subrogation against the Owner, Engineer and their officers, directors, partners, employees and other consultants and subcontractors of each and any of them.

SC-5.06A.

Delete paragraphs 5.06A. and A1 thru A7 of the General Conditions in their entirety.

SC-5.06B.

Delete paragraph 5.06B. of the General Conditions in its entirety.

SC-5.06C.

Delete Paragraph 5.06C. of the General Conditions in its entirety.

SC-5.06D.

Delete paragraph 5.06D. of the General Conditions in its entirety.

SC-5.06E.

Delete paragraph 5.06E. of the General Conditions in its entirety.

SC-5.07A.

Delete paragraph 5.07A. of the General Conditions in its entirety and replace with the following.

A. All insurance policies provided by the Contractor shall contain provisions to the effect that the insurer waives all rights of subrogation against any of the insured, loss payee, (and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them) Owner and the Engineer.

SC-5.08A.

Delete paragraph 5.08A. of the General Conditions in its entirety.

SC-5.08B.

Delete paragraph 5.08B. of the General Conditions in its entirety.

SC-5.09A.

Delete paragraph 5.09A. of the General Conditions in its entirety and replace with the following:

A. If Owner has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by Contractor in accordance with this Article 5 on the basis of its not complying with the Contract Documents, Owner will notify Contractor in writing thereof within ten days of the date of delivery of such certificates to Owner in accordance with paragraph 2.01. Contractor will

provide such additional information in respect of insurance provided by Contractor as Owner may reasonably request.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

SC-6.02

Add the following 2 new paragraphs immediately after paragraph 6.02B. of the General Conditions which are to read as follows:

C. Regular working hours are defined as 8 hours per day, Monday through Friday, excluding holidays, between the hours of 7:00 AM and 5:00 PM. Requests to work other than regular working hours shall be submitted to Engineer not less than 72 hours prior to any proposed weekend work or scheduled extended work weeks. Occasional unscheduled overtime on weekdays may be permitted provided two hours notice is given to Engineer.

1. Contractor may be required to work during non-regular working hours (5:00 PM to 7:00 AM). Contractor shall be required to notify the Engineer in writing 72 hours in advance. If the Contractor wishes to work during non-regular work hours, Contractor will only be allowed to work 8 hours during that time frame, or proportion his/her time during regular work hours such that the total time worked on a work day does not exceed 8 hours. Should the Contractor wish to exceed 8 hours per day, Contractor will be required to reimburse the Owner for additional Engineering as specified in Article SC-6.02.D.

2. When working during non-regular working hours, Contractor will be required to expedite the work as quickly as possible.

Contractor will be allowed to transport material during non-regular working hours in accordance with all local, state and federal requirements. Contractor shall notify the Engineer 72 hours in advance of such request to transport material during non-regular working hours. Contractor shall not exceed 8-hours per day of work. Compensate Owner for additional engineering above and beyond 8-hours as specified in SC-6.02.D below.

D. Contractor shall reimburse the Owner for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated in Article SC-6.02C. At Owner's option, overtime costs may either be deducted from the Contractor's monthly payment request or deducted from the Contractor's retention prior to release of final payment. Overtime costs for the Owner's personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the Engineer or Owner's independent testing laboratory shall be calculated in accordance with the terms of their respective contracts with the Owner. Overtime costs for personnel employed by the Engineer shall be $125.00 per hour per site worked by the Contractor.

Add the following new paragraphs immediately after paragraph 6.02D. of the General Conditions which are to read as follows:

E. This Agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, Public Law 87-581, 87th Congress. No Contractor or Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times that person's basic rate of pay for all hours worked in excess of forty hours in such work week.

F. Contractor shall employ only competent persons to do the work and whenever Owner shall notify Contractor, in writing, that any person on the Work appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the consent of Owner.

G. Contractor and Subcontractors shall, insofar as practicable, give preference in the hiring of workers for the Project to qualified local residents with first preference being given to citizens of the United States who have served in the armed forces of the United States and have been honorably discharged therefrom or released from active duty therein.

H. Contractor and all Subcontractors shall pay to all laborers and mechanics employed for the construction covered by this Contract the minimum rates of pay as determined by the Secretary of Labor in accordance with the Act of March 3, 1931, as amended, known as the Davis-Bacon Act (40 U.S.C. 276a through 276a-7). Furthermore, Contractor and Subcontractors shall adhere to the stipulations and provisions published by the Secretary of Health, Education, and Welfare in "Labor Standards (Federal Water Pollution Control Act)." The Wage Rate Schedule as prepared by the Secretary of Labor and the "Labor Standards" are part of this Contract and are included in PART II of these Supplementary Conditions.

I. Except as may be otherwise required by law, all claims and disputes pertaining to the classification of labor employed on the project under this Contract shall be decided by the governing body having jurisdiction.

J. Contractor and all Subcontractors shall comply with the Regulations of the Secretary of Labor made pursuant to the Anti-Kickback Act of June 30, 1940 (40 U.S.C. 276c) and all amendments or modifications thereto. Contractor and all Subcontractors shall furnish Owner with weekly Statements of Compliance. In case of Subcontracts, Contractor shall cause appropriate provision to be inserted in all subcontracts for the Work which Contractor may let to ensure compliance with said Anti-Kickback Act by all Subcontractors subject thereto, and Contractor shall be responsible for the submission of all Statements of Compliance required of Subcontractors by said Anti-Kickback Act except as the Secretary of Labor may specifically provide for reasonable limitations, variations, and exemptions from the requirements thereof. These Regulations are part of this Contract and are included in PART II of these Supplementary Conditions.

K. Contractor and all subcontractors shall comply with the Massachusetts Prevailing Wage law as contained in M.G.L. chapter 149 sections 26-27 which are included in Part II of these Supplementary Conditions.

SC-6.06A.

Delete Paragraphs 6.06A. and 6.06B. of the General Conditions in their entirety and replace with the following:

A. Contractor shall not employ any Subcontractor, Supplier or other person or organization, (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner may have reasonable objection. Acceptance of any Subcontractor, other person or organization by Owner shall not constitute a waiver of any right of Owner to reject defective Work. Contractor shall not be required to employ any Subcontractor, other person or organization against whom Contractor has reasonable objection.

B. Not Used.

SC-6.06C.

Add the following new sentence at the end of paragraph 6.06C. of the General Conditions to read as follows:

Contractor shall make payments to Subcontractors in accordance with Massachusetts General Law Chapter 30, Section 39F which is included in PART II of these Supplementary Conditions.

SC-6.06E.

Add the following new sentence at the end of paragraph 6.06E of the General Conditions to read as follows:

Owner or Engineer may furnish to any such Subcontractor, Supplier or other person or organization, to the extent practicable, information about amounts paid on their behalf to Contractor in accordance with Contractor's Applications for Payment.

SC-6.07B

Delete paragraph 6.07B of the General Conditions in its entirety.

SC-6.08A

Delete the first and second sentences of Paragraph 6.08A of the General Conditions in their entirety and replace with the following:

Contractor shall comply with the guidelines established in the Division of Municipal Services (DMS) Construction Grants Policy Memorandum No. CG-2 (Permits) included in Part II of the Supplementary Conditions.

SC-6.10A

Add the following new sentences at the end of paragraph 6.10A of the General Conditions to read as follows:

The materials and supplies to be used in the Work of this Contract are exempt from the Sales and Use Tax of the Commonwealth of Massachusetts. Contractor shall obtain the proper certificates, maintain the necessary records and otherwise comply with the requirements of Chapter 14 of the Acts of 1966 and any amendments thereto.

SC-6.16A.

Delete the last sentence in paragraph 6.16A. of the General Conditions in its entirety and replace with the following:

If Engineer determines that the incident giving rise to the emergency action was not the responsibility of the Contractor and that a change in the Contract Document is required because of the action taken by the Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

SC-6.17D.1.

Add the following new sentence at the end of paragraph 6.17.D.1 of the General Conditions to read as follows:

Approval of Shop Drawings for equipment requiring Efficiency Guarantee Bonds will be withheld until the receipt of such Bonds.

Reimburse Owner (Engineer) for time at the engineer's standard rate of $150/hour after two submittals as per Section 01300.

SC-6.19A.

Add the following new paragraph immediately after paragraph 6.19A. of the General Conditions which is to read as follow:

B. 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 or such longer period that may be specified in the Contract Documents 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.

1. 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.

2. The Contractor's guarantee under this clause, 6.19B, is in addition to the Contractor's express or implied warranties under this Agreement and State law and in no way diminish any other rights that the Owner may have against the Contractor.

SC-6.19C. and D.

Renumber 6.19B. and 6.19C. of the General Conditions to read 6.19C. and 6.19D.

SC-6.19D.

Add the following new paragraph immediately after paragraph 6.19D. of the General Conditions which is to read as follows:

E. Manufacturer's Guaranty/Warranty

1. The Contractor shall obtain the following guaranty/warranty from the manufacturer of all major pieces of equipment furnished and installed on this Project. Such guaranty/warranty shall be for the benefit of Owner and be furnished in writing by the manufacturer. The Contractor's and manufacturer's obligations under this provision are in addition to other express or implied warranties under the Contract Documents and under the law and in no way diminish any other right that the Owner may have against the Contractor or manufacturer for faulty material, equipment or work. The warranty period shall not be interpreted as a limitation on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

2. The manufacturer warrants and guarantees for a period of one year minimum from the date of Substantial Completion, or such longer period that may be specified in the Contract Documents, that all materials and equipment furnished and installed shall be free from flaws, defects in material and workmanship and shall be in conformance with the Contract Documents.

SC-6.20A.

Delete paragraph 6.20A of the General Conditions in its entirety and replace with the following:

A. To the fullest extent permitted by Laws and Regulations, Contractor shall defend, indemnify and hold harmless Owner, Engineer and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost or loss or damage:

1. is attributable to bodily injury, sickness, disease or death or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such indemnified party unless caused by the sole negligence of a party indemnified hereunder. If through the acts of neglect on the part of Contractor, any other contractor or any Subcontractor shall suffer loss or damage on the Work, Contractor shall settle with such other contractor or Subcontractor by agreement or arbitration if such other contractor or Subcontractor will so settle. If such other contractor or Subcontractor shall assert any claim against Owner and/or Engineer, or the officers, directors, members, partners, employees, agents, consultants and subcontractors of each on account of any damage alleged to have been sustained, Owner shall notify Contractor, who shall defend, indemnify and save harmless Owner, Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each against any such claims.

SC-6.20C.

Delete paragraphs 6.20C, C.1 and C.2 of the General Conditions in their entirety.

SC-6.21A.

Immediately after the last sentence, insert the following:

All professional engineering services required by the Contractor or his/her sub-contractors as part of this Contract shall be performed by a Registered Professional Engineer in the Commonwealth of Massachusetts. All professional surveying services required by the Contractor or his/her sub-contractors as part of this Contract shall be performed by a Registered Professional Land Surveyor in the Commonwealth of Massachusetts.

SC-6.21E

Delete paragraph 6.21E of the General Conditions in its entirety and replace with the following:

E. Contractor shall not be responsible for the adequacy of the performance criteria or design criteria contained in the Contract Documents.

SC-6.21E.

Add the following new paragraph immediately after paragraph 6.21E. of the General Conditions which is to read as follows:

SC-6.22 Definitions; Contract Provisions; Management and Financial Statements; Enforcement

A. Contractor shall comply with all applicable provisions of Chapter 30, Section 39R of the Massachusetts General Laws regarding Contractor's records which is included in Part II of the Supplementary Conditions.

ARTICLE 8. OWNER'S RESPONSIBILITIES

SC-8.06

Delete paragraph 8.06 of the General Conditions in its entirety.

SC-8.11A.

Add the following new paragraph immediately after 8.11A of the General Conditions which is to read as follows:

B. Upon request of Contractor prior to the execution of any Change Order involving a significant percent increase in the Contract Price, Owner shall furnish to Contractor responsible evidence that adequate financial arrangements have been made by Owner to enable Owner to fulfill the increased financial obligations to be undertaken by Owner as a result of such Change Order.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.03A.

Add the following new paragraph immediately after paragraph 9.03A of the General Conditions which is to read as follows:

B. Engineer will furnish a Resident Project Representative and assistants to assist Engineer in observing the performance of the Work. The duties and responsibilities of the Resident Project Representative will be as enumerated in a document entitled "Duties, Responsibilities and Limitations of the Authority of Resident Project Representative" and will be made available to Contractor at the start of the Work.

ARTICLE 10 – CHANGES IN WORK; CLAIMS

SC-10.05.B

Delete “30 days” in the fourth line and insert “10 days”. In the tenth line, replace “60 days” with “20 days”.

SC-10.05.E

In the sixth line replace “30 days” with “10 days”.

ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-11.01A.1.

Delete the second sentence in paragraph 11.01A.1. of the General Conditions in its entirety and replace with the following:

Such employees shall include foremen at the site.

SC-11.01A.1.

Add the following new paragraph immediately after paragraph 11.01A.1. of the General Conditions which is to read as follows:

a. Following award and prior to execution of a construction contract Contractor shall establish, in the Agreement, the Direct Labor Cost percentage. This percentage, where approved by Owner, will be used in the determination of the Direct Labor Cost listed in the Change Order Form included in Part II of the Supplementary Conditions. The Direct Labor Costs are defined to include social security contributions, unemployment, excise and payroll taxes, workers' and workmen's compensation, health and retirement benefits, sick leave, vacation and holiday pay, and cost of premiums for all additional insurance required because of changes in the Work.

SC-11.01B.1

Eighth line, insert “superintendent(s)” after the word clerks.

SC-11.02.

Delete paragraph 11.02. of the General Conditions in its entirety.

SC-11.03D.

Delete paragraph 11.03D. of the General Conditions in its entirety and replace with the following:

D. The unit price of an item of Unit Price Work shall be subject to re-evaluation and adjustment under the following conditions:

1. if the total cost of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 15 percent from the estimated quantity of such item indicated in the Agreement; and

2. if there is no corresponding adjustment with respect to any other item of Work; and

3. if Contractor believes that Contractor has incurred additional expense as a result thereof; or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Unit Price for that quantity by which is less than 85 percent of or the actual quantity exceeds 115% of the estimated quantity in accordance with Article 10.05 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.01 Change of Contract Price

Add the following new paragraph immediately after Paragraph 12.01A of the General Conditions:

1. Change Orders shall comply with the requirements of DEP-DMS-PM-10, which is included in Part II of these Supplementary Conditions. The following shall apply:

a. DEP-DMS-PM-10 indicates that the Contractor’s fee for overhead and profit shall not exceed 20% for the work done by the General Contractor and shall not exceed 7-1/2% for work done by a subcontractor. For this Contract, the Contractor’s fee for overhead and profit, as stated in paragraph 12.01.C.2.a of the General Conditions, shall be 15 percent for work done by the General Contractor, and, as stated in paragraph 12.01.C.2.b of the General Conditions, shall be 5 percent for work done by a subcontractor.

SC-12.01C.2.b.

In the second line of paragraph 12.01C.2.b, before the semicolon add the following words "based on subcontractor's Cost of the Work before subcontractor’s fee is added";

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-13.05A.

Add the following new paragraph immediately after paragraph 13.05A. of the General Conditions to read as follows:

B. If Owner stops Work under Paragraph 13.05A. Contractor shall not be entitled to any extension of Contract Time or increase in Contract Price.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

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SC-14.02A.1.

In the first sentence of paragraph 14.02.A.1 of the General Conditions delete the number "20" and replace with the number "ten".

SC-14.02A.3.

Add the following new paragraph immediately after paragraph 14.02A.3 of the General Conditions which is to read as follows:

4. Contractor shall furnish evidence that payment received on the basis of materials and equipment not incorporated and suitably stored, has in fact been paid to the respective supplier(s) within sixty days of payment by Owner. Failure to provide such evidence of payment may result in the withdrawal of previous approval(s) and removal of the cost of related materials and equipment from the next submitted Application for Payment.

SC-14.02B.1

Delete paragraph 14.02B.1. of the General Condition in its entirety and replace with the following:

1. Progress Payments will be made in accordance with Massachusetts General Law Chapter 30, Section 39G, which is included in PART II of these Supplementary Conditions.

SC-14.03A.

Add the following new paragraphs immediately after paragraph 14.03A of the General Conditions which are to read as follows:

B. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.

C. Contractor shall defend, indemnify and save Owner and Engineer harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor either pay unpaid bills, of which Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon Owner to either Contractor or Contractor's Surety. In paying any unpaid bills of the Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.

SC-14.07B.1.

Delete paragraph 14.07B.1. of the General Conditions in its entirety and replace with the following:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will indicate in writing Engineer's recommendation of payment and present the Application to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, Engineer will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, Owner shall in accordance with the applicable Massachusetts General Law, pay Contractor the amount recommended by Engineer.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

SC-15.01A.

Delete paragraph 15.01A. of the General Conditions in its entirety and replace with the following:

A. Owner may order, at any time and without cause, suspension of the Work in accordance with Massachusetts General Law Chapter 30, Section 39O, which is included in Part II of the Supplementary Conditions.

SC-15.02A.4.

Add the following new paragraph immediately after paragraph 15.02.A.4 of the General Conditions which is to read as follows:

5. If Contractor abandons the Work, or sublets this Contract or any part thereof, without the previous written consent of Owner, or if the Contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified;

ARTICLE 16 - DISPUTE RESOLUTION

SC-16.01A

Delete the paragraph 16.01A of the General Conditions in its entirety and replace with the following:

Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 within 60 days of when such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of this Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract.

SC-16.01C.3.

Add a new paragraph immediately after paragraph 16.01C.3. of the General Conditions which is to read as follows:

D. Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings, unless otherwise agreed by Contractor and Owner in writing.

ARTICLE 17 - MISCELLANEOUS

SC-17.06

Add the following new paragraphs immediately after paragraph 17.06 of the General Conditions which are to read as follows:

17.07 Addresses

A. Both the address given in the Bid Form upon which this Agreement is founded, and Contractor's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered. The delivering at the above named place, or depositing in a postpaid wrapper directed to the first-named place, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon Contractor; and the date of said service shall be the date of such delivery or mailing. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor, and delivered to Owner and Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.

17.08 Wage Rates

A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to the employment of labor, and to the schedule of minimum wage rates established in compliance with laws shall be a part of these Contract Documents. Copies of the wage schedules are included in PART II of these Supplementary Conditions. If, after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administrating the laws mentioned above. Such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. Contractor shall notify Owner of Contractor's intention to employ persons in trades or occupations not classified in sufficient time for Owner to obtain approved rates for such trades or occupations.

B. The schedules of wages referred to above are minimum rates only, and Owner will not consider any claims for additional compensation made by Contractor because of payment by Contractor of any wage rate in excess of the applicable rate contained in these Contract Documents. All disputes between Contractor and employees of Contractor in regard to the payment of wages in excess of these specified in the schedules shall be resolved by Contractor.

C. The said schedules of wages shall continue to be the minimum rates to be paid during the life of this Agreement and a legible copy of said schedules shall be kept posted in a conspicuous place at the site of the work.

D. Both Federal and State schedules of minimum wage rates are included in PART II of these Supplementary Conditions. Where rates differ, the higher rates shall apply as a minimum for that trade.

PART II – FEDERAL, STATE AND LOCAL GOVERNMENT PROVISIONS

Federal, State and Local Government Provisions included herein, have been selected from those to which specific references have been made elsewhere in the Contract Documents. Each and every other provision of law or clause required by law to be inserted in this Contract shall be deemed to be also inserted herein in accordance with paragraph 3.01D of the Supplementary Conditions.

1.0. FEDERAL GOVERNMENT PROVISIONS

1.1. Davis Bacon Act Requirements (Appendix G)

1.2 Federal Wage Rates

1.3. American Iron and Steel Requirements of P. L. 113-76, the Consolidated Appropriations Act of 2014 (Appendix I)

2.0. COMMONWEALTH OF MASSACHUSETTS PROVISIONS

2.1. Owner and Contractor agree that the following Commonwealth of Massachusetts Provisions apply to the work to be performed under this Contract and that these provisions supersede any conflicting provisions of this Contract.

2.2. 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.

2.3. Special Provisions for Disadvantaged Business Enterprises – Massachusetts Department of Environmental Protection, Division of Municipal Services. (Appendix E)

2.4 Massachusetts General Laws

2.4.1. Chapter 30, Section 39F (7 Pages)

2.4.2. Chapter 30, Section 39G (5 Pages)

2.4.3. Chapter 30, Section 39I (2 Pages)

2.4.4. Chapter 30, Section 39J (2 Pages)

2.4.5. Chapter 30, Section 39L (2 Pages)

2.4.6. Chapter 30, Section 39M (9 Pages)

2.4.7. Chapter 30, Section 39N (2 Pages)

2.4.8. Chapter 30, Section 39O (2 Pages)

2.4.9. Chapter 30, Section 39P (2 Pages)

2.4.10. Chapter 30, Section 39Q (4 Pages)

2.4.11. Chapter 30, Section 39R (6 Pages)

2.4.12. Chapter 30, Section 39S (2 Pages)

2.4.13. Chapter 82, Sections 40 and 40A through 40E (11 Pages)

2.4.14. Chapter 82A, Section 1 (2 Pages)

2.4.15. Chapter 149, Section 34 (2 Pages)

2.4.16. Chapter 149, Section 44J (2 Pages)

2.4.17. Price Adjustments for certain materials in Construction Projects. MGL Chapter 30 Section 38A. (Appendix H – 5 Pages).

2.5. Diesel Retrofit Requirements

2.6. Massachusetts Construction Grants Policy Memoranda (Currently 16 Memoranda).

2.7. Department of Environmental Protection Policy for Review of Sewer Line/Water Supply Protection.

2.8. State Wage Rates

SECTION 00800
SUPPLEMENTARY CONDITIONS
PART II – FEDERAL, STATE AND LOCAL GOVERNMENT PROVISIONS
1.0 FEDERAL GOVERNMENT PROVISIONS

APPENDIX G
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 my 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 by 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 subecipient 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 subecipient 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 by 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.

General Decision Number: MA180001 04/06/2018 MA1

Superseded General Decision Number: MA20170001

State: Massachusetts

Construction Type: Building

Counties: Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk and Suffolk Counties in Massachusetts.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes and apartments up to and including 4 stories)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 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 $10.35 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 2018. 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	01/05/2018
1	01/12/2018
2	02/09/2018
3	02/16/2018
4	02/23/2018
5	03/09/2018
6	03/23/2018
7	03/30/2018
8	04/06/2018

ASBE0006-001 09/01/2017

	Rates	Fringes
Insulator/asbestos worker Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems		
(ZONE A)	$ 46.09	27.50
(ZONE B)	$ 41.48	27.50

ZONES:

ZONE A
BARNSTABLE COUNTY (Brewster, Chatham, Dennis, Eastham, Harwich, Orleans, Provincetown, Truro, Wellfleet, Yarmouth)

BRISTOL COUNTY (Easton), MIDDLESEX COUNTY, and NORFOLK COUNTY (Avon, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxborough, Holbrook, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Randolph, Sharon, Stoughton, Walpole, Wellesley, Westwood, Weymouth)

ZONE B
BARNSTABLE COUNTY (Barnstable, Bourne, Falmouth, Mashpee, Sandwich), BRISTOL COUNTY (All cities except Easton),and NORFOLK COUNTY (Bellingham, Franklin, Plainville)

ASBE0006-002 06/01/2017

BARNSTABLE (Brewster, Chatham, Dennis, Eastham, Harwich, Orleans, Provincetown, Truro, Wellfleet and Yarmouth); BRISTOL (Easton); ESSEX; MIDDLESEX; NORFOLK (Avon, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxboro, Holbrook, Hull, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Randolph, Sharon Stoughton, Walpole, Wellesley, Westwood, and Weymouth) AND SUFFOLK COUNTIES

	Rates	Fringes
HAZARDOUS MATERIAL HANDLER (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems whether they contain asbestos or not)	$ 34.45	19.40

ASBE0006-010 09/01/2017

BARNSTABLE (Barnstable, Bourne, Falmouth, Mashpee and Sandwich); BRISTOL (Acushnet, Attleboro city, Berkeley, Dartmouth, Dighton, Fairhaven, Fall river City, Freetown, Marion, Mansfield, New Bedford City, North Attleboro, Norton, Raynham, Rehoboth, Seekonk, Somerset, Swansea, Taunton City and Westport); DUKES; NANTUCKET; NORFOLK (Bellingham, Franklin, Plainville, and Wrentham); PLYMOUTH (Lakeville, Mattapoisett, Middleboro, Rochester and Wareham)

	Rates	Fringes
Insulator/asbestos worker (Includes the application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.)	$ 41.48	27.50

BOIL0029-001 01/01/2017

	Rates	Fringes
BOILERMAKER	$ 42.42	24.92

BRMA0001-008 03/01/2018

FOXBORO CHAPTER

BRISTOL (Attleboro, Berkley, Dighton, Mansfield, North Attleboro, Norton, Raynham, Rehoboth, Seekonk, Taunton) AND NORFOLK (Bellingham, Canton, Dedham, Foxboro, Franklin, Norfolk, Norwood, Plainville, Sharon, Walpole, Westrwood, Wrentham) COUNTIES

	Rates	Fringes
Bricklayer, Cement Mason, Plasterer	$ 49.96	32.19

BRMA0001-009 03/01/2018

LOWELL CHAPTER
MIDDLESEX (Acton, Asby, Ayer, Bedford, Billerica, Boxboro, Carlisle, Chemsford, Dracut, Dunstble, Ft. Denvens, Groton, Littleton, Lowell, North Acton, Pepperell, Shirley, South Acton, Tewksbury, Townsend, Tyngsboro, West Acton, Westford, Wilmington)

	Rates	Fringes
Bricklayer and plasterer	$ 49.96	32.19

BRMA0001-010 03/01/2018

LOWELL CHAPTER
MIDDLESEX (Ashland, Framingham, Holliston, Hopkinton, Hudson, Maynard, Natick, Sherbvorn, Stow); and NORFOLK (Medfield, Medway,Millis)

	Rates	Fringes
BRICKLAYER	$ 49.96	32.19

BRMA0003-001 02/01/2018

	Rates	Fringes
Marble & Tile Finisher	$ 39.82	30.89
Marble, Tile & Terrazzo Workers	$ 52.10	32.92
TERRAZZO FINISHER	$ 51.00	32.76

BRMA0003-003 02/01/2018

BOSTON CHAPTER
MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Somerville); NORFOLK (Brookline, Milton); and SUFFOLK

	Rates	Fringes
BRICKLAYER	$ 52.06	32.97

BRMA0003-006 02/01/2018

LYNN CHAPTER
ESSEX (Amesbury, Andover, Beverly, Boxford, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipsewich, 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 (Reading, North Reading, Wakefield)

	Rates	Fringes
Bricklayer, cement mason and plasterer	$ 52.06	32.97

BRMA0003-007 02/01/2018

WALTHAM CHAPTER
MIDDLESEX (Belmont, Burlington, Concord, Lexington, Lincoln,
Stoneham, Sudbury, Waltham, Watertown, Wayland, Weston,
Winchester, Woburn)

	Rates	Fringes
Bricklayer and plasterer	$ 52.06	32.97

BRMA0003-008 02/01/2018

NEWTON CHAPTER
MIDDLESEX (Newton) and NORFOLK (Dover, Needham, Wellesley)

	Rates	Fringes
Bricklayer, cement mason and plasterer	$ 52.06	32.97

BRMA0003-009 02/01/2018

NEW BEDFORD
BARNSTABLE; BRISTOL (Acushnet, Darmouth, Farhaven, Fall River,
Freetown, New Bedford, Somerset, Swansea, Westport); DUKES; and
NANTUCKET COUNTIES

	Rates	Fringes
Bricklayer, cement mason and plasterer	$ 52.06	32.97

BRMA0003-010 02/01/2018

QUINCY CHAPTER
NORFOLK COUNTY (Avon, Braintree, Cohasset, Holbrook, Quincy,
Randolph, Soughton, Weymouth)

	Rates	Fringes
Bricklayer, cement mason and plasterer	$ 52.06	32.97

CARP0026-001 09/01/2017

BRISTOL (Attleborough, North Attleborough); ESSEX; MIDDLESEX
(Except Belmont, Cambridge, Everett, Malden, Medford,
Somerville); AND NORFOLK (Bellingham, Canton, Foxboro,
Franklin, Medfield, Medway, Millis, Needham, Norfolk, Norwood,
Plainville, Sharon, Walpole, Wellesley, Westwood, Wrentham)

	Rates	Fringes
CARPENTER	$ 39.28	27.90

CARP0033-001 09/01/2017

MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford, Somerville); NORFOLK (Brookline, Dedham, Milton); and SUFFOLK

	Rates	Fringes
CARPENTER	$ 46.43	28.35

CARP0056-011 08/01/2015

SUFFOLK (All of County); and those areas of BARNSTABLE, BRISTOL, ESSEX, MIDDLESEX & NORFOLK COUNTIES situated inside Boston Beltway (I-495) and North of Cape Cod Canal. ALL of DUKES AND NANTUCKET COUNTIES

	Rates	Fringes
PILEDRIVERMAN	$ 42.04	29.73

CARP0056-012 08/01/2015

The areas of BARNSTABLE, BRISTOL, and NORFOLK COUNTIES situated OUTSIDE Boston Beltway (I-495) and South of Cape Cod Canal

	Rates	Fringes
PILEDRIVERMAN	$ 42.04	29.73

CARP0056-013 08/01/2015

Those areas of ESSEX and MIDDLESEX COUNTIES situated OUTSIDE Boston Beltway (I-495)

	Rates	Fringes
PILEDRIVERMAN	$ 42.04	29.73

CARP0424-003 09/01/2017

NORFOLK COUNTY (Braintree, Cohassett, Scituate, Weymouth, Quincy)

	Rates	Fringes
CARPENTER	$ 39.28	27.90

CARP0624-005 09/01/2017

DUKES; NANTUCKET

	Rates	Fringes
CARPENTER	$ 46.43	28.35

CARP0624-007 09/01/2017

BARNSTABLE; BRISTOL (Except Attleboro & North Attleboro); AND
NORFOLK (Avon, Holbrook, Randolph, Stoughton) COUNTIES

	Rates	Fringes
CARPENTER	$ 39.28	27.90

CARP1121-001 10/01/2017

	Rates	Fringes
MILLWRIGHT	$ 39.52	30.85

CARP2168-001 03/01/2018

MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford,
Somerville); NORFOLK (Brookline, Dedham, Milton); and SUFFOLK

	Rates	Fringes
FLOOR LAYER: Carpet	$ 44.50	28.82

CARP2168-004 03/01/2018

BRISTOL; ESSEX; MIDDLESEX (Except Belmont, Cambridge, Everett,
Malden, Medford, Somerville); Remainder of Norfolk County

	Rates	Fringes
FLOOR LAYER: Carpet	$ 42.39	28.82

CARP2168-005 03/01/2018

BARNSTABALE; DUKES; AND NANTUCKET

	Rates	Fringes
FLOOR LAYER: Carpet	$ 42.39	28.82

ELEC0096-001 12/01/2017

MIDDLESEX (Ashby, Ashland, Ayer, Ft. Devens, Groton, Hopkinton,
Hudson, Marlboro, Pepperell, Shirley, Stow, Townsend)

	Rates	Fringes
ELECTRICIAN	$ 42.32	11%+20.06
Teledata System Installer	$ 29.04	23.04

ELEC0099-001 06/01/2017

BRISTOL (Attleboro, North Attleboro, Seekonk)

	Rates	Fringes
ELECTRICIAN	$ 38.08	57.24%
Teledata System Installer	$ 28.56	13.1%+13.76

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* ELEC0103-001 03/01/2018

ESSEX; MIDDLESEX (Excluding Ashby, Ashland, Ayer, Ft. Devens, Groton, Hopkinton, Hudson, Marlboro, Pepperell, Shirley, Stow, Townsend); NORFOLK (Excluding Avon, Holbrook, Plainville, Randolph, Stoughton) SUFFOLK

	Rates	Fringes
Teledata System Installer	$ 37.61	29.49

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* ELEC0103-002 03/01/2018

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	$ 50.15	31.60

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* ELEC0103-004 03/01/2018

ESSEX (Beverly, Danvers, Essex, Gloucester, Hamilton, Ipswich, Manchester, Marblehead, Middleton, Peabody, Rockport, Salem, Topsfield, Wenham)

	Rates	Fringes
ELECTRICIAN	$ 50.15	31.60

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* ELEC0103-005 03/01/2018

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, Frankloin, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); PLYMOUTH (Hingham and Hull);SUFFOLK

	Rates	Fringes
ELECTRICIAN	$ 50.15	31.60

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.

ELEC0223-005 03/01/2018

BARNSTABLE; BRISTOL (Except Attleboro, North Attleboro, Seekonk); DUKES; NANTUCKET AND NORFOLK (Avon, Halbrook, Plainville, Randolph, Stoughton)

	Rates	Fringes
ELECTRICIAN	$ 40.42	28.99%+11.15

ELEC0223-006 03/01/2018

BARNSTABLE; BRISTOL (Except Attleboro, North Attleboro, Seekonk); DUKES; NANTUCKET AND NORFOLK (Avon, Halbrook, Plainville, Randolph, Stoughton)

	Rates	Fringes
Teledata System Installer	$ 34.27	28.89%+10.90

ELEV0004-001 01/01/2018

	Rates	Fringes
ELEVATOR MECHANIC	$ 57.62	32.645+a+b

FOOTNOTE FOR ELEVATOR MECHANICS:

a.Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.
b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

ENGI0004-001 12/01/2017

	Rates	Fringes
Power equipment operators:		
Group 1	$ 46.63	26.90+A
Group 2	$ 46.17	26.90+A
Group 3	$ 31.80	26.90+A
Group 4	$ 38.57	26.90+A
Group 5	$ 23.24	26.90+A
Group 6	$ 27.40	26.90+A

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

HOURLY PREMIUM FOR BOOM LENGTHS (Including Jib):
Over 150 ft. +2.12
Over 185 ft. +3.72

Over 210 ft. +5.23
Over 250 ft. +7.92
Over 295 ft. +10.97
Over 350 ft. +12.76

POWER EQUIPMENT OPERATORS CLASSIFICATIONS
Group 1: Crane; shovel; truck crane; cherry picker; dragline; trench hoe; backhoe; three drum machine; derrick; pile driver; elevator tower; hoist; gradall; shovel dozer; front end loader; fork lift; suger; boring machine; rotaryu drill; post hole hammer; post hole digger; pumpcrete machine; asphalt plant (on site); concrete batching and/or mixing plant (on site); crusher plant (on site); paving concrete mixer; timber jack
Group 2: Sonic or vibratory hammer; grader; scraper; tandem scraper; concrete pump; bulldozer; tractor; york rake; mulching machine; portable steam boiler; portable steam generator; roller; spreader; tamper (self propelled or tractor drawn); asphalt paver; mechanic - maintenance; paving screed machine; stationary steam boiler; paving concrete finishing machine; cal truck; ballast regulator; switch tamper; rail anchor machine; tire truck
Group 3: Pumps (1-3 grouped); compressor; welding machine (1-3 grouped); generator; concrete vibrator; heater (power driven 1- 5); well point system (operating); syphon-pulsometer; concrete mixer; valves controlling permanent plant air or steam; conveyor; Jackson type tamper; single diaphragm pump; lighting plant
Group 4: Assistant engineer (fireman)
Group 5: Oiler (other than truck cranes and gradalls)
Group 6: Oiler (on truck cranes and gradalls) stant engineer (on truck crane and gradall)

IRON0007-006 09/16/2017

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); 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, Billericia, Chelmsford, Dracut, Groton, Groveland, Littleton, Lowell, Middleton, North Reading, Pepperell, Tewksbury, Tyngsboro, Westford, Wilmington)

	Rates	Fringes
Ironworkers:		
AREA 1	$ 44.71	30.56
AREA 2	$ 40.30	30.56

IRON0007-010 09/16/2017

MIDDLESEX (Ashby, Ashland, Ayer, Boxboro, Holliston, Hopkinton, Hudson, Marlboro, Shirley, Stow, Townsend); NORFOLK (Medway)

	Rates	Fringes
IRONWORKER	$ 44.41	30.56

IRON0037-005 09/16/2017

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)

	Rates	Fringes
IRONWORKER	$ 34.89	26.87

LABO0014-001 12/01/2017

	Rates	Fringes
Plasterer tender BARNSTABLE, BRISTOL, DUKES, ESSEX, NANTUCKET, MIDDLESEX (with the exception of Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn); NORFOLK (with the exception of Brookline Dedham and Milton) COUNTIES.	$ 32.83	22.50
SUFFOLK COUNTY (Boston, Chelsea, Revere, Winthrop, Deer Island, Nut Island); 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)....	$ 37.50	23.65

LABO0022-009 12/01/2017

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	$ 37.50	23.65

Group 2	$ 37.75	23.65
Group 3	$ 38.25	23.65
Group 4	$ 38.50	23.65
Group 5	$ 38.25	23.65
Group 6	$ 39.50	23.65
Group 7	$ 20.50	23.65

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; Carpenter Tenders

GROUP 2: Jackhammer operator; pavement breaker; asphalt raker carbide core drilling machine; chain saw operator; pipelayer; barco type jumping tampers; laser beam; concrete pump; mason tender; motorized mortar mixer; ride-on motorized buggy; fence and beam rail erector

GROUP 3: Air track, block paver; rammer; curb setter, hydraulic and similar self-powered drills

GROUP 4: Blaster; powderman

GROUP 5: Pre-cast floor and roof plank erector

GROUP 6: Asbestos removal laborers/haz-mat laborers

GROUP 7: Flaggers

LABO0022-010 12/01/2017

Counties of BARNSTABLE; BRISTOL; DUKES; ESSEX; NANTUCKET; MIDDLESEX (with the exception of Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakfield, Winchester, Winthrop and Woburn); NORFOLK (with the exception of Brookline, Dedham and Milton)

	Rates	Fringes
Laborers:		
Group 1	$ 32.83	22.50
Group 2	$ 33.08	22.50
Group 3	$ 33.58	22.50
Group 4	$ 33.83	22.50
Group 5	$ 33.58	22.50
Group 6	$ 34.83	22.50

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; Carpenter Tenders

GROUP 2: Jackhammer operator; pavement breaker; asphalt raker carbide core drilling machine; chain saw operator; pipelayer; barco type jumping tampers; laser beam; concrete pump; mason tender; motorized mortar mixer; ride-on motorized buggy; fence and beam rail erector

GROUP 3: Air track, block paver; hammer; curb setter, hydraulic and similar self-powered drills

GROUP 4: Blaster; powderman

GROUP 5: Pre-cast floor and roof plank erector

GROUP 6: Asbestos removal laborers/haz-mat laborers

LABO1421-004 12/01/2017

BARNSTABLE, BRISTOL, DUKES, ESSEX, MIDDLESEX, NANTUCKET NORFOLK AND SUFFOLK COUNTIES

	Rates	Fringes
Laborers: (Wrecking)		
Group 1	$ 37.65	23.65
Group 2	$ 38.40	23.65
Group 3	$ 38.65	23.65
Group 4	$ 33.65	23.65
Group 5	$ 36.75	23.65
Group 6	$ 37.65	23.65

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.

PAIN0011-007 06/01/2017

BARNSTABLE, BRISTOL, DUKES, AND NANTUCKET COUNTIES

	Rates	Fringes
GLAZIER	$ 36.28	20.45+A

FOOTNOTE:
A. PAID HOLIDAY: LABOR DAY (provided employee has worked any part of the week prior to Labor Day and any part of the week after Labor Day)

PAIN0035-004 01/01/2017

BARNSTABLE; BRISTOL; ESSEX; NANTUCKET; DUKES; COUNTIES; REMAINDER OF NORFOLK; MIDDLESEX AND SUFFOLK COUNTIES

	Rates	Fringes
Painters:		
NEW CONSTRUCTION:		
Brush, Taper	$ 37.86	28.10
Spray, Sandblast	$ 39.26	28.10
REPAINT:		
Brush, Taper	$ 35.92	28.10
Spray, Sandblast	$ 37.32	28.10

PAIN0035-013 01/01/2017

MIDDLESEX (Cambridge, Everett, Malden, Medford, Somerville) SUFFOLK COUNTY (Boston, Chelsea) NORFOLK COUNTY (Brookline)

	Rates	Fringes
Painters:		
NEW CONSTRUCTION:		
Brush, Taper	$ 43.65	28.10
Spray, Sandblast	$ 45.05	28.10
REPAINT:		
Brush, Taper	$ 41.71	28.10
Spray, Sandblast	$ 43.11	28.10

PAIN0035-020 01/01/2017

ESSEX; MIDDLESEX; NORFOLK; SUFFOLK

	Rates	Fringes
GLAZIER	$ 37.86	28.10

PLAS0534-001 01/01/2018

ESSEX; MIDDLESEX; NORFOLK AND SUFFOLK COUNTY

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 40.00	36.06

PLAS0534-004 01/01/2018

MIDDLESEX; NORFOLK AND SUFFOLK COUNTIES

	Rates	Fringes
PLASTERER	$ 40.00	36.06

PLUM0004-001 03/01/2018

MIDDLESEX (Ashby, Ayer-West of Greenville branch of Boston and Maine Railroad, Ft. Devens, Groton, Shirley, Townsend)

	Rates	Fringes
Plumbers and Pipefitters	$ 43.96	25.61

PLUM0012-005 03/01/2018

ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Manchester, Marblehead, Merrimac, Methuem, Middleton, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Topsfield, Wenham, West Newbury)

	Rates	Fringes
PLUMBER	$ 50.61	28.93

PLUM0012-007 03/01/2018

ESSEX (Lynn, Lynnfield, Nahant, Saugus, and Swampscott); MIDDLESEX (Acton, Arlington, Ashford, Ayer-except west of Greenville Branch of Boston & Maine Rail Road, Bedford, Belmont, Billerica, Boxboro, Burlington, Cambridge, Carlise,

Chelmsford, Concord, Dracut, Dunstable, Everett, Framingham, Hudson, Holliiston, Hopkinton, Lexington, Lincoln, Littleton, Lowell, Malden, Marlboro, Maynard, Medford, Melrose, Natick, Newton, North Reading, Pepperell, Reading, Sherborn, Somerville, Stoneham, Stow, Sudbury, Tewksbury, Tyngsboro, Wakefield, Watham, Watertown, Wayland, Westford, Wilmington, Winchester and Woburn), NORFOLK (Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxboro, Franklin, Medford, Medway, Millis, Milton, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth and Wrentham); PLYMOUTH (Hingham, Hull, Scituate); SUFFOLK; WORCESTER (Hopedale and Southboro)

	Rates	Fringes
PLUMBER	$ 54.69	28.93

PLUM0051-004 09/01/2016

BARNSTABLE; BRISTOL; DUKES; NANTUCKET; AND NORFOLK (Avon, Holbrook, Randolph, Stoughton) COUNTIES

	Rates	Fringes
Plumbers and Pipefitters	$ 38.38	28.20

PLUM0537-005 09/01/2016

ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Lynn, Lynnfield, Manchester, Marblehead, Merrimac, Methuem, Middleton, Nahant, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Saugus, Swampscott,Topsfield, Wenham, West Newbury); MIDDLESEX (Acton, Arlington, Ashford, Ayer-except west of Greenville Branch of Boston & Maine Rail Road, Bedford, Belmont, Billerica, Boxboro, Burlington, Cambridge, Carlise, Chelmsford, Concord, Dracut, Dunstable, Everett, Framingham, Hudson, Holliiston, Hopkinton, Lexington, Lincoln, Littleton, Lowell, Malden, Marlboro, Maynard, Medford, Melrose, Natick, Newton, North Reading, Pepperell, Reading, Sherborn, Somerville, Stoneham, Stow, Sudbury, Tewksbury, Tyngsboro, Wakefield, Watham, Watertown, Wayland, Westford, Wilmington, Winchester and Woburn), NORFOLK (Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxboro, Franklin, Medford, Medway, Millis, Milton, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth and Wrentham); PLYMOUTH (Hingham, Hull, Scituate); SUFFOLK; WORCHESTER (Hopedale and Southboro)

	Rates	Fringes
PIPEFITTER	$ 50.19	29.76

ROOF0033-001 02/01/2018

	Rates	Fringes
Roofers:		
All Tear-off and/or removal of any types of roofing and all spudding,		

sweeping, vacuuming and/or
cleanup of any and all
areas of any type where a
roof is to be relaid.....$ 42.36 26.80

SFMA0550-001 03/01/2018

BRISTOL (Portion within 35 mile radius from Boston City Hall; ESSEX; MIDDLESEX (Except Ashby, Townsend, and portions of Pepperell and Shirley beyond 35 mile radius from Boston City Hall); NORFOLK; PLYMOUTH (Portion within 35 mile radius of Boston City Hall); SUFFOLK

	Rates	Fringes
SPRINKLER FITTER	$ 57.78	28.08+a

a. PAID HOLIDAYS: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

SFMA0550-002 03/01/2018

BRISTOL (Seekonk, Swansea, and Somerset)

	Rates	Fringes
SPRINKLER FITTER	$ 52.00	28.08+a

a. PAID HOLIDAYS: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

SFMA0669-001 04/01/2017

BARNSTABLE; BRISTOL (Beyond 35 mile radius of Boston City Hall); DUKES; MIDDLESEX (Ashby, Townsend, portions of Pepperell and Shirley beyond 35 mile radius of Boston City Hall); NANTUCKET; PLYMOUTH (Beyond 35 mile radius of Boston City Hall)

	Rates	Fringes
SPRINKLER FITTER	$ 40.26	15.84

SHEE0017-003 10/01/2015

BRISTOL (Attleboro, Berkley, Easton, Mansfield, North Attleboro, Norton, Raynham, Taunton); ESSEX; MIDDLESEX; NORFOLK; PLYMOUTH (except except Marion, Mattapoisett, Rochester, Wareham); SUFFOLK

	Rates	Fringes
Sheet metal worker	$ 35.60	30.05

SHEE0017-007 10/01/2015

BARNSTABLE; BRISTOL (Acushnet, Assonet, Dartmouth, Dighton,

Fairhaven, Fall River, Freetown, New Bedford, Rehoboth, Seeekonk, Somerset, Swansea, Westport); DUKES; AND NANTUCKET

	Rates	Fringes
Sheet metal worker	$ 35.60	30.05

TEAM0379-001 12/01/2017

	Rates	Fringes
Truck drivers:		
Group 1	$ 32.48	24.27+A+B
Group 2	$ 32.65	24.27+A+B
Group 3	$ 32.72	24.27+A+B
Group 4	$ 32.84	24.27+A+B
Group 5	$ 32.94	24.27+A+B
Group 6	$ 33.23	24.27+A+B
Group 7	$ 33.52	24.27+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

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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: MA180004 04/06/2018 MA4

Superseded General Decision Number: MA20170004

State: Massachusetts

Construction Type: Residential

Counties: Barnstable, Berkshire, Bristol, Essex, Hampden, Hampshire, Middlesex, Norfolk, Plymouth, Suffolk and Worcester Counties in Massachusetts.

RESIDENTIAL CONSTRUCTION PROJECTS (including single family homes and apartments up to and including 4 stories)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 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 $10.35 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 2018. 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	01/05/2018
1	01/12/2018
2	02/09/2018
3	02/16/2018
4	02/23/2018
5	03/09/2018
6	03/23/2018
7	03/30/2018
8	04/06/2018

BRMA0001-026 03/01/2018

LOWELL CHAPTER

MIDDLESEX COUNTY (Acton, Asby, Ashland, Ayer, Bedford, Billerica, Boxboro, Carlisle, Chemsford, Dracut, Dunstable, Framingham, Ft. Devens, Groton, Holliston, Hopkinton, Hudson, Littleton, Lowell, Maynard, Natick, North Acton, Pepperell, Sherborn, Shirley, South Acton, Stow, Tewksbury, Townsend, Tyngsboro, West Acton, Westford, Wilmington) NORFOLK (Medfield, Medway, Mills) WORCESTER (Ashbumham, Athol, Fitchburg, Gardner, Harvard, Hopedale, Hubbardston, Lancaster, Leominster, Luneburg, Milford, Petersham, Phillipston, Princeton, Royalston, Southboro, Sterling, Templeton, Westminster, Winchendon)

	Rates	Fringes

Bricklayer, Plasterer,
Stonemason.....$ 49.96 32.19

BRMA0001-027 03/01/2018

SPRINGFIELD/PITTSFIELD CHAPTER
BERKSHIRE, HAMPDEN, HAMPSHIRE, WORCESTER (Warren) COUNTIES

	Rates	Fringes
Bricklayer, Plasterers, Stonemasons, Tile Layers	$ 40.56	30.47

BRMA0001-028 03/01/2018

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, Wrenhtham) PLYMOUTH (Lakeville)

	Rates	Fringes
BRICKLAYER	$ 49.96	32.19

BRMA0001-029 03/01/2018

WORCESTER CHAPTER
(Auburn, Barre, Blackstone, Berlin, Bolton, Boylston, Brookfield, Charlton, Clinton, Douglas, Dudley, Grafton, hardwick, Holden, Leicester, Mendon, Millbury, Millville, New Braintree, Northboro, Northbridge, Oakham, Oxford, Paxton, Rutland, Shrewbury, Southbridge, Spencer, Sturbridge, Sutton, Upton, Uxbridge, Webster, Westboro, West Boylston, Worcester)

	Rates	Fringes
Bricklayer, Plasterer, Stonemason	$ 49.96	32.19

BRMA0003-026 02/01/2018

BOSTON CHAPTER
MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Somerville) NORFOLK (Brookline, Milton) SUFFOLK

	Rates	Fringes
BRICKLAYER	$ 52.06	32.97

BRMA0003-027 02/01/2018

LYNN CHAPTER
ESSEX (Amesbury, Andover, Beverly, Boxford, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipsewich, Lawrence, Lynn, Lynnfield, Manchester, Nahant, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salisbury, Salem, Saugus, Swampscott, Topsfield, Wakefield, Wenham, West Newbury) MIDDLESEX (Reading, North Reading,

Wakefield)

	Rates	Fringes
Bricklayer, Plasterer	$ 52.06	32.97

BRMA0003-028 02/01/2018

NEWTON CHAPTER
MIDDLESEX (Newton); NORFOLK (Dover, Needham, Wellesley)

	Rates	Fringes
Bricklayer, Plasterer	$ 52.06	32.97

BRMA0003-029 02/01/2018

NEW BEDFORD CHAPTER
BARNSTABLE, BRISTOL (Acushnet, Darmouth, Fairhave, Fall River, Freetown, New Bedford, Somerset, Swansea, Westport) PLYMOUTH (Marion, Mattapoisett, Rochester, Wareham)

	Rates	Fringes
BRICKLAYER	$ 52.06	32.97

BRMA0003-030 02/01/2018

QUINCY CHAPTER
NORFOLK (Avon, Braintree, Cohasset, Holbrook, Quincy, Randolph, Stoughton, Weymouth) PLYMOUTH (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, Plasterer	$ 52.06	32.97

BRMA0003-031 02/01/2018

WALTHAM CHAPTER
MIDDLESEX (Belmont, Burlington, Concord, Lixington, Lincoln, Stoneham, Sudbury, Waltham, Watertown, Wayland, Weston, Winchester, Woburn)

	Rates	Fringes
Bricklayer, Plasterer	$ 52.06	32.97

BRMA0003-032 02/01/2018

BARNSTABLE, BRISTOL, SUFFOLK AND WORCESTER

	Rates	Fringes
Tile Layer	$ 39.82	30.89

CARP0026-007 09/01/2017

BRISTOL (Attleborough, North Attleborough) ESSEX, MIDDLESEX (Except Belmont, Cambridge, Everett, Malden, Medford, Somerville) NORFOLK (Bellingham, Canton, Foxboro, Franklin, Medfield, Medway, Millis, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Wrentham) and PLYMOUTH (Duxbury, Hanover, Hingham, Hull, Marshfield, Norwell, Pembroke, Rockland and Scituate)

	Rates	Fringes
Carpenters (Including Drywall Hanging & Acoustical Ceiling Installation)	$ 39.28	27.90

CARP0033-006 09/01/2017

MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford, Somerville) NORFOLK (Brookline, Dedham, Milton) and SUFFOLK

	Rates	Fringes
Carpenters (Including Drywall Hanging & Acoustical Ceiling Installation)	$ 46.43	28.35

CARP0107-011 09/01/2017

WORCESTER COUNTY
(except Gilbertville, Hardwick, Warren, West Brookfield)

	Rates	Fringes
Carpenters (Including Drywall Hanging & Acoustical Ceiling Installation)	$ 39.28	27.90

CARP0108-012 09/04/2017

BERKSHIRE, HAMPDEN, HAMPSHIRE AND WORCESTER (Gilbertville, Hardwick, Warren, West Brookfield)

	Rates	Fringes
Carpenters (Including Drywall Hanging & Acoustical Ceiling Installation)	$ 35.56	23.76

CARP0624-008 09/01/2017

BARNSTABLE, BRISTOL (Except Attleboro and North Attleboro) AND PLYMOUTH (Bridgewater, Brockton, Kingston, Lakeville, Middleboro, Plymouth, South Hanover, Whitman)

	Rates	Fringes
Carpenters (Including Drywall Hanging & Acoustical Ceiling Installation)	$ 39.28	27.90

CARP0723-001 10/01/2017

ZONE 2: BARNSTABLE, BERKSHIRE, BRISTOL, ESSEX, HAMPDEN, HAMPSHIRE, PLYMOUTH, WORCESTER COUNTIES AND PART OF MIDDLESEX, NORFOLK AND SUFFOLK COUNTIES
(All other cities and towns in Massachusetts + Chelsea & Winthrop)

	Rates	Fringes
CARPENTER (New Wood Frame Construction not exceeding 4 stories including basement)		
Wood framing, siding and exterior trim work	$ 26.25	15.48
All other carpentry work on wood frame projects	$ 26.25	15.48

CARP0723-002 10/01/2017

ZONE 1: MIDDLESEX, NORFOLK AND SUFFOLK COUNTIES (Consists of Boston, Islands of Boston Harbor, Brookline, Cambridge, Dedham, Malden, Medford and Somerville)

	Rates	Fringes
Carpenters (New Wood Frame Construction not exceeding 4 stories including basement)		
Wood framing, siding and exterior trim work	$ 31.07	15.48
All other carpentry work on wood frame projects	$ 31.07	15.48

ELEC0007-008 12/31/2017

HAMPDEN (Except Chester and Holyoke); HAMPSHIRE (Belchertown, Ware)

	Rates	Fringes
ELECTRICIAN	$ 40.51	22.02

ELEC0007-009 12/31/2017

BERKSHIRE; HAMPDEN (Chester, Holyoke); HAMPSHIRE (Except Belchertown, Ware)

	Rates	Fringes
ELECTRICIAN	$ 40.51	22.02
Teledata System Installer (Berkshire County)	$ 40.01	21.40

ELEC0096-004 12/01/2017

MIDDLESEX (Ashby, Ashland, Ayer, Ft. Devens, Groton, Hopkinton, Hudson, Marlboro, Pepperell, Shirley, Stow, Townsend); WORCESTER (Except Warren)

	Rates	Fringes
ELECTRICIAN	$ 42.32	11%+20.06
Teledata System Installer	$ 29.04	23.04

ELEC0096-005 12/01/2017

WORCESTER (Warren)

	Rates	Fringes
ELECTRICIAN	$ 42.32	11%+20.06

ELEC0099-005 06/01/2017

BRISTOL (North & South Attleboro, Seekonk)

	Rates	Fringes
ELECTRICIAN	$ 28.56	6.3%+13.91

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* ELEC0103-002 03/01/2018

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	$ 50.15	31.60

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* ELEC0103-004 03/01/2018

ESSEX (Beverly, Danvers, Essex, Gloucester, Hamilton, Ipswich, Manchester, Marblehead, Middleton, Peabody, Rockport, Salem, Topsfield, Wenham)

	Rates	Fringes
ELECTRICIAN	$ 50.15	31.60

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* ELEC0103-010 03/01/2018

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, Coahasset, Dedham, Dover, Foxboro, Franklin, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); PLYMOUTH (Hingham and Hull); SUFFOLK

	Rates	Fringes
ELECTRICIAN	$ 50.15	31.60
Teledata System Installer		

(ESSEX; MIDDLESEX {Excluding

Ashby, Ashland, Ayer, Ft.
Devens, Groton, Hokinton,
Hudson, Marlboro, Pepperell,
Shirley, Stow, Townsend;
NORFOLK {Excluding Avon,
Holbrook, Plainville,
Randolph, Stoughton; SUFFOLK)...$ 37.61 29.49

ELEC0223-011 03/01/2018

BARNSTABLE, BRISTOL (Except Attleboro, North Attleboro,
Seekonk); NORFOLK (Avon, Halbrook, Randolph, Sloughton);
PLYMOUTH (Except Hingham and Hull Townships)

	Rates	Fringes
ELECTRICIAN	$ 40.42	28.99%+11.15
Teledata System Installer (PLYMOUTH COUNTY (except Townships of Hingham and Hull))	$ 34.27	28.89%+10.90

ELEV0004-003 01/01/2018

BARNSTABLE, BRISTOL, ESSEX, MIDDLESEX, NORFOLK AND SUFFOLK

	Rates	Fringes
ELEVATOR MECHANIC	$ 57.62	32.645+a+b

FOOTNOTE FOR ELEVATOR MECHANICS
a.Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.
b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

ELEV0041-007 01/01/2018

BERKSHIRE, HAMPDEN AND HAMPSHIRE

	Rates	Fringes
ELEVATOR MECHANIC	$ 51.46	32.645+a+b

FOOTNOTE:
a.Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.
b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

ENGI0004-017 12/01/2017

BARNSTABLE; BRISTOL; ESSEX; MIDDLESEX, NORFOLK; PLYMOUTH;
SUFFOLK; and WORCESTER (Remainder of County)

	Rates	Fringes

Power Equipment Operator:
Excavators & Loaders.....$ 46.63 26.90+A

FOOTNOTE:

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 and Christmas Day.

ENGI0004-018 12/01/2017

WORCESTER (Athol, Barre, Brookfield, East Brookfield, hardwick, New Braintree, North Brookfield, Oakham, Petersham, Phllipston, Royalston, Struthbridge, Templeton, Warren, West Brookfield, Winchendon)

	Rates	Fringes
Power Equipment Operator: Excavators & Loaders	$ 46.63	26.90+A

FOOTNOTES:

a. New Year's Day, Washington's Birthday, Memborial Day, Independence Day, Labor Day, Patriots Day, Columbus Day, Veteran's Day, Thanksgiving Day and Christmas Day.

ENGI0098-012 12/01/2016

BERKSHIRE; HAMPDEN and HAMPSHIRE COUNTIES

	Rates	Fringes
Power Equipment Operator: Excavators & Loaders	$ 33.68	23.96+A

FOOTNOTE:
a. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day and Christmas Day

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LABO0022-014 12/01/2017

	Rates	Fringes
Laborers: Mason Tender, Stone/Stucco	$ 32.83	22.50

LABO0473-003 06/01/2017

BERKSHIRE, HAMPSHIRE (Chesterfield, Cummington, Goshen, Middlefield, Plainfield and Worthington)

	Rates	Fringes
Laborers: Mason Tender, Stone/Stucco	$ 28.00	19.70

LABO0596-007 12/04/2017

HAMPDEN, HAMPSHIRE (except Chesterfield, Cummington, Goshen, Middlefield, Plainfield and Worthington)

	Rates	Fringes
Laborers: Mason Tender, Stone/Stucco	$ 30.75	21.91

PAIN0035-016 01/01/2017

BERKSHIRE, HAMPDEN, AND HAMPSHIRE COUNTIES

	Rates	Fringes
PAINTER (DRYWALL FINISHING ONLY)	$ 30.33	24.20

PAIN0035-017 01/01/2017

BARNSTABLE, BRISTOL, ESSEX, MIDDLESEX, NORFOLK, PLYMOUTH, SUFFOLK, AND WORCESTER COUNTIES

	Rates	Fringes
PAINTER (DRYWALL FINISHING ONLY)	$ 37.86	28.10

PLAS0534-006 01/01/2018

MIDDLESEX; NORFOLK AND SUFFOLK COUNTIES

	Rates	Fringes
PLASTERER	$ 40.00	36.06

PLUM0004-006 03/01/2018

MIDDLESEX (Ashby, Ayer-West of Greenville branch of Boston and Maine Railroad, Ft. Devens, Groton, Shirley, Townsend)
WORCESTER (except Hopedale and Southboro)

	Rates	Fringes
Plumbers, Pipefitters (including HVAC work)	$ 43.96	25.61

PLUM0012-008 03/01/2018

ESSEX(Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence,Manchester, Marblehead, Merrimac, Methuem, Middleton, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Topsfieild, Wenham, West Newbury)

	Rates	Fringes
PLUMBER	$ 50.61	28.93

PLUM0012-009 03/01/2018

ESSEX(Lynn, Lynnfield, Nahant, Saugus, and Swampscott);
MIDDLESEX (Acton, Arlington, Ashland, Ayer-except west of
Greenville Branch of Boston & Maine Rail Road, 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, Wobrun); 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;
WORCESTER (Hopedale and Southboro)

	Rates	Fringes
PLUMBER	$ 54.69	28.93

PLUM0051-006 09/01/2016

BARNSABLE; BRISTOL; PLYMOUTH (Except Hingham, Hull, Scituate)

	Rates	Fringes
Plumbers, Pipefitters (including HVAC work)	$ 38.38	28.20

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* PLUM0104-005 03/17/2018

BERKSHIRE (Becket, Otis, Sandisfield); HAMPDEN; HAMPSHIRE

	Rates	Fringes
Plumbers, Pipefitters (including HVAC work)	$ 39.51	25.10+a

FOOTNOTE FOR PLUMBERS & STEAMFITTERS:
A. Paid holidays: Independence Day and Labor Day, provided the employee has been employed seven days prior to the holiday by the same employer.

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* PLUM0104-011 03/17/2018

BERKSHIRE (Except Becket, Otis, Sandisfield)

	Rates	Fringes
Plumbers, Pipefitters (including HVAC work)	$ 38.58	25.10+a

FOOTNOTE FOR PLUMBERS & STEAMFITTERS:
A. Paid holidays: Independence Day and Labor Day, provided the employee has been employed seven days prior to the holiday by the same employer.

PLUM0537-006 09/01/2016

ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers,

Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Lynn, Lynnfield, Manchester, Marblehead, Merrimac, Methuem, Middleton, Nahant, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Saugus, Swampscott,Topsfield, Wenham, West Newbury); MIDDLESEX (Acton, Arlington, Ashford, Ayer-except west of Greenville Branch of Boston & Maine Rail Road, Bedford, Belmont, Billerica, Boxboro, Burlington, Cambridge, Carlise, Chelmsford, Concord, Dracut, Dunstable, Everett, Framingham, Hudson, Holliiston, Hopkinton, Lexington, Lincoln, Littleton, Lowell, Malden, Marlboro, Maynard, Medford, Melrose, Natick, Newton, North Reading, Pepperell, Reading, Sherborn, Somerville, Stoneham, Stow, Sudbury, Tewksbury, Tyngsboro, Wakefield, Watham, Watertown, Wayland, Westford, Wilmington, Winchester and Woburn), NORFOLK (Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxboro, Franklin, Medford, Medway, Millis, Milton, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth and Wrentham); PLYMOUTH (Hingham, Hull, Scituate); SUFFOLK; WORCHESTER (Hopedale and Southboro)

	Rates	Fringes
Pipefitter including HVAC work...	$ 50.19	29.76

ROOF0033-006 02/01/2018

BARNSTABLE, BRISTOL, ESSEX, MIDDLESEX, NORFOLK, SUFFOLK, WORCESTER

	Rates	Fringes
Roofer, Waterproofers/Caulkers...	$ 42.36	26.80

ROOF0248-004 07/16/2017

BERKSHIRE, HAMPDEN, HAMPSHIRE

	Rates	Fringes
Roofer, Waterproofers/Caulkers...	$ 31.75	23.66
ROOFER: Slate & Tile Roof.....	$ 32.25	24.16

SHEE0017-004 10/01/2015

WORCESTER (Harvard, Lancaster)

	Rates	Fringes
Sheet metal worker.....	$ 35.60	30.05

SHEE0017-010 10/01/2015

BARNSTABLE, BRISTOL (Acushnet, Dartmouth, Dighton, Fairhaven, Fall River, Freetown, New Bedford, Rehoboth, Seekonk, Somerset, Swansea, Westport); PLYMOUTH (Marion, Mattapoisett, Rochester, Wareham)

	Rates	Fringes
Sheet Metal Worker.....	$ 35.60	30.05

SHEE0017-011 10/01/2015

BRISTOL (Attleboro, Berkley, Easton, Mansfield, North Attleboro, Norton, Raynham, Taunton); ESSEX; MIDDLESEX; NORFOLK; PLYMOUTH (Except Marion Mattapoisett, Rochester, Wareham); SUFFOLK

	Rates	Fringes
Sheet Metal Worker.....	$ 35.60	30.05

SHEE0063-002 01/01/2016

WORCESTER (Except Harvard & Lancaster)

	Rates	Fringes
Sheet metal worker.....	$ 31.57	28.12

SHEE0063-004 01/01/2016

BERKSHIRE, HAMPDEN AND HAMPSHIRE COUNTIES

	Rates	Fringes
Sheet metal worker.....	$ 31.57	28.12

SUMA2003-001 01/08/2003

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	$ 39.38	
FLOOR LAYER: Carpet.....	$ 31.96	
LABORER		
Unskilled.....	$ 18.73	6.33
PAINTER		
Brush & Roller, excluding drywall finishing.....	$ 30.86	

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: MA180010 01/05/2018 MA10

Superseded General Decision Number: MA20170010

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 $10.35 for calendar year 2018 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 $10.35 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 2018. 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	01/05/2018

* 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.

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:

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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: MA180011 01/05/2018 MA11

Superseded General Decision Number: MA20170011

State: Massachusetts

Construction Type: Heavy Dredging

Counties: Massachusetts Statewide.
STATEWIDE

Massacusetts 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 $10.35 for calendar year 2018 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 $10.35 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 2018. 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	01/05/2018

* ENGI0025-001 10/01/2017

STATEWIDE

	Rates	Fringes
Dredging:		
CLASS A	$ 38.18	16.21+a+b
CLASS B1	$ 33.03	15.80+a+b
CLASS B2	$ 31.09	15.65+a+b
CLASS C1	$ 30.24	14.83+a+b
CLASS C2	$ 29.26	14.75+a+b
CLASS D	$ 24.30	13.60+a+b

CLASSIFICATIONS:
CLASS A: Lead Dredgeman, Operator, Leverman, Licensed Tug Operator over 1000 HP.
CLASS B1: Derrick Operator, Spider/Spill Barge Operator, Engineer, Electrician, Chief Welder, Chief Mate, Fill Placer, Operator II, Maintenance Engineer, Licensed Boat Operator. CLASS B2: Certified Welder.
CLASS C1: Mate, Drag Barge Operator, Steward, Assistant Fill Placer, Welder.
CLASS C2: Boat Operator
CLASS D: Shoreman, Deckhand, Rodman, Scowman, Cook, Messman, Porter/Janitor, Oiler.

INCENTIVE PAY: (Add to Hourly Rate)
Operator (NCCCO License/Certification) $1.50 Licensed Tug Operator over 1000 HP (Assigned as Master) (USCG licensed Master of Towing Vessels (MOTV) $1.50; Licensed Boat Operator (Assigned as lead boat captain) USCG licensed boat operator $1.00; Engineer (QMED and Tankerman endorsement or licensed engineer (USCG) $1.50 Oiler (QMED and Tankerman endorsement (USCG) $1.50; All classifications (Tankerman endorsement only) USCG $1.25; Deckhand or Mate (AB with Lifeboatman endorsement (USCG) $1.50; All classifications (lifeboatman endorsement only (USCG) $1.25; Welder (ABS certification) $0.50

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.

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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: MA180013 04/06/2018 MA13

Superseded General Decision Number: MA20170013

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 $10.35 for calendar year 2018 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 $10.35 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 2018. 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	01/05/2018
1	02/09/2018
2	02/16/2018
3	02/23/2018
4	03/09/2018
5	03/23/2018
6	04/06/2018

BOIL0029-001 01/01/2017

	Rates	Fringes
BOILERMAKER	$ 42.42	24.92

BRMA0001-011 03/01/2018

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, Westrwood, Wrentham); and PLYMOUTH (Lakeville)

	Rates	Fringes
Bricklayer/Cement Mason	$ 49.96	32.19

BRMA0001-012 03/01/2018

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	$ 49.96	32.19

BRMA0001-013 03/01/2018

LOWELL CHAPTER
MIDDLESEX (Ashland, Framingham, Holliston, Hopkinton, Hudson, Maynard, Natick, Sherbvorn, Stow); and NORFOLK (Medfield, Medway, Millis)

	Rates	Fringes
BRICKLAYER	$ 49.96	32.19

BRMA0003-001 02/01/2018

	Rates	Fringes
Marble & Tile Finisher	$ 39.82	30.89
Marble, Tile & Terrazzo Workers	$ 52.10	32.92
TERRAZZO FINISHER	$ 51.00	32.76

BRMA0003-003 02/01/2018

BOSTON CHAPTER
MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Somerville); NORFOLK (Brookline, Milton); and SUFFOLK

	Rates	Fringes
BRICKLAYER	$ 52.06	32.97

BRMA0003-011 02/01/2018

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	$ 52.06	32.97

BRMA0003-012 02/01/2018

	Rates	Fringes
BRICKLAYER WALTHAM CHAPTER - MIDDLESEX (Belmont, Burlington, Concord, Lexington, Lincoln, Stoneham, Sudbury, Waltham, Watertown, Wayland, Weston, Winchester, Woburn).....	$ 52.06	32.97

BRMA0003-014 02/01/2018

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.....	$ 52.06	32.97

BRMA0003-025 02/01/2018

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.....	$ 52.06	32.97

BRMA0003-033 02/01/2018

NEWTON CHAPTER
MIDDLESEX (Newton); NORFOLK (Dover, Needham, Wellesley)

	Rates	Fringes
Bricklayer, Plasterer.....	$ 52.06	32.97

CARP0026-003 09/01/2017

BRISTOL (Attleborough, North Attleborough); ESSEX; MIDDLESEX (Except Belmont, Cambridge, Everett, Malden, Medford, Somerville); AND NORFOLK (Bellingham, Braintree, Canton, Cohassett, Foxboro, Franklin, Medfield, Medway, Millis, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham) COUNTIES

	Rates	Fringes
CARPENTER.....	$ 39.28	27.90

CARP0033-003 09/01/2017

MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford, Somerville); NORFOLK (Brookline, Dedham, Milton); AND SUFFOLK COUNTIES

	Rates	Fringes
CARPENTER	$ 46.43	28.35

CARP0056-001 08/01/2015

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	$ 42.04	29.73

CARP0056-002 08/01/2015

The areas of BARNSTABLE, BRISTOL, PLYMOUTH, and NORFOLK COUNTIES situated OUTSIDE Boston Beltway (I-495) and South of Cape Cod Canal

	Rates	Fringes
PILEDRIVERMAN	$ 42.04	29.73

CARP0056-003 08/01/2015

Those areas of ESSEX and MIDDLESEX COUNTIES situated OUTSIDE Boston Beltway (I-495)

	Rates	Fringes
PILEDRIVERMAN	$ 42.04	29.73

CARP0056-004 08/01/2015

	Rates	Fringes
DIVER TENDER	$ 42.04	29.73
DIVER	$ 58.86	29.73

CARP0424-001 09/01/2017

NORFOLK (Braintree, Quincy, Cohasset, Weymouth, etc.) PLYMOUTH (Duxbury, Hanover, Hull, Hingham, Marshfield, Norwell, Pembroke Rockland, Scituate)

	Rates	Fringes
CARPENTER	$ 39.28	27.90

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 10/01/2017

	Rates	Fringes
MILLWRIGHT	$ 39.52	30.85

ELEC0096-001 12/01/2017

MIDDLESEX (Ashby, Ashland, Ayer, Ft. Devens, Groton, Hopkinton, Hudson, Marlboro, Pepperell, Shirley, Stow, Townsend)

	Rates	Fringes
ELECTRICIAN	$ 42.32	11%+20.06
Teledata System Installer	$ 29.04	23.04

ELEC0099-001 06/01/2017

BRISTOL (Attleboro, North Attleboro, Seekonk)

	Rates	Fringes
ELECTRICIAN	$ 38.08	57.24%
Teledata System Installer	$ 28.56	13.1%+13.76

* ELEC0103-002 03/01/2018

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	$ 50.15	31.60

* ELEC0103-004 03/01/2018

ESSEX (Beverly, Danvers, Essex, Gloucester, Hamilton, Ipswich, Manchester, Marblehead, Middleton, Peabody, Rockport, Salem, Topsfield, Wenham)

	Rates	Fringes

ELECTRICIAN.....$ 50.15 31.60

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* ELEC0103-005 03/01/2018

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, Frankloin, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); PLYMOUTH (Hingham and Hull);SUFFOLK

	Rates	Fringes
ELECTRICIAN	$ 50.15	31.60

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 03/01/2018

BARNSTABLE, BRISTOL (Except Attleboro, North Attleboro, Seekonk); DUKES; NANTUCKET; PLYMOUTH (Except Hingham and Hull Twps); NORFOLK (Avon, Halbrook, Randolph, Sloughton)

	Rates	Fringes
ELECTRICIAN	$ 40.42	28.99%+11.15

ENGI0004-009 12/01/2017

	Rates	Fringes
Power equipment operators:		
Group 1	$ 46.63	26.90+A
Group 2	$ 46.17	26.90+A
Group 3	$ 31.80	26.90+A
Group 4	$ 38.57	26.90+A
Group 5	$ 23.24	26.90+A
Group 6	$ 27.40	26.90+A

HOURLY PREMIUM FOR BOOM LENGTHS (Including Jib):
Over 150 ft. +2.12
Over 185 ft. +3.72
Over 210 ft. +5.23
Over 250 ft. +7.92

Over 295 ft. +10.97
Over 350 ft. +12.76

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 09/16/2017

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, Wilminton)

	Rates	Fringes

IRONWORKER

AREA 1	$ 44.71	30.56
AREA 2	$ 40.30	30.56

IRON0007-010 09/16/2017

MIDDLESEX (Ashby, Ashland, Ayer, Boxboro, Holliston, Hopkinton, Hudson, Marlboro, Shirley, Stow, Townsend); NORFOLK (Medway)

	Rates	Fringes
IRONWORKER	$ 44.41	30.56

IRON0037-002 09/16/2017

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	$ 34.89	26.87

LABO0022-006 12/01/2017

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	$ 37.50	23.65
GROUP 2	$ 37.75	23.65
GROUP 3	$ 38.25	23.65
GROUP 4	$ 38.50	23.65
GROUP 5	$ 21.50	23.65
GROUP 6	$ 39.50	23.65

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

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LABO0022-012 12/01/2017

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	$ 32.83	22.50
GROUP 2	$ 33.08	22.50
GROUP 3	$ 33.58	22.50
GROUP 4	$ 33.83	22.50
GROUP 5	$ 21.50	22.50
GROUP 6	$ 34.83	22.50

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 drillperator

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

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LABO0022-013 12/01/2017

	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	$ 38.85	23.85+A
Laborer	$ 37.45	23.85+A
(OPEN AIR CASSONS, UNDERPINNING AND TEST		

BORING INDUSTRIES):

OPEN AIR CASSON, UNDERPINNING WORK & BORING CREW		
Bottom man	$ 38.60	23.85+A
Laborers; Top man	$ 37.45	23.85+A
(TUNNELS, CAISSON & CYLINDER WORK IN COMPRESSED AIR)		
GROUP 1	$ 39.25	24.25+A
GROUP 2	$ 41.80	24.25+A
GROUP 3	$ 41.80	24.25+A
GROUP 4	$ 41.80	24.25+A
GROUP 5	$ 41.80	24.25+A
GROUP 6	$ 43.80	24.25+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

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LABO1421-001 12/01/2017

WRECKING LABORERS:

	Rates	Fringes
Laborers: (Wrecking)		
Group 1	$ 37.65	23.65
Group 2	$ 38.40	23.65
Group 3	$ 38.65	23.65
Group 4	$ 33.65	23.65
Group 5	$ 36.75	23.65
Group 6	$ 37.65	23.65

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 01/01/2017

BARNSTABLE BRISTOL; DUKES; ESSEX; NANTUCKET; PLYMOUTH (Remainder of NORFOLK; MIDDLESEX AND SUFFOLK COUNTIES)

	Rates	Fringes
Painters:		
NEW CONSTRUCTION:		
Bridge	$ 48.36	28.10
Brush, Taper	$ 37.86	28.10
Spray, Sandblast	$ 39.26	28.10
REPAINT:		
Bridge	$ 48.36	28.10
Brush, Taper	$ 35.92	28.10
Spray, Sandblast	$ 37.32	28.10

PAIN0035-015 01/01/2017

MIDDLESEX (Cambridge, Everett, Malden, Medford, Sommerville)
SUFFOLK COUNTY (Boston, Chelsea) NORFOLK COUNTY (Brookline)

	Rates	Fringes
Painters:		
NEW CONSTRUCTION:		
Brush, Taper	$ 43.65	28.10
Spray, Sandblast	$ 45.05	28.10
REPAINT:		
Bridge	$ 48.36	28.10
Brush, Taper	$ 41.71	28.10
Spray, Sandblast	$ 43.11	28.10

PLAS0534-001 01/01/2018

ESSEX; MIDDLESEX; NORFOLK AND SUFFOLK COUNTY

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 40.00	36.06

PLUM0004-001 03/01/2018

MIDDLESEX (Ashby, Ayer-West of Greenville branch of Boston and Maine Railroad, Ft. Devens, Groton, Shirley, Townsend)

	Rates	Fringes
Plumbers and Pipefitters	$ 43.96	25.61

PLUM0012-001 03/01/2018

ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence,Manchester, Marblehead, Merrimac, Methuem, Middleton, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Topsfieild, Wenham, West Newbury)

	Rates	Fringes
PLUMBER	$ 50.61	28.93

PLUM0012-003 03/01/2018

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	$ 50.61	28.93

PLUM0012-006 03/01/2018

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	$ 54.69	28.93

PLUM0051-005 09/01/2016

BARNSTABLE; BRISTOL; DUKES; NANTUCKET; NORFOLK (Avon, Holbrook, Randolph, Stoughton) PLYMOUTH(Remainder of County)

	Rates	Fringes
Plumbers and Pipefitters	$ 38.38	28.20

PLUM0537-001 09/01/2016

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 Wrenthan); PLYMOUTH (Hingham, Hull, Scituate); ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence,Lynn, Lynnfield, Manchester, Marblehead, Merrimac, Methuem, Middleton, Nahant, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Saugus, Swampscott, Topsfieild, Wenham, West Newbury)

	Rates	Fringes
PIPEFITTER	$ 50.19	29.76

TEAM0379-001 12/01/2017

	Rates	Fringes
Truck drivers:		
Group 1	$ 32.48	24.27+A+B
Group 2	$ 32.65	24.27+A+B
Group 3	$ 32.72	24.27+A+B
Group 4	$ 32.84	24.27+A+B
Group 5	$ 32.94	24.27+A+B
Group 6	$ 33.23	24.27+A+B
Group 7	$ 33.52	24.27+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

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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: MA180022 04/06/2018 MA22

Superseded General Decision Number: MA20170022

State: Massachusetts

Construction Type: Highway

County: Bristol County in Massachusetts.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 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 $10.35 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 2018. 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	01/05/2018
1	02/09/2018
2	04/06/2018

CARP1305-001 09/01/2017

	Rates	Fringes
CARPENTER (Includes Form Work)	$ 39.28	27.90

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* ELEC0103-003 03/01/2018

	Rates	Fringes
ELECTRICIAN (Includes Traffic Signalization)	$ 50.15	31.60

ENGI0004-021 12/01/2017

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1	$ 46.63	26.90+A
Group 2	$ 46.17	26.90+A

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
Group 1: Backhoe/Excavator/Trackhoe; Bobcat/Skid Steer/Skid

Loader; Broom/Sweeper; Crane; Gradall; Loader; Paver (Asphalt, Aggregate, and Concrete); Post Driver (Guardrail/Fences)
Group 2: Bulldozer; Grader/Blade; Milling Machine; Roller

IRON0007-029 09/16/2017

	Rates	Fringes
IRONWORKER, ORNAMENTAL	$ 44.71	30.56

LABO0133-001 12/01/2017

	Rates	Fringes
LABORER (Concrete Surfacer)	$ 33.08	22.50

LABO0385-001 12/01/2017

	Rates	Fringes
LABORER		
Common or General	$ 32.83	22.50
Fence Erection	$ 33.08	22.50

LABO0721-001 12/01/2017

	Rates	Fringes
LABORER (Guardrail Installation)	$ 33.08	22.50

LABO0876-002 12/01/2017

	Rates	Fringes
LABORER (Landscape)	$ 32.83	22.50

PAIN0035-023 01/01/2017

	Rates	Fringes
PAINTER (Steel)	$ 48.36	28.10

SUMA2014-007 01/11/2017

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 56.70	21.08
IRONWORKER, REINFORCING	$ 42.13	18.15
IRONWORKER, STRUCTURAL	$ 45.19	17.30
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor	$ 34.72	16.01
LABORER: Concrete Saw (Hand Held/Walk Behind)	$ 44.43	14.18
LABORER: Jack Hammer	$ 35.32	18.48
OPERATOR: Forklift	$ 64.67	0.00

OPERATOR: Mechanic.....$ 48.74 11.79

OPERATOR: Piledriver.....$ 42.56 17.34

PAINTER: Spray (Linestriping)....$ 47.30 6.42

TRAFFIC CONTROL: Flagger.....$ 23.00 20.44

TRAFFIC CONTROL:
Laborer-Cones/
Barricades/Barrels -
Setter/Mover/Sweeper.....$ 53.35 12.78

TRUCK DRIVER: Concrete Truck....$ 33.69 15.79

TRUCK DRIVER: Dump Truck.....$ 39.03 12.89

TRUCK DRIVER: Flatbed Truck.....$ 48.53 0.00

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.

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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.

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U.S. Department of Labor
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Washington, DC 20210

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END OF GENERAL DECISION

APPENDIX I

AMERICAN IRON AND STEET 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.

Internet Address (URL) • http://www.epa.gov
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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
General • Waiver request includes the following information: — 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		
Cost Waiver Requests • Waiver request includes the following information: — 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		
Availability Waiver Requests • 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: — 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
Cost Waiver Requests • Does the waiver request include the following information? — 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%?				
Availability Waiver Requests • 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? — 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? Examples include: — 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?				

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 Contactor 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

SECTION 00800
SUPPLEMENTARY CONDITIONS
PART II – FEDERAL, STATE AND LOCAL GOVERNMENT PROVISIONS
2.0 COMMONWEALTH OF MASSACHUSETTS PROVISIONS

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

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.

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

Section 39G COMPLETION OF PUBLIC WORKS; SEMI-FINAL AND FINAL ESTIMATES; PAYMENTS; EXTRA WORK; DISPUTED ITEMS

Section 39G. Upon substantial completion of the work required by a contract with the commonwealth, or any agency or political subdivision thereof, for the construction, reconstruction, alteration, remodeling, repair or improvement of public ways, including bridges and other highway structures, sewers and, water mains, airports and other public works, the contractor shall present in writing to the awarding authority its certification that the work has been substantially completed. Within twenty-one days thereafter, the awarding authority shall present to the contractor either a written declaration that the work has been substantially completed or an itemized list of incomplete or unsatisfactory work items required by the contract sufficient to demonstrate that the work has not been substantially completed. The awarding authority may include with

such list a notice setting forth a reasonable time, which shall not in any event be prior to the contract completion date, within which the contractor must achieve substantial completion of the work. In the event that the awarding authority fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the contractor's certification within the twenty-one day period, the contractor's certification shall take effect as the awarding authority's declaration that the work has been substantially completed.

Within sixty-five days after the effective date of a declaration of a substantial completion, the awarding authority shall prepare and forthwith send to the contractor for acceptance a substantial completion estimate for the quantity and price of the work done and all but one per cent retainage, if held by the awarding authority, on that work, including the quantity, price and all but one per cent retainage, if held by the awarding authority, for the undisputed part of each work item and extra work item in dispute but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory work items and less the total periodic payments made to date for the work. The awarding authority also shall deduct from the substantial completion estimate an amount equal to the sum of all demands for direct payment filed by subcontractors and not yet paid to subcontractors or deposited in joint accounts pursuant to section thirty-nine F, but no contract subject to said section thirty-nine F shall contain any other provision authorizing the awarding authority to deduct any amount by virtue of claims asserted against the contract by subcontractors, material suppliers or others.

If the awarding authority fails to prepare and send to the contractor any substantial completion estimate required by this section on or before the date herein above set forth, the awarding authority shall pay to the

contractor interest on the amount which would have been due to the contractor pursuant to such substantial completion estimate at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston from such date to the date on which the awarding authority sends that substantial completion estimate to the contractor for acceptance or to the date of payment therefor, whichever occurs first. The awarding authority shall include the amount of such interest in the substantial completion estimate.

Within fifteen days after the effective date of the declaration of substantial completion, the awarding authority shall send to the contractor by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory work items, and, unless delayed by causes beyond his control, the contractor shall complete all such work items within forty-five days after the receipt of such list or before the then contract completion date, whichever is later. If the contractor fails to complete such work within such time, the awarding authority may, subsequent to seven days' written notice to the contractor by certified mail, return receipt requested, terminate the contract and complete the incomplete or unsatisfactory work items and charge the cost of same to the contractor.

Within thirty days after receipt by the awarding authority of a notice from the contractor stating that all of the work required by the contract has been completed, the awarding authority shall prepare and forthwith send to the contractor for acceptance a final estimate for the quantity and price of the work done and all retainage, if held by the awarding authority, on that work less all payments made to date, unless the awarding authority's inspection shows that work items required by the contract remain incomplete or unsatisfactory, or that documentation required by the contract has not been completed. If the awarding authority fails to prepare

and send to the contractor the final estimate within thirty days after receipt of notice of completion, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such final estimate at the rate hereinabove provided from the thirtieth day after such completion until the date on which the awarding authority sends the final estimate to the contractor for acceptance or the date of payment therefor, whichever occurs first, provided that the awarding authority's inspection shows that no work items required by the contract remain incomplete or unsatisfactory. Interest shall not be paid hereunder on amounts for which interest is required to be paid in connection with the substantial completion estimate as hereinabove provided. The awarding authority shall include the amount of the interest required to be paid hereunder in the final estimate.

The awarding authority shall pay the amount due pursuant to any substantial completion or final estimate within thirty-five days after receipt of written acceptance for such estimate from the contractor and shall pay interest on the amount due pursuant to such estimate at the rate hereinabove provided from that thirty-fifth day to the date of payment. Within 15 days, 30 days in the case of the commonwealth, after receipt from the contractor, at the place designated by the awarding authority, if such place is so designated, of a periodic estimate requesting payment of the amount due for the preceding periodic estimate period, the awarding authority shall make a periodic payment to the contractor for the work performed during the preceding periodic estimate period and for the materials not incorporated in the work but delivered and suitably stored at the site, or at some location agreed upon in writing, to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free

from all encumbrances. The awarding authority shall include with each such payment interest on the amount due pursuant to such periodic estimate at the rate herein above provided from the due date. In the case of periodic payments, the contracting authority may deduct from its payment a retention based on its estimate of the fair value of its claims against the contractor, a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and a retention to secure satisfactory performance of the contractual work not exceeding five per cent of the approved amount of any periodic payment, and the same right to retention shall apply to bonded subcontractors entitled to direct payment under section thirty-nine F of chapter thirty; provided, that a five per cent value of all items that are planted in the ground shall be deducted from the periodic payments until final acceptance.

No periodic, substantial completion or final estimate or acceptance or payment thereof shall bar a contractor from reserving all rights to dispute the quantity and amount of, or the failure of the awarding authority to approve a quantity and amount of, all or part of any work item or extra work item.

Substantial completion, for the purposes of this section, shall mean either that the work required by the contract has been completed except for work having a contract price of less than one per cent of the then adjusted total contract price, or substantially all of the work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the work required by the contract.

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Section 39I DEVIATIONS FROM PLANS AND SPECIFICATIONS

Section 39I. Every contractor having a contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or public works for the commonwealth, or of any political subdivision thereof, shall perform all the work required by such contract in conformity with the plans and specifications contained therein. No wilful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the awarding authority or by the engineer or architect in charge of the work who is duly authorized by the awarding authority to approve such deviations. In order to avoid delays in the prosecution of the work required by such contract such deviation from the plans or specifications may be authorized by a written order of the awarding authority or such engineer or architect so authorized to approve such deviation. Within thirty days thereafter, such written order shall be

confirmed by a certificate of the awarding authority stating: (1) If such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor; (2) that the specified deviation does not materially injure the project as a whole; (3) that either the work substituted for the work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the contracting agency and the contractor and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the contracting authority.

Such certificate shall be signed under the penalties of perjury and shall be a permanent part of the file record of the work contracted for.

Whoever violates any provision of this section wilfully and with intent to defraud shall be punished by a fine of not more than five thousand dollars or by imprisonment for not more than six months, or both.

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Section 39J PUBLIC CONSTRUCTION CONTRACTS; EFFECT OF DECISIONS OF CONTRACTING BODY OR ADMINISTRATIVE BOARD

Section 39J. Notwithstanding any contrary provision of any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or public works by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount of the contract is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, a decision, by the contracting body or by any administrative board, official or agency, or by any architect or engineer, on a dispute, whether of fact or of law, arising under said contract shall not be final or conclusive if such decision is made in bad faith, fraudulently, capriciously,

or arbitrarily is unsupported by substantial evidence, or is based upon error of law.

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Section 39L PUBLIC CONSTRUCTION WORK BY FOREIGN CORPORATIONS; RESTRICTIONS AND REPORTS

Section 39L. The commonwealth and every county, city, town, district, board, commission or other public body which, as the awarding authority, requests proposals, bids or sub-bids for any work in the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or other public works (1) shall not enter into a contract for the work with, and shall not approve as a subcontractor furnishing labor and materials for a part of the work, a foreign corporation which has not filed with the awarding authority a certificate of the state secretary stating that the corporation has complied with requirements of section 15.03 of subdivision A of Part 15 of chapter 156D and the date of compliance, and further has filed all annual reports required by section 16.22 of subdivision B of Part 16 of said chapter 156D, and (2) shall report to the state secretary and to the department of corporations and taxation any foreign

corporation performing work under such contract or subcontract, and any person, other than a corporation, performing work under such contract or subcontract, and residing or having a principal place of business outside the commonwealth.

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Section 39M CONTRACTS FOR CONSTRUCTION AND MATERIALS; MANNER OF AWARDING

[Subsection (a) effective until November 7, 2016. For text effective November 7, 2016, see below.]

Section 39M. (a) Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district, or housing authority, and estimated by the awarding authority to cost more than ten thousand dollars, and every contract for the construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency, as defined by subsection one of section forty-four A of chapter one hundred and forty-nine, estimated to cost more than $25,000 but not more than $100,000, shall be awarded to the lowest responsible and

eligible bidder on the basis of competitive bids publicly opened and read by such awarding authority forthwith upon expiration of the time for the filing thereof; provided, however, that such awarding authority may reject any and all bids, if it is in the public interest to do so. Every bid for such contract shall be accompanied by a bid deposit in the form of a bid bond, or cash, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the awarding authority. The amount of such bid deposit shall be five per cent of the value of the bid. Any person submitting a bid under this section shall, on such bid, certify as follows:

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

_____

(Name of person signing bid)

_____

(Company)

This paragraph shall not apply to the award of any contract subject to the provisions of sections forty-four A to forty-four J, inclusive, of chapter one hundred and forty-nine and every such contract shall continue to be awarded as provided therein. In cases of extreme emergency caused by enemy attack, sabotage or other such hostile actions or resulting from an imminent security threat explosion, fire, flood, earthquake, hurricane, tornado or other such catastrophe, an awarding authority may, without competitive bids and notwithstanding any general or specific law, award

contracts otherwise subject to this paragraph to perform work and to purchase or rent materials and equipment, all as may be necessary for temporary repair and restoration to service of any and all public work in order to preserve the health and safety of persons or property; provided, that this exception shall not apply to any permanent reconstruction, alteration, remodeling or repair of any public work.

[Subsection (a) as amended by 2016, 218, Sec. 2 effective November 7, 2016. For text effective until November 7, 2016, see above.]

(a) Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district or housing authority that is and estimated by the awarding authority to cost less than $10,000 dollars shall be obtained through the exercise of sound business practices as defined in section 2 of chapter 30B. The awarding authority shall make and keep a record of each procurement that, at a minimum, shall include the name and address of the person from whom the services were procured. An awarding authority that utilizes a vendor on a statewide contract procured through the operational services division, or a blanket contract procured by the awarding authority pursuant to this section, shall be deemed to have obtained the contract through sound business practices.

Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district or housing authority that is estimated by the awarding authority to cost not less than $10,000 but not more than $50,000 shall be awarded to the responsible bidder offering to perform the contract at the lowest price. The awarding authority shall

make public notification of the contract and shall seek written responses from no fewer than 3 persons who customarily perform such work. For purposes of this subsection, the term "public notification" shall include, but need not be limited to, posting, at least 2 weeks before the time specified in the notification for the receipt of responses, the contract and scope-of-work statement: (1) on the website of the awarding authority, (2) on the COMMBUYS system administered by the operational services division, (3) in the central register published pursuant to section 20A of chapter 9 and (4) in a conspicuous place in or near the primary office of the awarding authority; provided, however, that if the awarding authority obtains a minimum of 2 written responses from a vendor list established through a blanket contract or a statewide contract procured through the operational services division, and the lowest of those written responses is deemed acceptable to the awarding authority, public notification is not required. The solicitation shall include a scope-of-work statement that defines the work to be performed and provides potential responders with sufficient information regarding the objectives and requirements of the awarding authority and the time period within which the work shall be completed. The awarding authority shall record the names and addresses of all persons from whom written responses were sought, the names of the persons submitting written responses and the date and amount of each written response.

An awarding authority may utilize a vendor list established through a statewide contract procured through the operational services division to identify 1 or more of the persons from whom it will seek written responses for purposes of this subsection. An awarding authority may also procure a blanket contract to establish a listing of vendors in certain defined categories of work that are under contract to provide services for multiple individual tasks of not more than $50,000 each, and from whom written

responses will be sought. Any such blanket contract procured by the awarding authority shall be procured pursuant to this section or sections 44A to 44J, inclusive, of chapter 149 which are applicable to projects over $50,000.

Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district or housing authority that is estimated by the awarding authority to cost more than $50,000, and every contract for the construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency, as defined by subsection (1) of section 44A of chapter 149, estimated to cost more than $50,000 but not more than $150,000, shall be awarded to the lowest eligible responsible bidder on the basis of competitive bids publicly opened and read by the awarding authority forthwith upon expiration of the time for the filing thereof; provided, however, that such awarding authority may reject any and all bids, if it is in the public interest to do so. Every bid for such contract shall be accompanied by a bid deposit in the form of: (1) a bid bond, (2) cash, or (3) a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the awarding authority. The amount of the bid deposit shall be 5 per cent of the value of the bid. Any person submitting a bid pursuant to this section shall, on such bid, certify as follows:

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

(Name of person signing bid)

(Company)

This subsection shall not apply to the award of any contract subject to the provisions of sections 44A to 44J, inclusive, of chapter 149 and every such contract shall continue to be awarded as provided therein. In cases of extreme emergency: (1) caused by enemy attack, sabotage or other such hostile actions or (2) resulting from an imminent security threat explosion, fire, flood, earthquake, hurricane, tornado or other such catastrophe, an awarding authority may, without competitive bids and notwithstanding any general or special law, award contracts otherwise subject to this subsection to perform work and to purchase or rent materials and equipment, all as may be necessary for temporary repair and restoration to service of any and all public work in order to preserve the health and safety of persons or property; provided, that this exception shall not apply to any permanent reconstruction, alteration, remodeling or repair of any public work.

(b) Specifications for such contracts, and specifications 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 therefor, 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, in the

opinion of the awarding authority: (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 name or described materials.

(c) The term "lowest responsible and eligible bidder" shall mean the bidder: (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who shall certify, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who shall certify that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; (4) who, where the provisions of section 8B of chapter 29 apply, shall have been determined to be qualified thereunder; and (5) who obtains within 10 days of the notification of contract award the security by bond required under section 29 of chapter 149; provided that for the purposes of this section the term "security by bond" shall mean the bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority; provided further, that if there is more than 1 surety company, the surety companies

shall be jointly and severally liable.

[Subsection (d) effective until November 7, 2016. For text effective November 7, 2016, see below.]

(d) The provisions of this section shall not apply (1) to the extent that they prevent the approval of such specifications by any contributing federal agency, (2) to materials purchased under specifications of the state department of highways at prices established by the said department pursuant to advertisement and bidding in connection with work to be performed under the provisions of chapter eighty-one or chapter ninety, (3) to any transaction between the commonwealth and any of its political subdivisions or between the commonwealth and any public service corporation, and (4) to any contract of not more than twenty-five thousand dollars awarded by a governmental body, as defined by section two of chapter thirty B, in accordance with the provisions of section five of said chapter thirty B; and (5) to any contract solely for the purchase of material awarded by a governmental body, as defined by section 2 of chapter 30B, in accordance with section 5 of said chapter 30B.

[Subsection (d) as amended by 2016, 218, Secs. 3 and 4 effective November 7, 2016. For text effective until November 7, 2016, see above.]

(d) The provisions of this section shall not apply (1) to the extent that they prevent the approval of such specifications by any contributing federal agency, (2) to materials purchased under specifications of the state department of highways at prices established by the said department pursuant to advertisement and bidding in connection with work to be performed under the provisions of chapter eighty-one or chapter ninety, (3) to any transaction between the commonwealth and any of its political subdivisions or between the commonwealth and any public service corporation, and (4) to any contract of not more than $50,000 awarded by

a governmental body, as defined by section two of chapter thirty B, in accordance with the provisions of section five of said chapter thirty B; and (5) to any contract solely for the purchase of material awarded by a governmental body, as defined by section 2 of chapter 30B, in accordance with section 5 of said chapter 30B, or procured through the operational services division pursuant to sections 22 and 52 of chapter 7.

(e) The word "material" as used in this section shall mean and include any article, assembly, system, or any component part thereof.

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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.

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Section 39O CONTRACTS FOR CONSTRUCTION AND MATERIALS; SUSPENSION, DELAY OR INTERRUPTION DUE TO ORDER OF AWARDING AUTHORITY; ADJUSTMENT IN CONTRACT PRICE; WRITTEN CLAIM

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.

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Section 39P CONTRACTS FOR CONSTRUCTION AND MATERIALS; AWARDING AUTHORITY'S DECISIONS ON INTERPRETATION OF SPECIFICATIONS, ETC.; TIME LIMIT; NOTICE

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 requires 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.

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Section 39Q CONTRACTS FOR CAPITAL FACILITY CONSTRUCTION; CONTENTS; ANNUAL CLAIMS REPORT

Section 39Q. (1) Every contract awarded by any state agency as defined by section thirty-nine A of chapter seven for the construction, reconstruction, alteration, remodeling, repair or demolition of any capital facility as defined by the aforesaid section thirty-nine A shall contain the following subparagraphs (a) through (d) in their entirety:

(a) Disputes regarding changes in and interpretations of the terms or scope of the contract and denials of or failures to act upon claims for payment for extra work or materials shall be resolved according to the following procedures, which shall constitute the exclusive method for resolving such disputes. Written notice of the matter in dispute shall be submitted promptly by the claimant to the chief executive official of the state agency which awarded the contract or his designee. No person or business entity

having a contract with a state agency shall delay, suspend, or curtail performance under that contract as a result of any dispute subject to this section. Any disputed order, decision or action by the agency or its authorized representative shall be fully performed or complied with pending resolution of the dispute.

(b) Within thirty days of submission of the dispute to the chief executive official of the state agency or his designee, he shall issue a written decision stating the reasons therefor, and shall notify the parties of their right of appeal under this section. If the official or his designee is unable to issue a decision within thirty days, he shall notify the parties to the dispute in writing of the reasons why a decision cannot be issued within thirty days and of the date by which the decision shall issue. Failure to issue a decision within the thirty-day period or within the additional time period specified in such written notice shall be deemed to constitute a denial of the claim and shall authorize resort to the appeal procedure described below. The decision of the chief executive official or his designee shall be final and conclusive unless an appeal is taken as provided below.

(c) Within twenty-one calendar days of the receipt of a written decision or of the failure to issue a decision as stated in the preceding subparagraph, any aggrieved party may file a notice of claim for an adjudicatory hearing with the division of hearing officers or the aggrieved party may file an action directly in a court of competent jurisdiction and shall serve copies thereof upon all other parties in the form and manner prescribed by the rules governing the conduct of adjudicatory proceedings of the division of hearing officers. In the event an aggrieved party exercises his option to file an action directly in court as provided in the previous sentence, the twenty-one day period shall not apply to such filing and the period of filing such action shall be the same period otherwise applicable for filing a

civil action in superior court. The appeal shall be referred to a hearing officer experienced in construction law and shall be prosecuted in accordance with the formal rules of procedure for the conduct of adjudicatory hearings of the division of hearing officers, except as provided below. The hearing officer shall issue a final decision as expeditiously as possible, but in no event more than one hundred and twenty calendar days after conclusion of the adjudicatory hearing, unless the decision is delayed by a request for extension of time for filing post-hearing briefs or other submissions assented to by all parties. Whenever, because an extension of time has been granted, the hearing officer is unable to issue a decision within one hundred and twenty days, he shall notify all parties of the reasons for the delay and the date when the decision will issue. Failure to issue a decision within the one hundred and twenty-day period or within the additional period specified in such written notice shall give the petitioner the right to pursue any legal remedies available to him without further delay.

(d) When the amount in dispute is less than ten thousand dollars, a contractor who is party to the dispute may elect to submit the appeal to a hearing officer experienced in construction law for expedited hearing in accordance with the informal rules of practice and procedure of the division of hearing officers. An expedited hearing under this subparagraph shall be available at the sole option of the contractor. The hearing officer shall issue a decision no later than sixty days following the conclusion of any hearing conducted pursuant to this subparagraph. The hearing officer's decision shall be final and conclusive, and shall not be set aside except in cases of fraud.

(2) The commissioner of administration shall require the division of hearings officers to prepare annually a report concerning the construction

contract claims submitted to the division during the preceding twelve months, in such form as the commissioner shall prescribe. The report shall contain, at a minimum, the following information: the number of claims submitted; the names of all parties to each such claim; a brief description of the claim; the date of submission and of disposition of the claim; its disposition, whether by settlement, withdrawal, default or written decision; and the number of claims currently pending. The original of the report shall be submitted to the commissioner of administration by January fifteenth, and a copy shall be filed with the state librarian and shall be a public document.

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Section 39R KEEPING AND MAINTAINING OF BOOKS, RECORDS AND ACCOUNTS; STATEMENT OF MANAGEMENT ON INTERNAL ACCOUNTING CONTROL; FINANCIAL STATEMENTS; ENFORCEMENT

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 sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A to forty-four H, inclusive, of chapter one hundred and forty-nine, which is for an amount or estimated amount greater than one hundred

thousand dollars.

(2) "Contract" means any contract awarded or executed pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred and forty-nine, which is for 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, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or 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 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 declination 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 he has made and sets forth his 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 the 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 principles and auditing standards.

(b) Subsection (a)(2) hereof notwithstanding, every agreement or contract awarded or executed pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven, or eleven C of chapter twenty-five A, and pursuant to section thirty-nine M of chapter thirty or to section forty-four A through H, inclusive, of chapter one hundred and forty-nine, 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 office of inspector general, and the commissioner of capital asset management and maintenance shall have the right to examine any books, documents, papers or records of the contractor or of his subcontractors that directly pertain to, and involve transactions relating to, the contractor or his 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 description the date of the change and reasons therefor, 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 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 commissioner of capital asset management and maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be

accompanied by an accountant's report. Such statements shall be made available to the awarding authority upon request.

(e) The office of inspector general, the commissioner of capital asset management and maintenance and any other awarding authority shall enforce the provisions of this section. The commissioner of capital asset management and maintenance 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 debarment pursuant to section forty-four C of chapter one hundred and forty-nine.

(f) Records and statements required to be made, kept or filed under the provisions of this section shall not be public records as defined in section seven of chapter four and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of clause (2) of paragraph (b).

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

Section 39S CONTRACTS FOR CONSTRUCTION; REQUIREMENTS

Section 39S. (a) As used in this section the word "person" shall mean any natural person, joint venture, partnership corporation or other business or legal entity. Any person submitting a bid for, or signing a contract to work on, the construction, reconstruction, alteration, remodeling or repair of any public work by the commonwealth, or political subdivision thereof, or by any county, city, town, district, or housing authority, and estimated by the awarding authority to cost more than $10,000, and any person submitting a bid for, or signing a contract to work on, the construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency, estimated to cost more than $10,000, shall certify on the bid, or contract, under penalties of perjury, as follows:

(1) that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all

employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

(b) Any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

(c) The attorney general, or his designee, shall have the power to enforce this section including the power to institute and prosecute proceedings in the superior court to restrain the award of contracts and the performance of contracts in all cases where, after investigation of the facts, he has made a finding that the award or performance has resulted in violation, directly or indirectly, of subsection (b), and he shall not be required to pay to the clerk of the court an entry fee in connection with the institution of the proceeding.

Part I ADMINISTRATION OF THE GOVERNMENT

Title XIV PUBLIC WAYS AND WORKS

Chapter 82 THE LAYING OUT, ALTERATION, RELOCATION AND DISCONTINUANCE OF PUBLIC WAYS, AND SPECIFIC REPAIRS THEREON

Section 40 DEFINITIONS

Section 40. The following words, as used in this section and sections 40A to 40E, inclusive, shall have the following meanings:?

"Company", natural gas pipeline company, petroleum or petroleum products pipeline company, public utility company, cable television company, and municipal utility company or department that supply gas, electricity, telephone, communication or cable television services or private water companies within the city or town where such excavation is to be made.

"Description of excavation location", such description shall include the name of the city or town, street, way, or route number where appropriate, the name of the streets at the nearest intersection to the excavation, the

number of the buildings closest to the excavation or any other description, including landmarks, utility pole numbers or other information which will accurately define the location of the excavation.

"Emergency", a condition in which the safety of the public is in imminent danger, such as a threat to life or health or where immediate correction is required to maintain or restore essential public utility service.

"Excavation", an operation for the purpose of movement or removal of earth, rock or the materials in the ground including, but not limited to, digging, blasting, augering, backfilling, test boring, drilling, pile driving, grading, plowing in, hammering, pulling in, jacking in, trenching, tunneling and demolition of structures, excluding excavation by tools manipulated only by human power for gardening purposes and use of blasting for quarrying purposes.

"Excavator", any entity including, but not limited to, a person, partnership, joint venture, trust, corporation, association, public utility, company or state or local government body which performs excavation operations.

"Premark", to delineate the general scope of the excavation or boring on the paved surface of the ground using white paint, or stakes or other suitable white markings on nonpaved surfaces. No premarking shall be acceptable if such marks can reasonably interfere with traffic or pedestrian control or are misleading to the general public. Premarking shall not be required of any continuous excavation that is over 500 feet in length.

"Safety zone", a zone designated on the surface by the use of standard color-coded markings which contains the width of the facilities plus not more than 18 inches on each side.

"Standard color-coded markings", red - electric power lines, cables, conduit or light cables; yellow - gas, oil, street petroleum, or other gaseous

materials; orange - communications cables or conduit, alarm or signal lines; blue - water, irrigation and slurry lines; green - sewer and drain lines; white - premark of proposed excavation.

"System", the underground plant damage prevention system as defined in section 76D of chapter 164.

Part I ADMINISTRATION OF THE GOVERNMENT

Title XIV PUBLIC WAYS AND WORKS

Chapter 82 THE LAYING OUT, ALTERATION, RELOCATION AND DISCONTINUANCE OF PUBLIC WAYS, AND SPECIFIC REPAIRS THEREON

Section 40A EXCAVATIONS; NOTICE

Section 40A. No excavator installing a new facility or an addition to an existing facility or the relay or repair of an existing facility shall, except in an emergency, make an excavation, in any public or private way, any company right-of-way or easement or any public or privately owned land or way, unless at least 72 hours, exclusive of Saturdays, Sundays and legal holidays but not more than 30 days before the proposed excavation is to be made, such excavator has premarked not more than 500 feet of the proposed excavation and given an initial notice to the system. Such initial notice shall set forth a description of the excavation location in the manner as herein defined. In addition, such initial notice shall indicate whether any such excavation will involve blasting and, if so, the date and the location at which such blasting is to occur.

The notice requirements shall be waived in an emergency as defined herein; provided, however, that before such excavation begins or during a life-threatening emergency, notification shall be given to the system and the initial point of boring or excavation shall be premarked. The excavator shall ensure that the underground facilities of the utilities in the area of such excavation shall not be damaged or jeopardized.

In no event shall any excavation by blasting take place unless notice thereof, either in the initial notice or a subsequent notice accurately specifying the date and location of such blasting shall have been given and received at least 72 hours in advance, except in the case of an unanticipated obstruction requiring blasting when such notice shall be not less than four hours prior to such blasting. If any such notice cannot be given as aforesaid because of an emergency requiring blasting, it shall be given as soon as may be practicable but before any explosives are discharged.

Part I ADMINISTRATION OF THE GOVERNMENT

Title XIV PUBLIC WAYS AND WORKS

Chapter 82 THE LAYING OUT, ALTERATION, RELOCATION AND DISCONTINUANCE OF PUBLIC WAYS, AND SPECIFIC REPAIRS THEREON

Section 40B DESIGNATION OF LOCATION OF UNDERGROUND FACILITIES

Section 40B. Within 72 hours, exclusive of Saturdays, Sundays and legal holidays, from the time the initial notice is received by the system or at such time as the company and the excavator agree, such company shall respond to the initial notice or subsequent notice by designating the location of the underground facilities within 15 feet in any direction of the premarking so that the existing facilities are to be found within a safety zone. Such safety zone shall be so designated by the use of standard color-coded markings. The providing of such designation by the company shall constitute prima facie evidence of an exercise of reasonable precaution by the company as required by this section; provided, however, that in the event that the excavator has given notice as aforesaid at a location at which because of the length of excavation the company cannot reasonably

designate the entire location of its facilities within such 72 hour period, then such excavator shall identify for the company that portion of the excavation which is to be first made and the company shall designate the location of its facilities in such portion within 72 hours and shall designate the location of its facilities in the remaining portion of the location within a reasonable time thereafter. When an emergency notification has been given to the system, the company shall make every attempt to designate its facilities as promptly as possible.

Part I ADMINISTRATION OF THE GOVERNMENT

Title XIV PUBLIC WAYS AND WORKS

Chapter 82 THE LAYING OUT, ALTERATION, RELOCATION AND DISCONTINUANCE OF PUBLIC WAYS, AND SPECIFIC REPAIRS THEREON

Section 40C EXCAVATOR'S RESPONSIBILITY TO MAINTAIN DESIGNATION MARKINGS; DAMAGE CAUSED BY EXCAVATOR

Section 40C. After a company has designated the location of its facilities at the location in accordance with section 40B, the excavator shall be responsible for maintaining the designation markings at such locations, unless such excavator requests remarking at the location due to the obliteration, destruction or other removal of such markings. The company shall then remark such location within 24 hours following receipt of such request.

When excavating in close proximity to the underground facilities of any company when such facilities are to be exposed, non-mechanical means shall be employed, as necessary, to avoid damage in locating such facility

and any further excavation shall be performed employing reasonable precautions to avoid damage to any underground facilities including, but not limited to, any substantial weakening of structural or lateral support of such facilities, penetration or destruction of any pipe, main, wire or conduit or the protective coating thereof, or damage to any pipe, main, wire or conduit.

If any damage to such pipe, main, wire or conduit or its protective coating occurs, the company shall be notified immediately by the excavator responsible for causing such damage.

The making of an excavation without providing the notice required by section 40A with respect to any proposed excavation which results in any damage to a pipe, main, wire or conduit, or its protective coating, shall be prima facie evidence in any legal or administrative proceeding that such damage was caused by the negligence of such person.

Part I ADMINISTRATION OF THE GOVERNMENT

Title XIV PUBLIC WAYS AND WORKS

Chapter 82 THE LAYING OUT, ALTERATION, RELOCATION AND DISCONTINUANCE OF PUBLIC WAYS, AND SPECIFIC REPAIRS THEREON

Section 40D LOCAL LAWS REQUIRING EXCAVATION PERMITS; PUBLIC WAYS

Section 40D. Nothing in this section shall affect or impair local ordinances or by-laws requiring a permit to be obtained before excavation in a public way or on private property; but notwithstanding any general or special law, ordinance or by-law to the contrary, to the extent that any permit issued under the provisions of the state building code or state fire code requires excavation by an excavator on a public way or on private property, the permit shall not be valid unless the excavator notifies the system as required pursuant to sections 40 and 40A, before the commencement of the excavation, and has complied with the permitting requirements of chapter 82A.

Part I ADMINISTRATION OF THE GOVERNMENT

Title XIV PUBLIC WAYS AND WORKS

Chapter 82 THE LAYING OUT, ALTERATION, RELOCATION AND DISCONTINUANCE OF PUBLIC WAYS, AND SPECIFIC REPAIRS THEREON

Section 40E VIOLATIONS OF SECS. 40A TO 40E; PUNISHMENT

Section 40E. Any person or company found by the department of telecommunications and energy, after a hearing, to have violated any provision of sections 40A to 40E, inclusive, shall be fined $1,000 for the first offense and not less than $5,000 nor more than $10,000 for any subsequent offense within 12 consecutive months as set forth by the rules of said department; provided, however, that nothing herein shall be construed to require forfeiture of any penal sum by a state or local government body for violation of section 40A or 40C; and provided, further, that nothing herein shall be construed to require the forfeiture of any penal sum by a residential property owner for the failure to premark for an excavation on such person's residential property.

Part I ADMINISTRATION OF THE GOVERNMENT

Title XIV PUBLIC WAYS AND WORKS

Chapter 82A EXCAVATION AND TRENCH SAFETY

Section 1 UNATTENDED OPEN TRENCHES; SAFETY HAZARDS; RULES AND REGULATIONS; FINES

Section 1. An excavator shall not leave an open trench unattended without first making reasonable effort to eliminate any recognized safety hazard that may exist as a result of leaving the open trench unattended. The commissioner of public safety, in conjunction with the director of labor and workforce development, or his designee, shall promulgate rules and regulations governing all construction related excavations and trench safety. The rules and regulations shall include, but not be limited to, a description of recognized safety hazards that may exist as a result of leaving open trenches or excavations unattended, a description of the procedures required or recommended by the department to eliminate safety hazards which may include covering, barricading or otherwise protecting open trenches from accidental entry, and a penalty structure for each violation of the proposed rules and regulations to be imposed by the department empowered with ensuring compliance with the rules and regulations. This penalty structure shall include the imposition of a fine for

each violation of the regulations promulgated pursuant to this section. Any such fines collected by the department of public safety or the department of labor and workforce development shall be available for expenditure, without further appropriation, by those departments in an amount not to exceed $100,000 during each fiscal year for the sole purpose of providing construction safety training for licensed operators of hoisting equipment, police department officials, fire department officials and building officials. Those departments may also charge a reasonable fee to help defray the costs associated with said training. Any monies collected from the imposition of these fines in excess of $100,000 shall be transmitted monthly by those departments to the state treasurer who shall then deposit the excess funds into the General Fund. The department of public safety, in conjunction with the department of labor and workforce development, shall file a report detailing the amount of fines imposed, collected and expended pursuant to this section with the house and senate committees on ways and means and with the joint committee on public safety not later than August 15 of each year. The rules and regulations shall not be effective until the department of public safety has received a formal determination from the United States Secretary of Labor that the proposed rules or regulations do not seek to assume responsibility for development and enforcement therein of occupational safety and health standards relating to any occupational safety or health issue with respect to which a federal standard has already been promulgated under 29 U.S.C. section 667 or until the rules and regulations are approved by the United States Secretary of Labor as a state plan for the development of the standards and their enforcement pursuant to 29 U.S.C. section 667(c).

Part I ADMINISTRATION OF THE GOVERNMENT

Title XXI LABOR AND INDUSTRIES

Chapter 149 LABOR AND INDUSTRIES

Section 34 PUBLIC CONTRACTS; STIPULATION AS TO HOURS AND DAYS OF WORK; VOID CONTRACTS

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, sub-contractor 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 forty-eight 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; provided, that in contracts entered into by the department of highways for the construction or reconstruction of highways there may be inserted in said stipulation a provision that said department, or any contractor or sub-

contractor for said department, may employ laborers, workmen, mechanics, foremen and inspectors for more than eight hours in any one day in such construction or reconstruction when, in the opinion of the commissioner, public necessity so requires. Every such contract not containing the aforesaid stipulation shall be null and void.

Part I ADMINISTRATION OF THE GOVERNMENT

Title XXI LABOR AND INDUSTRIES

Chapter 149 LABOR AND INDUSTRIES

Section 44J INVITATIONS TO BID; NOTICE; CONTENTS; VIOLATIONS; PENALTY

[Subsection (1) effective until November 7, 2016. For text effective November 7, 2016, see below.]

Section 44J. (1) No public agency or authority of the commonwealth or any political subdivision thereof shall award any contract for which competitive bids are required pursuant to section forty-four A of this chapter or section thirty-nine M of chapter thirty, or for which competitive proposals are required pursuant to subsection (4) of section forty-four E of this chapter or section eleven C of chapter twenty-five A, unless a notice inviting bids or proposals therefor shall have been posted no less than one week prior to the time specified in such notice for the receipt of said bids or proposals in a conspicuous place in or near the offices of the awarding authority, and shall have remained posted until the time so specified, and unless such notice shall also have been published at least once not less than two weeks prior to the time so specified in the central register

published by the secretary of state pursuant to section twenty A of chapter nine and in a newspaper of general circulation in the locality of the proposed project. Said notice shall also be published at such other times and in such other newspapers or trade periodicals as the commissioner of capital asset management and maintenance may require, having regard to the locality of the work involved.

[Subsection (1) as amended by 2016, 218, Sec. 230 effective November 7, 2016. For text effective until November 7, 2016, see above.]

(1) No public agency or authority of the commonwealth or any political subdivision thereof shall award any contract for which competitive bids are required pursuant to section forty-four A of this chapter or section thirty-nine M of chapter thirty, or for which competitive proposals are required pursuant to subsection (4) of section forty-four E of this chapter or section eleven C of chapter twenty-five A, unless a notice inviting bids or proposals therefor shall have been posted no less than one week prior to the time specified in such notice for the receipt of said bids or proposals in a conspicuous place in or near the offices of the awarding authority, and shall have remained posted until the time so specified, and unless such notice shall also have been published at least once not less than two weeks prior to the time so specified in the central register published by the secretary of state pursuant to section twenty A of chapter nine and in a newspaper of general circulation in the locality of the proposed project, and on the COMMBUYS system administered by the operational services division. Said notice shall also be published at such other times and in such other newspapers or trade periodicals as the commissioner of capital asset management and maintenance may require, having regard to the locality of the work involved.

(2) Said notice shall specify the time and place where plans and

specifications of the proposed work may be had; the time and place of submission of general bids; and the time and place for opening of the general bids. For contracts subject to the provisions of sections forty-four A to H, inclusive, of this chapter, said notice shall also specify the time and place for submission of filed sub-bids, where required pursuant to section forty-four F; and the time and place for opening of said filed sub-bids.

Said notice shall also provide sufficient facts concerning the nature and scope of such project, the type and elements of construction, and such other information as will assist applicants in deciding to bid on such contract.

(3) No contract or preliminary plans and specifications shall be split or divided for the purpose of evading the provisions of this section.

(4) General bids and filed sub-bids for any contract subject to this section shall be in writing and shall be opened in public at the time and place specified in the posted or published notice, and after being so opened shall be open to public inspection.

(5) The provisions of this section shall not apply to any transaction between the commonwealth and any public service corporation.

(6) The provisions of this section may be waived in cases of extreme emergency involving the health and safety of the people and their property, upon the written approval of said commissioner. The written approval shall contain a description of the circumstances and the reasons for the commissioner's determination.

(7) Whoever violates any provision of this section shall be punished by a fine of not more than ten thousand dollars or by imprisonment in the state prison for not more than three years or in a jail or house of correction for

not more than two and one-half years, or by both said fine and imprisonment; and in the event of final conviction, said person shall be incapable of holding any office of honor, trust or profit under the commonwealth or under any county, district of municipal agency.

Each and every person who shall cause or conspire to cause any contract or preliminary plans and specifications to be split or divided for the purpose of evading the provisions of this section shall forfeit and pay to the commonwealth, a political subdivision thereof or other awarding authority subject to this section, the sum of not more than five thousand dollars and, in addition, such person or persons shall pay, apportioned among them, double the amount of damages which the commonwealth or political subdivision thereof or other awarding authority may have sustained by reason of the doing of such act, together with the costs of the action.

(8) If an awarding authority rejects all general bids or does not receive any general bids, and advertises for a second opening of general bids with the original filed sub-bids as set forth in subsection (1) of section forty-four E the notice for receipt of such general bids may be published in the central register and elsewhere as required not less than one week prior to the time specified for such second opening of general bids.

(9) No request for proposals or invitation for bids issued under sections 38A 1/2 to 38*O*, inclusive, of chapter 7, section 11C of chapter 25A, section 39M of chapter 30, this section and sections 44A to 44H, inclusive, shall be advertised if the awarding authority's cost estimate is greater than 1 year old.

APPENDIX H

PRICE ADJUSTMENTS FOR CERTAIN MATERIALS IN CONSTRUCTION PROJECTS
MGL CHAPTER 30, SECTION 38A

On November 20, 2013, the Massachusetts Legislature passed a bill (Chapter 150 of the Acts of 2013) requiring that water and sewer projects bid under MGL Chapter 30 Section 39M include price adjustment clauses for **fuel** (both diesel and gasoline), **liquid asphalt** and **portland cement** contained in cast in place concrete for all projects that are advertised for bid after January 1, 2014.

The inclusion of these clauses in the construction contract is the responsibility of the awarding authority, and as such, MassDEP does not dictate what language should be used in the contract. MassDEP will, however, review the contracts to verify that price adjustment clauses have been included.

Awarding Authorities may find value from researching the *price adjustment* information on the Massachusetts Department of Transportation (MassDOT) website at https://www.massdot.state.ma.us/highway/DoingBusinessWithUs/Construction/PriceAdjustments.aspx. MassDOT requires the use of price adjustment clauses in all of its contracts, and since 2008 has been requiring cities and towns utilizing Chapter 90 road construction funds to also include price adjustment clauses. Because of this, many cities and towns may already have drafted appropriate price adjustment language. This language would be suitable for use in SRF funded contracts. The MassDOT website has extensive information on price adjustments and required contract language for MassDOT contracts.

Attached below is the new Chapter 30, Section 38A language and the contract language that MassDOT uses in its construction contracts. The MassDOT contract language is presented as a possible starting point for borrowers that have not drafted price adjustment clauses. The LGU should consult with their legal and contract staff as appropriate in developing the price adjustment clauses.

Chapter 150 of the Acts of 2013
An Act Relative to Price Adjustment for Certain Materials in Construction Projects

Whereas, the deferred operation of this act would tend to defeat its purpose, which is to establish forthwith certain price adjustments, therefore it is hereby declared to be an emergency law, necessary for the immediate preservation of the public convenience.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same as follows:

SECTION 1. Chapter 30 of the General Laws is hereby amended by inserting after section 38 the following section:-

Section 38A. Contracts for road and bridge projects awarded as a result of a proposal or invitation for bids under section 39M shall include a price adjustment clause for each of the following materials: fuel, both diesel and gasoline; asphalt; concrete; and steel. Contracts for water and sewer projects awarded as a result of a proposal or invitation for bids under said section 39M shall include a price adjustment clause for fuel, both diesel and gasoline; liquid asphalt; and

portland cement contained in cast-in-place concrete. A base price for each material shall be set by the awarding authority or agency and shall be included in the bid documents at the time the project is advertised. The awarding authority or agency shall also identify in the bid documents the price index to be used for each material. The price adjustment clause shall provide for a contract adjustment to be made on a monthly basis when the monthly cost change exceeds plus or minus 5 per cent.

SECTION 2. Section 1 shall apply to projects which are advertised for bid after January 1, 2014.

Approved, November 25, 2013.

MassDOT Price Adjustment Clauses

DOCUMENT 00811
SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES
ENGLISH UNITS
Revised: 02/02/2009

This provision applies to all projects using greater than 100 tons of hot mix asphalt (HMA) mixtures containing liquid asphalt cement as stipulated in the Notice to Contractors section of the bid documents.

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. This Price Adjustment will occur on a monthly basis.

Base Price
The Base Price of liquid asphalt on a project as listed in the Notice to Contractors section of the bid documents is a fixed price determined at the time of bid by the Department by using the same method as for the determination of the Period Price detailed below.

Period Price
Please note that, starting December 15, 2008, two sets of period prices will be posted each month on the MassHighway website at http://www.massdot.state.ma.us/. They will be labeled "New Asphalt Period Price Method" and "Old Asphalt Period Price Method".

New Asphalt Period Price Method
The "New Asphalt Period Price Method" is for contracts bid after December 15, 2008 and will show the Period Price of liquid asphalt for each monthly period as determined by MassHighway using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer's terminal, as listed under the "East Coast Market - New England, Boston, Massachusetts area" section of the Poten & Partners, Inc. "Asphalt Weekly Monitor". This average selling price is listed in the issue having a publication date of the second Friday of the month and will be posted as the Period Price for that month. MassHighway will post this Period Price on this website within two (2) business days following their receipt of the relevant issue of the "Asphalt Weekly Monitor". Poten and Partners has granted MassHighway the right to publish this specific asphalt price information sourced from the Asphalt Weekly Monitor.

Old Asphalt Period Price Method
The "Old Asphalt Period Price Method" Period Price will be for contracts bid on or before December 15, 2008 and will contain liquid asphalt prices as determined by the old or previous method. These prices will continue to be posted on MassHighway's website until all contracts using the "Old Asphalt Period Price Method" Period Price have been closed.

New and Old Asphalt Period Price Methods
The paragraphs below apply to both the New and the Old Asphalt Period Price Methods.
The Contract Price of the hot mix 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 applies only to the actual virgin liquid asphalt content in the mixture placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M3.11.03.

The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of tons of hot mix asphalt mixtures placed during each monthly period times the liquid asphalt content percentage times the variance in price between Base Price and Period Price of liquid asphalt.

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 a Department approved extension of time.

******** END OF DOCUMENT ********

DOCUMENT 00812
SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE – ENGLISH UNITS
Revised: 01/26/2009

This monthly fuel price adjustment is inserted in this contract because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the Commonwealth, depending on an increase or decrease in the average price of diesel fuel or gasoline.

This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. 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 in the Department's web site (http://www.massdot.state.ma.us/) 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: Items 120, 120.1, 121, 123, 124, 125, 127, 129.3, 140, 140.1, 141, 142, 143, 144., 150, 150.1, 151 and 151.1 (Both Factors used)	0.29 Gallons / CY	0.15 Gallons / CY
Surfacing Work: All Items containing Hot Mix Asphalt	2.90 Gallons / Ton	Does Not Apply

******** END OF DOCUMENT ********

DOCUMENT 00814
SPECIAL PROVISIONS
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES
January 12, 2009

This provision applies to all projects using greater than 100 Cubic Yards (76 Cubic Meters) of Portland cement concrete containing Portland cement as stipulated in the Notice to Contractors section of the Bid Documents. 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 a project is a fixed price determined at the time of bid by the
Department by using the same method as for the determination of the Period Price (see below) and found in the Notice to Contractors.

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 or at the ENR website http://www.enr.com under **Construction Economics**. The Period Price will be posted on the MassHighway website the Wednesday immediately following the publishing of the monthly price in ENR, which is normally the first week of the month.

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 in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M4.02.01.

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 a Department-approved extension of time.

****
****

END OF DOCUMENT

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

Division of Municipal Services

State Revolving Fund Loan Program

Plans and Specifications Checklist

January 2018

This information is available in alternate format. Call MassDEP Diversity office at 617-556-1139. TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

Changes for 2018

States are required to periodically review the process and data with which they establish Disadvantaged Business Enterprise (DBE) goals, for the use of EPA grants. During 2016 and the first half of 2017, MassDEP and the Clean Water Trust, completed a DBE review and submitted the results to USEPA for approval. On July 27, 2017, EPA Region 1 approved new DBE goals of 4.2% for minority-owned business enterprises (MBE) and 4.5 % for women-owned business enterprises (WBE). Projects receiving SRF financing must therefore meet those goals. Proponents unable to meet the targets may seek a waiver from the requirement, if they can demonstrate a 'good faith effort' was undertaken to achieve those goals.

Owing to the fact that many of the projects which will receive SRF financing are already well under development or into construction, the Department had delayed the implementation of the change. Therefore, any projects or contracts bid on or after January 1, 2018, will be required to use the new 4.2% MBE and 4.5% WBE goals. There can be no exceptions.

Changes from previous years that continue into 2018 include:

Cost and Effectiveness – Starting with the 2016 IUP, the EPA is requiring that **Clean Water** borrowers provide a certification that the borrower has evaluated the cost and effectiveness of the project including evaluating water and energy efficiency.

Architectural and Engneering (A/E) Services Procurement - The EPA is requiring that A/E services that are paid with **federal** funds for **Clean Water** projects be procured using the qualifications based selection process under Chapter 11 of title 40, United States Code or an equivalent state qualifications based requirement. The Trust will not use federal funds for A/E services. However, on some large projects that may receive federal funds for construction, the A/E services may need to be split out into a separate loan. While this will have an impact on certain communities, the Trust felt this was a lesser burden than modifying Massachusetts' various procurement processes.

Affordability Criteria – The Trust has developed affordability criteria for the distribution of additional subsidy in accordance with EPA requirements. These criteria take into account income, unemployment rate, and population trends.

Project Accounting – The EPA requires that projects accounts be maintained in accordance with generally accepted government accounting standards, including standards relating to the reporting of infrastructure assets. MassDEP will be changing the standard condition regarding project accounting in the Project Regulatory Agreement to reflect this change.

Project Signage – In an effort to communicate the positive impact and benefits of EPA funding and to increase awareness surrounding the improvements communities receive as a result of SRF assistance, the EPA is now requiring project signs or other means of publicizing the project.

American Iron and Steel (AIS) – All SRF construction projects beginning January 17, 2014 are required to use iron and steel products that are produced in the United States. Iron and steel products include 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. AIS language will be required in all assistance agreements and construction contracts and documentation of compliance with AIS must be maintained by assistance recipients.

Please note, the AIS requirements are not applicable to non-point source projects under Section 319 of the Clean Water Act (CWA) and estuary projects under Section 320 of the CWA as long as those projects do not meet the definition of a "treatment works" project under Section 212 of the CWA.

An additional statement is added into the Instructions for Bidders (Item 5.G in the P&S Checklist) identifying that AIS is applicable to the project and an additional item is added to the Contract section (Item 13 in the P&S Checklist) providing specific AIS language to be added to the Contract.

Appendix I provides the official EPA guidance and sample contract language for use in SRF construction contracts. It also provides guidance on obtaining waivers from the AIS requirements.

Price Adjustment Clauses – On November 20, 2013, the Massachusetts Legislature passed a bill (Chapter 150 of the Acts of 2013) requiring that water and sewer projects bid under MGL Chapter 30 Section 39M include price adjustment clauses for fuel, liquid asphalt and portland cement contained in cast in place concrete.

An additional item is added to the Contract section (Item 14 in the P&S Checklist) requiring the use of price adjustment clauses. The legislative language and samples of the MassDOT price adjustment clauses are included as Appendix H.

DBE United States Citizen Certification – The USEPA requires the use of certified Disadvantaged Business Enterprises (DBEs) in all SRF financed contracts. The EPA allows the use of DBEs firms certified under the MassDOT program as long at those firms are owned or controlled by a United States Citizen. In order to avoid creating a separate DBE certifying program, MassDEP requires that DBE firms be certified under the MassDOT program. The MassDOT program, however, does not address the citizenship requirement of the EPA. As such, MassDEP has added an additional form to the DBE package requiring the DBE firm to certify that it is owned or controlled by a United States citizen. This form is required for both Construction and Professional Services contracts.

Davis Bacon Wage Rates – Davis Bacon wage rates are again required for 2018. The required Davis Bacon contract language may be found in Appendix G.

APPENDIX A1

Certification Statements wording required in the BID PROPOSAL of contracts bid under the provisions of c.30, s39M (Non-Building/Public Works Contract).

Pursuant to M.G.L. Ch. 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.

C.30 s39 (c) The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work.

The undersigned bidder hereby certifies he/she will comply with the specific affirmative action steps contained in the Equal Employment Opportunity/Affirmative Action (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.

C.30 s39 (a) The undersigned certifies under penalties of perjury that this bid is in all respects bonafide, fair and made without collusion or fraud with any other person. As use in this paragraph the "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

Certification undersigned is not presently debarred from doing public construction work in the Commonwealth of Massachusetts 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 regulations 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.

(Date) (Name of General Bidder) (Federal Employer Identification No.)

By: _____

(Signature)

_____

(Title & Name of person signing bid)

_____

(Business Address)

_____

(City, State, Zip)

APPENDIX A2

Certification Statements wording required in the BID PROPOSAL of contracts bid under the provisions of c.149 s 44A – 44J (Building Contract with filed Sub-bids)

Pursuant to M.G.L. Ch. 62C, s 49A, 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.

The undersigned bidder hereby certifies he/she will comply with the specific affirmative action steps contained in the Equal Employment Opportunity/Affirmative Action (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.

The undersigned certifies under penalties of perjury that there have been no substantial changes in his financial position or business organization other than those changes noted within the application since the applicant's most recent pre-qualification statement and that the bid is in all respects bonafide, fair and made without collusion or fraud with any other person.

c149 s44D (1)(b) "Person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity which sells materials, equipment or supplies used in or for, or engages in the performance of, the same or similar construction, reconstruction, installation, demolition, maintenance or repair work or any part thereof.

c149 s44E (2) The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that he will comply fully with all laws and regulations applicable to awards made subject to section forty-four A.

c149 s44E (3) The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provision 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.

_____ _____ _____

(Date) (Name of General Bidder) (Federal Employer Identification No.)

By: _____

(Signature)

_____

(Title & Name of person signing bid)

_____

(Business Address) (City State, Zip)

APPENDIX B
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 calendars days from the date such Diesel Construction Equipment is brought on site;

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

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.

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 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 DEP'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)**

APPENDIX B (cont.)

DIESEL RETROFIT PROGRAM CONTRACTOR CERTIFICATION

Each Contractor and its Subcontractor(s) must sign and submit this form to DEP DMS project engineer, 5th Floor, MassDEP, One Winter Street, Boston, MA 02108 and the Municipality within 10 days after the Contractor is notified that it is awarded the Contract.

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.

APPENDIX B (cont.)

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 C
MA DEP – DMS BID PROVISIONS FOR SRF PROJECTS

ADVERTISING REQUIREMENTS

(1) * CENTRAL REGISTER
14 days prior to bid opening

(2) * LOCAL NEWSPAPERS
14 days prior to bid opening

(3) * POSTED NOTICE
7 days prior to bid opening

CHAPTER 149 ss. 44A – 44J Projects Building Contracts with Filed Sub - Bids	CHAPTER 30 s. 39M Projects Non-Building/Public Works Contracts
(4) GENERAL BID OPENING With 5% bid security from Each bidder [44B (2) 2] (min 4 days after sub-bid opening) [44F (3)]	**(4) GENERAL BID OPENING** With 5% bid security from Each bidder [39M (a)]
(5) BID SECURITY RETURNED Within 5 working days of Bid opening except the 3 lowest bidders [44B (3)]	**(5)* BID SECURITY RETURNED** No time frame Holds – 3 lowest bidders
(6)* CONTRACT AWARD by Local Government Unit within 30 working days of bid opening [44A (3)]	**(6)* CONTRACT AWARD** by Local Government Unit within 30 working days of bid opening [DMS Policy]
(7)* EXECUTE CONTRACT AGREEMENT/ PROCURE DOCUMENTS By low bidder within 5 working days of Notice of Award [44E (2) E]	**(7)* EXECUTE CONTRACT AGREEMENT/ PROCURE DOCUMENTS** By low bidder within 10 calendar days of Notice of Award [39M (c)]
(8) NOTICE TO PROCEED Issued by owner within reasonable time	**(8) NOTICE TO PROCEED** Issued by owner within reasonable time
(9)* WORK BEGINS Within 10 days of the Notice to Proceed	**(9) WORK BEGINS** Within a reasonable time after the Notice to Proceed

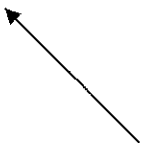
ADDITIONAL NOTES

[bid law reference section in parenthesis]

(1)* Deadline for the acceptance of advertisement in the Central Register is Tuesday @ 4PM. The advertisement is published 8 days later on Wednesday. Telephone Number (617)727-9136 – FAX (617) 742-4822.
(2)* Advertise in the local newspaper once a week for two weeks. The last publication should be one week before the bid opening.
(3)* Post the notice of bid advertisement in or near the office of awarding authority.
(5)* Chapter 30 is silent on the time frame for holding the bid security. All but the low bidders security should be returned by the award of the contract.
(6)* The contract award is done within 30 working days of the bid opening unless the bid holding period is extended by mutual agreement.
(7)* Low bidder provides original insurance certificates and original construction bonds to the Local Governmental Unit at the execution of the contract.
(9)* Contract Criterion Division of Capital Assets Management and Maintenance (formerly DCPO).

APPENDIX D
DCAM CERTIFICATION CATEGORIES
DO NOT CONFUSE WITH C.149 S44F (1) SUB-BID CATEGORIES

General Building Construction
Alarm Systems
Asbestos Removal
Demolition
Doors & Windows
Electrical
Elevators
Energy Management Systems
Floor Covering
Fire Protection Systems
Hazardous Waste Removal
Historical Building Restoration
Historical Masonry
Historical Painting
Historical Roofing
HVAC
Masonry
Mechanical Systems
Modular Construction/Prefab
Painting
Plumbing
Pumping Stations
Roofing
Sewage and Water Treatment Plants
Telecommunications Systems
Waterproofing
Deleading
Special



You can request DCAM to create a Special Category for a Specific Project, but allow Ample Time to Create the Category and allow Contractors Time to get certified.

APPENDIX E
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) 4.2% Disadvantaged WBE (D/WBE) 4.5%

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 DBSs 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 is 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):

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

° 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. ( ) _____ Ext. _____

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

APPENDIX F

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.

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:

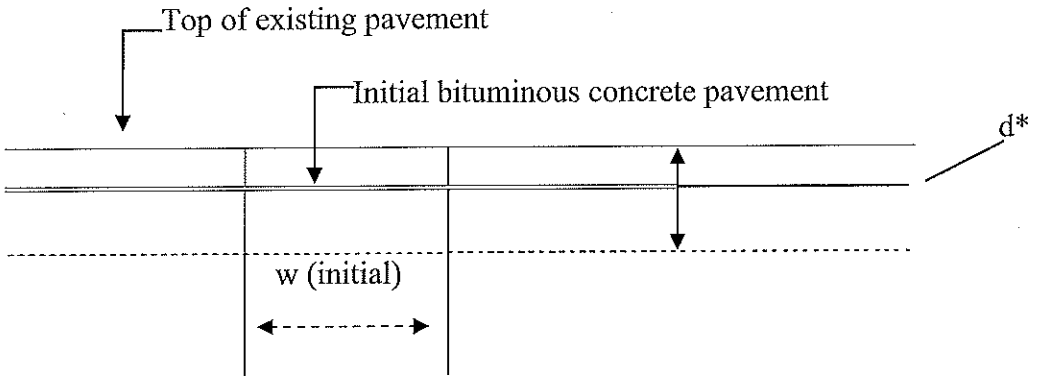
Nominal Pipe Diameter	Maximum Eligible Widths	
	Initial Pavement	Permanent Trench
0-24"	6'-6"	8'-6"

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.

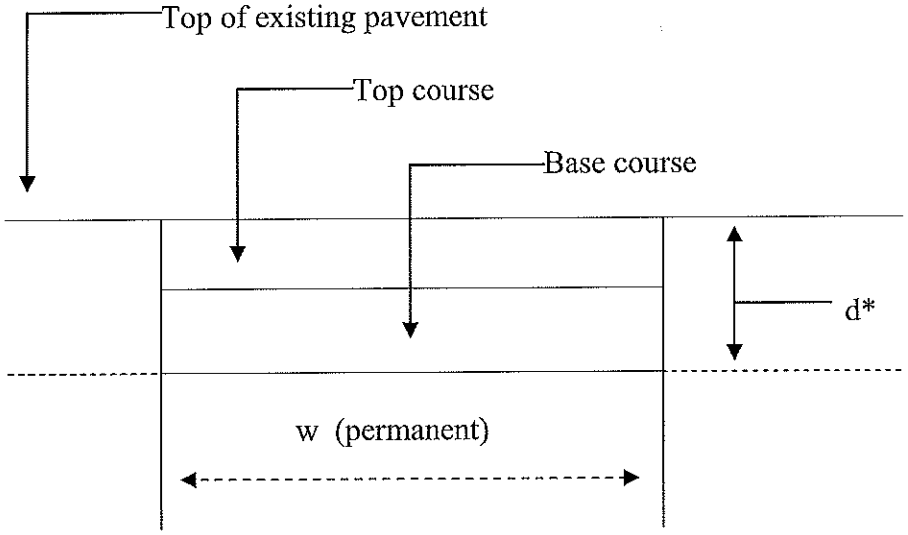
At the design phase of a project the owner has the option to elect either Initial Pavement with Option I (Permanent Trench replacement) or Initial with Option II (curb to curb over initial)

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.

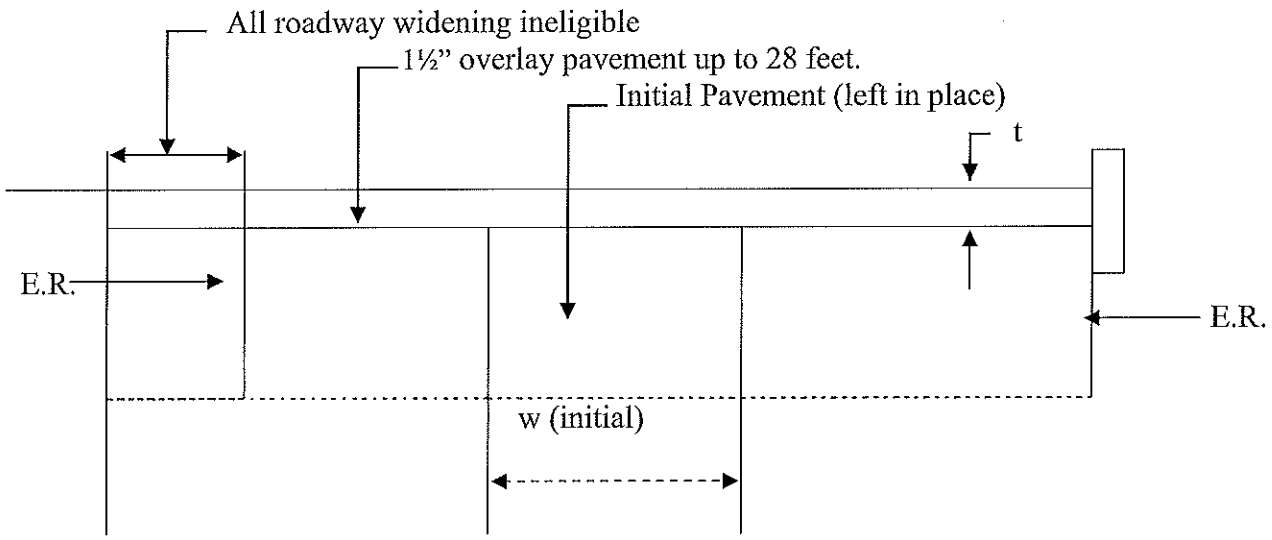
OPTION I Permanent Trench Pavement



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 (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.

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.

(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
- Builders Risk Insurance
- Experience Modification Insurance
- Surcharges

))))))) If applied to any required direct labor costs.

Following the Notice of Intent to Award, the Owner shall require the Low Bidder to submit the percentage to be used for the Direct Labor Cost markup, along with the breakdown of how it is calculated (this number shall be required and submitted to MassDEP before and Authorization to Award is issued by DMS). This documented direct labor cost may be adjusted upon the submission of new documentation which demonstrates both how and why it has changed.

(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

PM-10 Attachment 1 Page 1 of 2

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

DEP/DMS

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

PM-10 Attachment 2

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	168.00	
			$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)	25.00	
		2,025.00

(4) Equipment

1 Backhoe 10 hrs @ $80.00/hr	$ 800.00	
1 Truck-crane 10 hrs @ $100.00/hr	1,000.00	
		1,800.00
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) - 323.00

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;

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

PM-13 Attachment 1

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)	
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

Evaluator(s) _____

_____

_____

PM-13 Attachment 2

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
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	

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.

Depth From Ground Surface To Invert Pipe	Pay Width (Nominal Pipe Diameter)	
	0-24"	Over 24"
* 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 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.

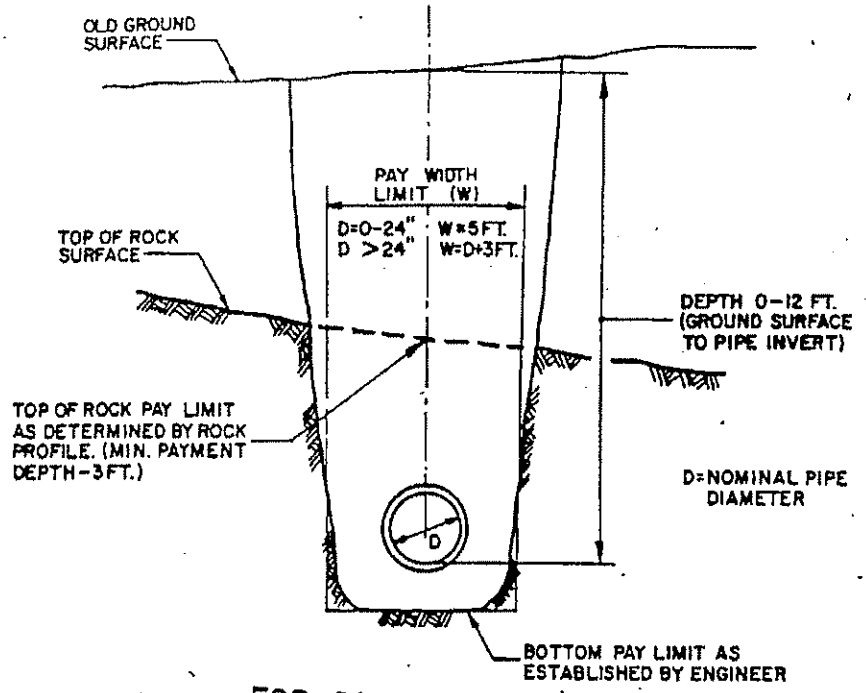
The pay limit for rock removal outside proposed manholes shall commence one foot (1') outside the widest dimension of the structure of shall be the maximum connecting trench width, whichever is greater.

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.

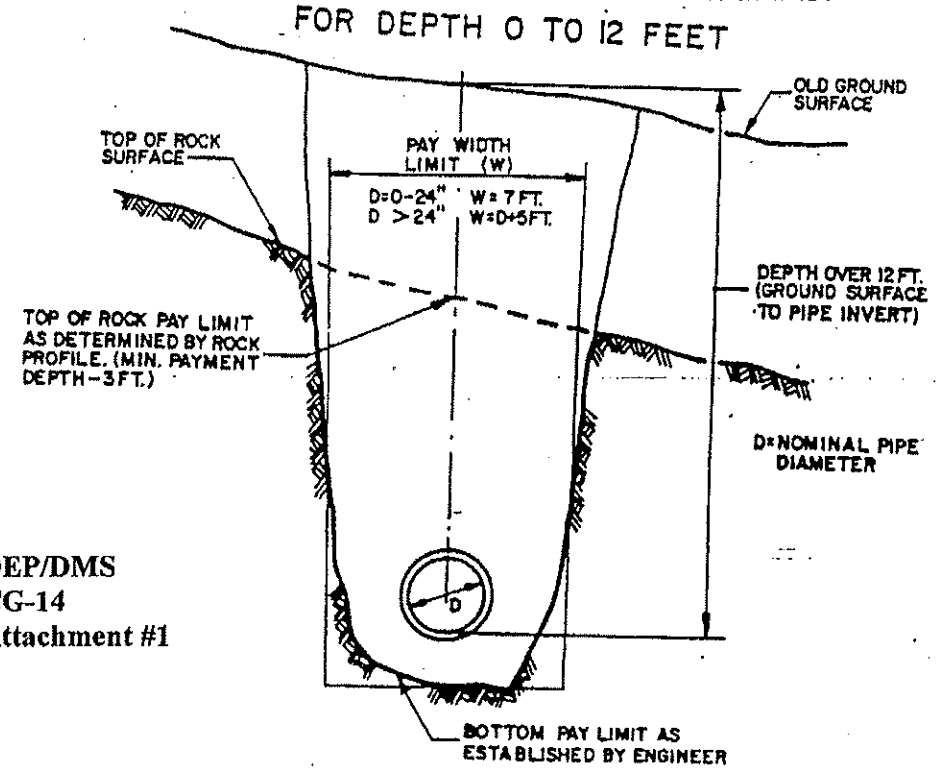
Payment for rock removed, using the same or equal equipment as utilized for normal trench excavation, shall be limited to the actual depth removed within the limits established by the contract documents.

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



FOR DEPTH OVER 12 FEET AND UP TO 20 FEET

DEP/DMS
CG-14
Attachment #1

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 QUANITITES**

Unit	Documentation required
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 assembles. 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 use.

- 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 Date 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.

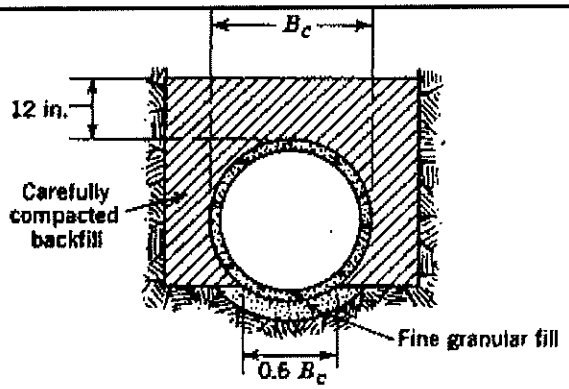
- Potential public water supply – areas designated by communities for water supply purposes where land has been set aside and Department approved pump tests conducted and surface water supplies as defined below.

- Surface Water Supply – Waters classified as Class A by the DWPC.

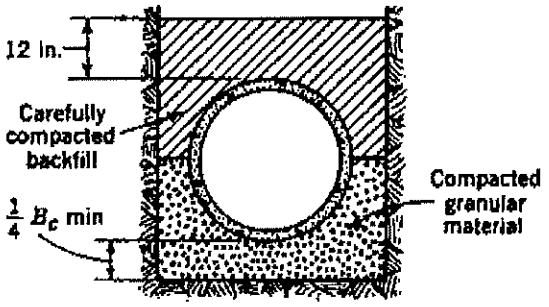
- Public Water Supply Systems – as defined in 310 CMR 22.02 (DEP Drinking Water Regulations).

- 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.

APPENDIX G
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 my 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 by 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 subecipient 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 subecipient 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 by 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 H

PRICE ADJUSTMENTS FOR CERTAIN MATERIALS IN CONSTRUCTION PROJECTS
MGL CHAPTER 30, SECTION 38A

On November 20, 2013, the Massachusetts Legislature passed a bill (Chapter 150 of the Acts of 2013) requiring that water and sewer projects bid under MGL Chapter 30 Section 39M include price adjustment clauses for **fuel** (both diesel and gasoline), **liquid asphalt** and **portland cement** contained in cast in place concrete for all projects that are advertised for bid after January 1, 2014.

The inclusion of these clauses in the construction contract is the responsibility of the awarding authority, and as such, MassDEP does not dictate what language should be used in the contract. MassDEP will, however, review the contracts to verify that price adjustment clauses have been included.

Awarding Authorities may find value from researching the *price adjustment* information on the Massachusetts Department of Transportation (MassDOT) website at https://www.massdot.state.ma.us/highway/DoingBusinessWithUs/Construction/PriceAdjustments.aspx. MassDOT requires the use of price adjustment clauses in all of its contracts, and since 2008 has been requiring cities and towns utilizing Chapter 90 road construction funds to also include price adjustment clauses. Because of this, many cities and towns may already have drafted appropriate price adjustment language. This language would be suitable for use in SRF funded contracts. The MassDOT website has extensive information on price adjustments and required contract language for MassDOT contracts.

Attached below is the new Chapter 30, Section 38A language and the contract language that MassDOT uses in its construction contracts. The MassDOT contract language is presented as a possible starting point for borrowers that have not drafted price adjustment clauses. The LGU should consult with their legal and contract staff as appropriate in developing the price adjustment clauses.

Chapter 150 of the Acts of 2013
An Act Relative to Price Adjustment for Certain Materials in Construction Projects

Whereas, the deferred operation of this act would tend to defeat its purpose, which is to establish forthwith certain price adjustments, therefore it is hereby declared to be an emergency law, necessary for the immediate preservation of the public convenience.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same as follows:

SECTION 1. Chapter 30 of the General Laws is hereby amended by inserting after section 38 the following section:-

Section 38A. Contracts for road and bridge projects awarded as a result of a proposal or invitation for bids under section 39M shall include a price adjustment clause for each of the following materials: fuel, both diesel and gasoline; asphalt; concrete; and steel. Contracts for water and sewer projects awarded as a result of a proposal or invitation for bids under said section 39M shall include a price adjustment clause for fuel, both diesel and gasoline; liquid asphalt; and

portland cement contained in cast-in-place concrete. A base price for each material shall be set by the awarding authority or agency and shall be included in the bid documents at the time the project is advertised. The awarding authority or agency shall also identify in the bid documents the price index to be used for each material. The price adjustment clause shall provide for a contract adjustment to be made on a monthly basis when the monthly cost change exceeds plus or minus 5 per cent.

SECTION 2. Section 1 shall apply to projects which are advertised for bid after January 1, 2014.

Approved, November 25, 2013.

MassDOT Price Adjustment Clauses

DOCUMENT 00811
SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES
ENGLISH UNITS
Revised: 02/02/2009

This provision applies to all projects using greater than 100 tons of hot mix asphalt (HMA) mixtures containing liquid asphalt cement as stipulated in the Notice to Contractors section of the bid documents.

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. This Price Adjustment will occur on a monthly basis.

Base Price
The Base Price of liquid asphalt on a project as listed in the Notice to Contractors section of the bid documents is a fixed price determined at the time of bid by the Department by using the same method as for the determination of the Period Price detailed below.

Period Price
Please note that, starting December 15, 2008, two sets of period prices will be posted each month on the MassHighway website at http://www.massdot.state.ma.us/. They will be labeled "New Asphalt Period Price Method" and "Old Asphalt Period Price Method".

New Asphalt Period Price Method
The "New Asphalt Period Price Method" is for contracts bid after December 15, 2008 and will show the Period Price of liquid asphalt for each monthly period as determined by MassHighway using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer's terminal, as listed under the "East Coast Market - New England, Boston, Massachusetts area" section of the Poten & Partners, Inc. "Asphalt Weekly Monitor". This average selling price is listed in the issue having a publication date of the second Friday of the month and will be posted as the Period Price for that month. MassHighway will post this Period Price on this website within two (2) business days following their receipt of the relevant issue of the "Asphalt Weekly Monitor". Poten and Partners has granted MassHighway the right to publish this specific asphalt price information sourced from the Asphalt Weekly Monitor.

Old Asphalt Period Price Method
The "Old Asphalt Period Price Method" Period Price will be for contracts bid on or before December 15, 2008 and will contain liquid asphalt prices as determined by the old or previous method. These prices will continue to be posted on MassHighway's website until all contracts using the "Old Asphalt Period Price Method" Period Price have been closed.

New and Old Asphalt Period Price Methods
The paragraphs below apply to both the New and the Old Asphalt Period Price Methods.
The Contract Price of the hot mix 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 applies only to the actual virgin liquid asphalt content in the mixture placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M3.11.03.

The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of tons of hot mix asphalt mixtures placed during each monthly period times the liquid asphalt content percentage times the variance in price between Base Price and Period Price of liquid asphalt.

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 a Department approved extension of time.

******** END OF DOCUMENT ********

DOCUMENT 00812
SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE – ENGLISH UNITS
Revised: 01/26/2009

This monthly fuel price adjustment is inserted in this contract because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the Commonwealth, depending on an increase or decrease in the average price of diesel fuel or gasoline.

This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. 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 in the Department's web site (http://www.massdot.state.ma.us/) 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: Items 120, 120.1, 121, 123, 124, 125, 127, 129.3, 140, 140.1, 141, 142, 143, 144., 150, 150.1, 151 and 151.1 (Both Factors used)	0.29 Gallons / CY	0.15 Gallons / CY
Surfacing Work: All Items containing Hot Mix Asphalt	2.90 Gallons / Ton	Does Not Apply

******** END OF DOCUMENT ********

DOCUMENT 00814
SPECIAL PROVISIONS
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES
January 12, 2009

This provision applies to all projects using greater than 100 Cubic Yards (76 Cubic Meters) of Portland cement concrete containing Portland cement as stipulated in the Notice to Contractors section of the Bid Documents. 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 a project is a fixed price determined at the time of bid by the
Department by using the same method as for the determination of the Period Price (see below) and found in the Notice to Contractors.

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 or at the ENR website http://www.enr.com under **Construction Economics**. The Period Price will be posted on the MassHighway website the Wednesday immediately following the publishing of the monthly price in ENR, which is normally the first week of the month.

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 in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M4.02.01.

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 a Department-approved extension of time.

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END OF DOCUMENT

APPENDIX I

AMERICAN IRON AND STEET 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.

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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
General • Waiver request includes the following information: — 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		
Cost Waiver Requests • Waiver request includes the following information: — 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		
Availability Waiver Requests • 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: — 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
Cost Waiver Requests • Does the waiver request include the following information? — 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%?				
Availability Waiver Requests • 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? — 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? Examples include: — 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?				

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 Contactor 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

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

WILLIAM D MCKINNEY
Director

Awarding Authority: City of New Bedford, MA

Contract Number: Bid No. 18450518 **City/Town:** DARTMOUTH

Description of Work: High Hill Reservoir Rehabilitation - Replacement of existing valves and rehabilitation to the reservoir and its roof.

Job Location: Off of Faunce Corner Road, Dartmouth, MA

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.15	$10.91	$10.89	$0.00	$53.95
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.22	$10.91	$10.89	$0.00	$54.02
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.34	$10.91	$10.89	$0.00	$54.14
ADS/SUBMERSIBLE PILOT *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2017	$92.97	$9.90	$21.15	$0.00	$124.02
	08/01/2018	$97.80	$9.90	$21.15	$0.00	$128.85
	08/01/2019	$102.78	$9.90	$21.15	$0.00	$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR *LABORERS - ZONE 2*	12/01/2017	$33.58	$7.70	$13.60	$0.00	$54.88
	06/01/2018	$34.42	$7.70	$13.60	$0.00	$55.72
	12/01/2018	$35.26	$7.70	$13.60	$0.00	$56.56
	06/01/2019	$36.13	$7.70	$13.60	$0.00	$57.43
	12/01/2019	$36.99	$7.70	$13.60	$0.00	$58.29
	06/01/2020	$37.88	$7.70	$13.60	$0.00	$59.18
	12/01/2020	$38.77	$7.70	$13.60	$0.00	$60.07
	06/01/2021	$39.69	$7.70	$13.60	$0.00	$60.99
	12/01/2021	$40.60	$7.70	$13.60	$0.00	$61.90
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS WORKER (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)*	12/01/2017	$35.90	$11.50	$7.10	$0.00	$54.50
	06/01/2018	$36.90	$11.50	$7.10	$0.00	$55.50
	12/01/2018	$37.90	$11.50	$7.10	$0.00	$56.50
	06/01/2019	$38.90	$11.50	$7.10	$0.00	$57.50
	12/01/2019	$39.90	$11.50	$7.10	$0.00	$58.50
	06/01/2020	$40.90	$11.50	$7.10	$0.00	$59.50
	12/01/2020	$41.90	$11.50	$7.10	$0.00	$60.50
ASPHALT RAKER *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.63	$10.50	$15.50	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.63	$10.50	$15.50	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BARCO-TYPE JUMPING TAMPER *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER *LABORERS - ZONE 2*	12/01/2017	$33.58	$7.70	$13.60	$0.00	$54.88
	06/01/2018	$34.42	$7.70	$13.60	$0.00	$55.72
	12/01/2018	$35.26	$7.70	$13.60	$0.00	$56.56
	06/01/2019	$36.13	$7.70	$13.60	$0.00	$57.43
	12/01/2019	$36.99	$7.70	$13.60	$0.00	$58.29
	06/01/2020	$37.88	$7.70	$13.60	$0.00	$59.18
	12/01/2020	$38.77	$7.70	$13.60	$0.00	$60.07
	06/01/2021	$39.69	$7.70	$13.60	$0.00	$60.99
	12/01/2021	$40.60	$7.70	$13.60	$0.00	$61.90
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER *BOILERMAKERS LOCAL 29*	01/01/2017	$42.92	$6.97	$16.21	$0.00	$66.10

Apprentice - *BOILERMAKER - Local 29*

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$27.90	$6.97	$10.54	$0.00	$45.41
2	65	$27.90	$6.97	$10.54	$0.00	$45.41
3	70	$30.04	$6.97	$11.35	$0.00	$48.36
4	75	$32.19	$6.97	$12.16	$0.00	$51.32
5	80	$34.34	$6.97	$12.97	$0.00	$54.28
6	85	$36.48	$6.97	$13.78	$0.00	$57.23
7	90	$38.63	$6.97	$14.59	$0.00	$60.19
8	95	$40.77	$6.97	$15.40	$0.00	$63.14

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) *BRICKLAYERS LOCAL 3 (NEW BEDFORD)*	02/01/2018	$52.06	$10.75	$20.03	$0.00	$82.84
	08/01/2018	$53.41	$10.75	$20.16	$0.00	$84.32
	02/01/2019	$54.05	$10.75	$20.16	$0.00	$84.96
	08/01/2019	$55.40	$10.75	$20.30	$0.00	$86.45
	02/01/2020	$56.04	$10.75	$20.30	$0.00	$87.09
	08/01/2020	$57.39	$10.75	$20.45	$0.00	$88.59
	02/01/2021	$58.03	$10.75	$20.45	$0.00	$89.23
	08/01/2021	$59.43	$10.75	$20.61	$0.00	$90.79
	02/01/2022	$60.02	$10.75	$20.61	$0.00	$91.38

Apprentice - *BRICK/PLASTER/CEMENT MASON - Local 3 New Bedford*

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.03	$10.75	$20.03	$0.00	$56.81
2	60	$31.24	$10.75	$20.03	$0.00	$62.02
3	70	$36.44	$10.75	$20.03	$0.00	$67.22
4	80	$41.65	$10.75	$20.03	$0.00	$72.43
5	90	$46.85	$10.75	$20.03	$0.00	$77.63

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.71	$10.75	$20.16	$0.00	$57.62
2	60	$32.05	$10.75	$20.16	$0.00	$62.96
3	70	$37.39	$10.75	$20.16	$0.00	$68.30
4	80	$42.73	$10.75	$20.16	$0.00	$73.64
5	90	$48.07	$10.75	$20.16	$0.00	$78.98

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2017	$38.60	$7.70	$14.95	$0.00	$61.25
	06/01/2018	$39.55	$7.70	$14.95	$0.00	$62.20
	12/01/2018	$40.50	$7.70	$14.95	$0.00	$63.15
	06/01/2019	$41.50	$7.70	$14.95	$0.00	$64.15
	12/01/2019	$42.50	$7.70	$14.95	$0.00	$65.15
	06/01/2020	$43.49	$7.70	$14.95	$0.00	$66.14
	12/01/2020	$44.47	$7.70	$14.95	$0.00	$67.12
	06/01/2021	$45.49	$7.70	$14.95	$0.00	$68.14
	12/01/2021	$46.50	$7.70	$14.95	$0.00	$69.15

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2017	$37.45	$7.70	$14.95	$0.00	$60.10
	06/01/2018	$38.40	$7.70	$14.95	$0.00	$61.05
	12/01/2018	$39.35	$7.70	$14.95	$0.00	$62.00
	06/01/2019	$40.35	$7.70	$14.95	$0.00	$63.00
	12/01/2019	$41.35	$7.70	$14.95	$0.00	$64.00
	06/01/2020	$42.34	$7.70	$14.95	$0.00	$64.99
	12/01/2020	$43.32	$7.70	$14.95	$0.00	$65.97
	06/01/2021	$44.34	$7.70	$14.95	$0.00	$66.99
	12/01/2021	$45.35	$7.70	$14.95	$0.00	$68.00
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2017	$37.45	$7.70	$14.95	$0.00	$60.10
	06/01/2018	$38.40	$7.70	$14.95	$0.00	$61.05
	12/01/2018	$39.35	$7.70	$14.95	$0.00	$62.00
	06/01/2019	$40.35	$7.70	$14.95	$0.00	$63.00
	12/01/2019	$41.35	$7.70	$14.95	$0.00	$64.00
	06/01/2020	$42.34	$7.70	$14.95	$0.00	$64.99
	12/01/2020	$43.32	$7.70	$14.95	$0.00	$65.97
	06/01/2021	$44.34	$7.70	$14.95	$0.00	$66.99
	12/01/2021	$45.35	$7.70	$14.95	$0.00	$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
CARPENTER *CARPENTERS -ZONE 2 (Eastern Massachusetts)*	03/01/2018	$40.28	$9.90	$17.50	$0.00	$67.68
	09/01/2018	$41.32	$9.90	$17.50	$0.00	$68.72
	03/01/2019	$42.35	$9.90	$17.50	$0.00	$69.75

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CARPENTER - Zone 2 Eastern MA*

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.14	$9.90	$1.73	$0.00	$31.77
2	60	$24.17	$9.90	$1.73	$0.00	$35.80
3	70	$28.20	$9.90	$12.31	$0.00	$50.41
4	75	$30.21	$9.90	$12.31	$0.00	$52.42
5	80	$32.22	$9.90	$14.04	$0.00	$56.16
6	80	$32.22	$9.90	$14.04	$0.00	$56.16
7	90	$36.25	$9.90	$15.77	$0.00	$61.92
8	90	$36.25	$9.90	$15.77	$0.00	$61.92

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.66	$9.90	$1.73	$0.00	$32.29
2	60	$24.79	$9.90	$1.73	$0.00	$36.42
3	70	$28.92	$9.90	$12.31	$0.00	$51.13
4	75	$30.99	$9.90	$12.31	$0.00	$53.20
5	80	$33.06	$9.90	$14.04	$0.00	$57.00
6	80	$33.06	$9.90	$14.04	$0.00	$57.00
7	90	$37.19	$9.90	$15.77	$0.00	$62.86
8	90	$37.19	$9.90	$15.77	$0.00	$62.86

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 $29.76/ 3&4 $35.45/ 5&6 $52.14/ 7&8 $57.89

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME *CARPENTERS -ZONE 2 (Wood Frame)*	04/01/2018	$26.67	$7.07	$7.86	$0.00	$41.60
	10/01/2018	$27.09	$7.07	$7.86	$0.00	$42.02
	04/01/2019	$27.52	$7.07	$7.86	$0.00	$42.45
	10/01/2019	$27.95	$7.07	$7.86	$0.00	$42.88

As of 9/1/09 Carpentry work on wood-frame WEATHERIZATION projects shall be paid the WOOD FRAME CARPENTER rate.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CARPENTER (Wood Frame) - Zone 2*

Effective Date - 04/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$16.00	$7.07	$0.00	$0.00	$23.07
2	60	$16.00	$7.07	$0.00	$0.00	$23.07
3	65	$17.34	$7.07	$7.86	$0.00	$32.27
4	70	$18.67	$7.07	$7.86	$0.00	$33.60
5	75	$20.00	$7.07	$7.86	$0.00	$34.93
6	80	$21.34	$7.07	$7.86	$0.00	$36.27
7	85	$22.67	$7.07	$7.86	$0.00	$37.60
8	90	$24.00	$7.07	$7.86	$0.00	$38.93

Effective Date - 10/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$16.25	$7.07	$0.00	$0.00	$23.32
2	60	$16.25	$7.07	$0.00	$0.00	$23.32
3	65	$17.61	$7.07	$7.86	$0.00	$32.54
4	70	$18.96	$7.07	$7.86	$0.00	$33.89
5	75	$20.32	$7.07	$7.86	$0.00	$35.25
6	80	$21.67	$7.07	$7.86	$0.00	$36.60
7	85	$23.03	$7.07	$7.86	$0.00	$37.96
8	90	$24.38	$7.07	$7.86	$0.00	$39.31

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 $19.07/ 3&4 $26.49/ 5&6 $33.60/ 7&8 $36.27

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME (All Other Work) *CARPENTERS -ZONE 2 (Wood Frame)*	06/01/2016	$25.32	$9.80	$16.82	$0.00	$51.94
CEMENT MASONRY/PLASTERING *BRICKLAYERS LOCAL 3 (NEW BEDFORD)*	01/01/2018	$46.02	$12.35	$22.41	$0.30	$81.08
	07/01/2018	$47.41	$12.35	$22.41	$0.30	$82.47
	01/01/2019	$48.15	$12.35	$22.41	$0.30	$83.21
	07/01/2019	$49.54	$12.35	$22.41	$0.30	$84.60
	01/01/2020	$50.29	$12.35	$22.41	$0.30	$85.35

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CEMENT MASONRY/PLASTERING - Eastern Mass (New Bedford)*

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.01	$12.35	$15.41	$0.00	$50.77
2	60	$27.61	$12.35	$17.41	$0.30	$57.67
3	65	$29.91	$12.35	$18.41	$0.30	$60.97
4	70	$32.21	$12.35	$19.41	$0.30	$64.27
5	75	$34.52	$12.35	$20.41	$0.30	$67.58
6	80	$36.82	$12.35	$21.41	$0.30	$70.88
7	90	$41.42	$12.35	$22.41	$0.30	$76.48

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.71	$12.35	$15.41	$0.00	$51.47
2	60	$28.45	$12.35	$17.41	$0.30	$58.51
3	65	$30.82	$12.35	$18.41	$0.30	$61.88
4	70	$33.19	$12.35	$19.41	$0.30	$65.25
5	75	$35.56	$12.35	$20.41	$0.30	$68.62
6	80	$37.93	$12.35	$21.41	$0.30	$71.99
7	90	$42.67	$12.35	$22.41	$0.30	$77.73

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$47.63	$10.50	$15.50	$0.00	$73.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$31.80	$10.50	$15.50	$0.00	$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DELEADER (BRIDGE)	01/01/2018	$49.66	$8.10	$19.55	$0.00	$77.31
PAINTERS LOCAL 35 - ZONE 2	07/01/2018	$50.76	$8.10	$19.55	$0.00	$78.41
	01/01/2019	$51.86	$8.10	$19.55	$0.00	$79.51
	07/01/2019	$52.96	$8.10	$19.55	$0.00	$80.61
	01/01/2020	$54.06	$8.10	$19.55	$0.00	$81.71
	07/01/2020	$55.16	$8.10	$19.55	$0.00	$82.81
	01/01/2021	$56.26	$8.10	$19.55	$0.00	$83.91

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.83	$8.10	$0.00	$0.00	$32.93
2	55	$27.31	$8.10	$5.06	$0.00	$40.47
3	60	$29.80	$8.10	$5.52	$0.00	$43.42
4	65	$32.28	$8.10	$5.98	$0.00	$46.36
5	70	$34.76	$8.10	$16.79	$0.00	$59.65
6	75	$37.25	$8.10	$17.25	$0.00	$62.60
7	80	$39.73	$8.10	$17.71	$0.00	$65.54
8	90	$44.69	$8.10	$18.63	$0.00	$71.42

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.38	$8.10	$0.00	$0.00	$33.48
2	55	$27.92	$8.10	$5.06	$0.00	$41.08
3	60	$30.46	$8.10	$5.52	$0.00	$44.08
4	65	$32.99	$8.10	$5.98	$0.00	$47.07
5	70	$35.53	$8.10	$16.79	$0.00	$60.42
6	75	$38.07	$8.10	$17.25	$0.00	$63.42
7	80	$40.61	$8.10	$17.71	$0.00	$66.42
8	90	$45.68	$8.10	$18.63	$0.00	$72.41

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN	12/01/2017	$37.65	$7.70	$14.75	$0.00	$60.10
LABORERS - ZONE 2	06/01/2018	$38.60	$7.70	$14.75	$0.00	$61.05
	12/01/2018	$39.55	$7.70	$14.75	$0.00	$62.00
	06/01/2019	$40.55	$7.70	$14.75	$0.00	$63.00
	12/01/2019	$41.55	$7.70	$14.75	$0.00	$64.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR	12/01/2017	$38.65	$7.70	$14.75	$0.00	$61.10
LABORERS - ZONE 2	06/01/2018	$39.60	$7.70	$14.75	$0.00	$62.05
	12/01/2018	$40.55	$7.70	$14.75	$0.00	$63.00
	06/01/2019	$41.55	$7.70	$14.75	$0.00	$64.00
	12/01/2019	$42.55	$7.70	$14.75	$0.00	$65.00

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS *LABORERS - ZONE 2*	12/01/2017	$38.40	$7.70	$14.75	$0.00	$60.85
	06/01/2018	$39.35	$7.70	$14.75	$0.00	$61.80
	12/01/2018	$40.30	$7.70	$14.75	$0.00	$62.75
	06/01/2019	$41.30	$7.70	$14.75	$0.00	$63.75
	12/01/2019	$42.30	$7.70	$14.75	$0.00	$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER *LABORERS - ZONE 2*	12/01/2017	$38.65	$7.70	$14.75	$0.00	$61.10
	06/01/2018	$39.60	$7.70	$14.75	$0.00	$62.05
	12/01/2018	$40.55	$7.70	$14.75	$0.00	$63.00
	06/01/2019	$41.55	$7.70	$14.75	$0.00	$64.00
	12/01/2019	$42.55	$7.70	$14.75	$0.00	$65.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR *LABORERS - ZONE 2*	12/01/2017	$38.40	$7.70	$14.75	$0.00	$60.85
	06/01/2018	$39.35	$7.70	$14.75	$0.00	$61.80
	12/01/2018	$40.30	$7.70	$14.75	$0.00	$62.75
	06/01/2019	$41.30	$7.70	$14.75	$0.00	$63.75
	12/01/2019	$42.30	$7.70	$14.75	$0.00	$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER *LABORERS - ZONE 2*	12/01/2017	$37.65	$7.70	$14.75	$0.00	$60.10
	06/01/2018	$38.60	$7.70	$14.75	$0.00	$61.05
	12/01/2018	$39.55	$7.70	$14.75	$0.00	$62.00
	06/01/2019	$40.55	$7.70	$14.75	$0.00	$63.00
	12/01/2019	$41.55	$7.70	$14.75	$0.00	$64.00
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2017	$61.98	$9.90	$21.15	$0.00	$93.03
	08/01/2018	$65.20	$9.90	$21.15	$0.00	$96.25
	08/01/2019	$68.52	$9.90	$21.15	$0.00	$99.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2017	$44.27	$9.90	$21.15	$0.00	$75.32
	08/01/2018	$46.57	$9.90	$21.15	$0.00	$77.62
	08/01/2019	$48.94	$9.90	$21.15	$0.00	$79.99
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2017	$66.41	$9.90	$21.15	$0.00	$97.46
	08/01/2018	$69.86	$9.90	$21.15	$0.00	$100.91
	08/01/2019	$73.41	$9.90	$21.15	$0.00	$104.46
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2017	$92.97	$9.90	$21.15	$0.00	$124.02
	08/01/2018	$97.80	$9.90	$21.15	$0.00	$128.85
	08/01/2019	$102.78	$9.90	$21.15	$0.00	$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ELECTRICIAN *ELECTRICIANS LOCAL 223*	03/01/2018	$40.42	$9.40	$12.34	$0.00	$62.16
	09/01/2018	$41.03	$9.65	$12.74	$0.00	$63.42
	03/01/2019	$41.64	$9.90	$13.15	$0.00	$64.69
	09/01/2019	$42.26	$10.15	$13.54	$0.00	$65.95
	03/01/2020	$42.87	$10.40	$13.94	$0.00	$67.21

Apprentice - *ELECTRICIAN - Local 223*

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$16.17	$0.00	$0.49	$0.00	$16.66
2	42	$16.98	$0.00	$0.51	$0.00	$17.49
3	45	$18.19	$9.40	$0.55	$0.00	$28.14
4	48	$19.40	$9.40	$4.00	$0.00	$32.80
5	50	$20.21	$9.40	$4.30	$0.00	$33.91
6	55	$22.23	$9.40	$4.45	$0.00	$36.08
7	60	$24.25	$9.40	$4.74	$0.00	$38.39
8	65	$26.27	$9.40	$5.04	$0.00	$40.71
9	70	$28.29	$9.40	$5.33	$0.00	$43.02
10	75	$30.32	$9.40	$5.62	$0.00	$45.34

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$16.41	$0.00	$0.49	$0.00	$16.90
2	42	$17.23	$0.00	$0.52	$0.00	$17.75
3	45	$18.46	$9.65	$0.58	$0.00	$28.69
4	48	$19.69	$9.65	$4.35	$0.00	$33.69
5	50	$20.52	$9.65	$4.45	$0.00	$34.62
6	55	$22.57	$9.65	$4.75	$0.00	$36.97
7	60	$24.62	$9.65	$5.04	$0.00	$39.31
8	65	$26.67	$9.65	$5.34	$0.00	$41.66
9	70	$28.72	$9.65	$5.63	$0.00	$44.00
10	75	$30.77	$9.65	$5.87	$0.00	$46.29

Notes:

Steps are 750 hours

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2018	$57.62	$15.43	$16.61	$0.00	$89.66
	01/01/2019	$59.47	$15.58	$17.51	$0.00	$92.56
	01/01/2020	$61.42	$15.73	$18.41	$0.00	$95.56
	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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELEVATOR CONSTRUCTOR - Local 4*

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.81	$15.43	$0.00	$0.00	$44.24
2	55	$31.69	$15.43	$16.61	$0.00	$63.73
3	65	$37.45	$15.43	$16.61	$0.00	$69.49
4	70	$40.33	$15.43	$16.61	$0.00	$72.37
5	80	$46.10	$15.43	$16.61	$0.00	$78.14

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$29.74	$15.58	$0.00	$0.00	$45.32
2	55	$32.71	$15.58	$17.51	$0.00	$65.80
3	65	$38.66	$15.58	$17.51	$0.00	$71.75
4	70	$41.63	$15.58	$17.51	$0.00	$74.72
5	80	$47.58	$15.58	$17.51	$0.00	$80.67

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*	01/01/2018	$40.33	$15.43	$16.61	$0.00	$72.37
	01/01/2019	$41.63	$15.58	$17.51	$0.00	$74.72
	01/01/2020	$42.99	$15.73	$18.41	$0.00	$77.13
	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 *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2018	$42.84	$10.50	$15.50	$0.00	$68.84
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2018	$44.31	$10.50	$15.50	$0.00	$70.31
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2018	$22.51	$10.50	$15.50	$0.00	$48.51
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER *ELECTRICIANS LOCAL 223*	03/01/2018	$40.42	$9.40	$12.34	$0.00	$62.16
	09/01/2018	$41.03	$9.65	$12.74	$0.00	$63.42
	03/01/2019	$41.64	$9.90	$13.15	$0.00	$64.69
	09/01/2019	$42.26	$10.15	$13.54	$0.00	$65.95
	03/01/2020	$42.87	$10.40	$13.94	$0.00	$67.21
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING*ELECTRICIANS LOCAL 223*	03/01/2018	$34.27	$9.40	$10.46	$0.00	$54.13
	09/01/2018	$34.76	$9.65	$10.81	$0.00	$55.22
	03/01/2019	$35.25	$9.90	$11.14	$0.00	$56.29
	09/01/2019	$35.78	$10.15	$11.45	$0.00	$57.38
	03/01/2020	$36.27	$10.40	$11.78	$0.00	$58.45
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$38.57	$10.50	$15.50	$0.00	$64.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER *LABORERS - ZONE 2*	12/01/2017	$21.50	$7.70	$13.60	$0.00	$42.80
	06/01/2018	$21.50	$7.70	$13.60	$0.00	$42.80
	12/01/2018	$22.50	$7.70	$13.60	$0.00	$43.80
	06/01/2019	$22.50	$7.70	$13.60	$0.00	$43.80
	12/01/2019	$23.50	$7.70	$13.60	$0.00	$44.80
	06/01/2020	$23.50	$7.70	$13.60	$0.00	$44.80
	12/01/2020	$24.50	$7.70	$13.60	$0.00	$45.80
	06/01/2021	$24.50	$7.70	$13.60	$0.00	$45.80
	12/01/2021	$24.50	$7.70	$13.60	$0.00	$45.80
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER *FLOORCOVERERS LOCAL 2168 ZONE I*	03/01/2016	$42.13	$9.80	$17.62	$0.00	$69.55

Apprentice - *FLOORCOVERER - Local 2168 Zone I*

Effective Date - 03/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.07	$9.80	$1.79	$0.00	$32.66
2	55	$23.17	$9.80	$1.79	$0.00	$34.76
3	60	$25.28	$9.80	$12.25	$0.00	$47.33
4	65	$27.38	$9.80	$12.25	$0.00	$49.43
5	70	$29.49	$9.80	$14.04	$0.00	$53.33
6	75	$31.60	$9.80	$14.04	$0.00	$55.44
7	80	$33.70	$9.80	$15.83	$0.00	$59.33
8	85	$35.81	$9.80	$15.83	$0.00	$61.44

Notes: Steps are 750 hrs.
% After 09/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
Step 1&2 $30.55/ 3&4 $36.49/ 5&6 $53.33/ 7&8 $59.33

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.63	$10.50	$15.50	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
GENERATOR/LIGHTING PLANT/HEATERS *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2017	$31.80	$10.50	$15.50	$0.00	$57.80
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) *GLAZIERS LOCAL 1333*	06/01/2017	$36.28	$10.25	$8.95	$0.00	$55.48
	06/01/2018	$37.18	$10.40	$9.35	$0.00	$56.93
	06/01/2019	$38.18	$10.60	$9.90	$0.00	$58.68
	06/01/2020	$39.18	$10.80	$10.45	$0.00	$60.43

Apprentice - *GLAZIER - Local 1333*

Effective Date - 06/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.14	$10.25	$1.45	$0.00	$29.84
2	56	$20.41	$10.25	$1.45	$0.00	$32.11
3	63	$22.68	$10.25	$1.95	$0.00	$34.88
4	69	$24.94	$10.25	$1.95	$0.00	$37.14
5	75	$27.21	$10.25	$2.45	$0.00	$39.91
6	81	$29.48	$10.25	$2.45	$0.00	$42.18
7	88	$31.75	$10.25	$8.95	$0.00	$50.95
8	94	$34.01	$10.25	$8.95	$0.00	$53.21

Effective Date - 06/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.59	$10.40	$1.60	$0.00	$30.59
2	56	$20.91	$10.40	$1.60	$0.00	$32.91
3	63	$23.24	$10.40	$2.10	$0.00	$35.74
4	69	$25.56	$10.40	$2.10	$0.00	$38.06
5	75	$27.89	$10.40	$2.60	$0.00	$40.89
6	81	$30.21	$10.40	$2.60	$0.00	$43.21
7	88	$32.53	$10.40	$9.35	$0.00	$52.28
8	94	$34.86	$10.40	$9.35	$0.00	$54.61

Notes:

Apprentice to Journeyworker Ratio:1:3

HOISTING ENGINEER/CRANES/GRADALLS *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.63	$10.50	$15.50	$0.00	$72.63

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 12/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$25.65	$10.50	$0.00	$0.00	$36.15
2	60	$27.98	$10.50	$15.50	$0.00	$53.98
3	65	$30.31	$10.50	$15.50	$0.00	$56.31
4	70	$32.64	$10.50	$15.50	$0.00	$58.64
5	75	$34.97	$10.50	$15.50	$0.00	$60.97
6	80	$37.30	$10.50	$15.50	$0.00	$63.30
7	85	$39.64	$10.50	$15.50	$0.00	$65.64
8	90	$41.97	$10.50	$15.50	$0.00	$67.97

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) *SHEETMETAL WORKERS LOCAL 17 - B*	04/01/2018	$34.96	$12.20	$16.30	$1.90	$65.36
	10/01/2018	$35.46	$12.20	$16.30	$1.90	$65.86
	04/01/2019	$35.96	$12.20	$16.30	$1.90	$66.36
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) *ELECTRICIANS LOCAL 223*	03/01/2018	$40.42	$9.40	$12.34	$0.00	$62.16
	09/01/2018	$41.03	$9.65	$12.74	$0.00	$63.42
	03/01/2019	$41.64	$9.90	$13.15	$0.00	$64.69
	09/01/2019	$42.26	$10.15	$13.54	$0.00	$65.95
	03/01/2020	$42.87	$10.40	$13.94	$0.00	$67.21
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) *SHEETMETAL WORKERS LOCAL 17 - B*	04/01/2018	$34.96	$12.20	$16.30	$1.90	$65.36
	10/01/2018	$35.46	$12.20	$16.30	$1.90	$65.86
	04/01/2019	$35.96	$12.20	$16.30	$1.90	$66.36
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) *PLUMBERS & PIPEFITTERS LOCAL 51*	09/01/2017	$40.69	$10.00	$17.60	$0.00	$68.29
	09/01/2018	$42.69	$10.00	$17.60	$0.00	$70.29
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC *PLUMBERS & PIPEFITTERS LOCAL 51*	09/01/2017	$40.69	$10.00	$17.60	$0.00	$68.29
	09/01/2018	$42.69	$10.00	$17.60	$0.00	$70.29
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS *LABORERS - ZONE 2*	12/01/2017	$33.58	$7.70	$13.60	$0.00	$54.88
	06/01/2018	$34.42	$7.70	$13.60	$0.00	$55.72
	12/01/2018	$35.26	$7.70	$13.60	$0.00	$56.56
	06/01/2019	$36.13	$7.70	$13.60	$0.00	$57.43
	12/01/2019	$36.99	$7.70	$13.60	$0.00	$58.29
	06/01/2020	$37.88	$7.70	$13.60	$0.00	$59.18
	12/01/2020	$38.77	$7.70	$13.60	$0.00	$60.07
	06/01/2021	$39.69	$7.70	$13.60	$0.00	$60.99
	12/01/2021	$40.60	$7.70	$13.60	$0.00	$61.90
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
INSULATOR (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)*	09/01/2017	$42.38	$11.75	$14.20	$0.00	$68.33
	09/01/2018	$44.40	$11.75	$14.20	$0.00	$70.35
	09/01/2019	$46.65	$11.75	$14.20	$0.00	$72.60

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

Effective Date - 09/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.19	$11.75	$10.45	$0.00	$43.39
2	60	$25.43	$11.75	$11.20	$0.00	$48.38
3	70	$29.67	$11.75	$11.95	$0.00	$53.37
4	80	$33.90	$11.75	$12.70	$0.00	$58.35

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.20	$11.75	$10.45	$0.00	$44.40
2	60	$26.64	$11.75	$11.20	$0.00	$49.59
3	70	$31.08	$11.75	$11.95	$0.00	$54.78
4	80	$35.52	$11.75	$12.70	$0.00	$59.97

Notes:
Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER *IRONWORKERS LOCAL 37*	03/16/2016	$34.71	$7.70	$16.00	$0.00	$58.41

Apprentice - *IRONWORKER - Local 37*

Effective Date - 03/16/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	70	$24.30	$7.70	$16.00	$0.00	$48.00
2	75	$26.03	$7.70	$16.00	$0.00	$49.73
3	80	$27.77	$7.70	$16.00	$0.00	$51.47
4	85	$29.50	$7.70	$16.00	$0.00	$53.20
5	90	$31.24	$7.70	$16.00	$0.00	$54.94
6	95	$32.97	$7.70	$16.00	$0.00	$56.67

Notes:

Apprentice to Journeyworker Ratio:1:4

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
JACKHAMMER & PAVING BREAKER OPERATOR *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
LABORER *LABORERS - ZONE 2*	12/01/2017	$32.83	$7.70	$13.60	$0.00	$54.13
	06/01/2018	$33.67	$7.70	$13.60	$0.00	$54.97
	12/01/2018	$34.51	$7.70	$13.60	$0.00	$55.81
	06/01/2019	$35.38	$7.70	$13.60	$0.00	$56.68
	12/01/2019	$36.24	$7.70	$13.60	$0.00	$57.54
	06/01/2020	$37.13	$7.70	$13.60	$0.00	$58.43
	12/01/2020	$38.02	$7.70	$13.60	$0.00	$59.32
	06/01/2021	$38.94	$7.70	$13.60	$0.00	$60.24
	12/01/2021	$39.85	$7.70	$13.60	$0.00	$61.15

Apprentice - *LABORER - Zone 2*

Effective Date - 12/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$19.70	$7.70	$13.60	$0.00	$41.00
2	70	$22.98	$7.70	$13.60	$0.00	$44.28
3	80	$26.26	$7.70	$13.60	$0.00	$47.56
4	90	$29.55	$7.70	$13.60	$0.00	$50.85

Effective Date - 06/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$20.20	$7.70	$13.60	$0.00	$41.50
2	70	$23.57	$7.70	$13.60	$0.00	$44.87
3	80	$26.94	$7.70	$13.60	$0.00	$48.24
4	90	$30.30	$7.70	$13.60	$0.00	$51.60

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER *LABORERS - ZONE 2*	12/01/2017	$32.83	$7.70	$13.60	$0.00	$54.13
	06/01/2018	$33.67	$7.70	$13.60	$0.00	$54.97
	12/01/2018	$34.51	$7.70	$13.60	$0.00	$55.81
	06/01/2019	$35.38	$7.70	$13.60	$0.00	$56.68
	12/01/2019	$36.24	$7.70	$13.60	$0.00	$57.54
	06/01/2020	$37.13	$7.70	$13.60	$0.00	$58.43
	12/01/2020	$38.02	$7.70	$13.60	$0.00	$59.32
	06/01/2021	$38.94	$7.70	$13.60	$0.00	$60.24
	12/01/2021	$39.85	$7.70	$13.60	$0.00	$61.15
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER *LABORERS - ZONE 2*	12/01/2017	$32.83	$7.70	$13.60	$0.00	$54.13
	06/01/2018	$33.67	$7.70	$13.60	$0.00	$54.97
	12/01/2018	$34.51	$7.70	$13.60	$0.00	$55.81
	06/01/2019	$35.38	$7.70	$13.60	$0.00	$56.68
	12/01/2019	$36.24	$7.70	$13.60	$0.00	$57.54
	06/01/2020	$37.13	$7.70	$13.60	$0.00	$58.43
	12/01/2020	$38.02	$7.70	$13.60	$0.00	$59.32
	06/01/2021	$38.94	$7.70	$13.60	$0.00	$60.24
	12/01/2021	$39.85	$7.70	$13.60	$0.00	$61.15
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER *LABORERS - ZONE 2*	12/01/2017	$33.03	$7.70	$13.55	$0.00	$54.28
	06/01/2018	$33.87	$7.70	$13.55	$0.00	$55.12
	12/01/2018	$34.71	$7.70	$13.55	$0.00	$55.96
	06/01/2019	$35.58	$7.70	$13.55	$0.00	$56.83
	12/01/2019	$36.44	$7.70	$13.55	$0.00	$57.69
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER *LABORERS - ZONE 2*	12/01/2017	$32.83	$7.70	$13.60	$0.00	$54.13
	06/01/2018	$33.67	$7.70	$13.60	$0.00	$54.97
	12/01/2018	$34.51	$7.70	$13.60	$0.00	$55.81
	06/01/2019	$35.38	$7.70	$13.60	$0.00	$56.68
	12/01/2019	$36.24	$7.70	$13.60	$0.00	$57.54
	06/01/2020	$37.13	$7.70	$13.60	$0.00	$58.43
	12/01/2020	$38.02	$7.70	$13.60	$0.00	$59.32
	06/01/2021	$38.94	$7.70	$13.60	$0.00	$60.24
	12/01/2021	$39.85	$7.70	$13.60	$0.00	$61.15
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: TREE REMOVER *LABORERS - ZONE 2*	12/01/2017	$32.83	$7.70	$13.60	$0.00	$54.13
	06/01/2018	$33.67	$7.70	$13.60	$0.00	$54.97
	12/01/2018	$34.51	$7.70	$13.60	$0.00	$55.81
	06/01/2019	$35.38	$7.70	$13.60	$0.00	$56.68
	12/01/2019	$36.24	$7.70	$13.60	$0.00	$57.54
	06/01/2020	$37.13	$7.70	$13.60	$0.00	$58.43
	12/01/2020	$38.02	$7.70	$13.60	$0.00	$59.32
	06/01/2021	$38.94	$7.70	$13.60	$0.00	$60.24
	12/01/2021	$39.85	$7.70	$13.60	$0.00	$61.15
This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2018	$39.82	$10.75	$18.34	$0.00	$68.91
	08/01/2018	$40.90	$10.75	$18.47	$0.00	$70.12
	02/01/2019	$41.41	$10.75	$18.47	$0.00	$70.63
	08/01/2019	$42.49	$10.75	$18.61	$0.00	$71.85
	02/01/2020	$43.00	$10.75	$18.61	$0.00	$72.36
	08/01/2020	$44.08	$10.75	$18.76	$0.00	$73.59
	02/01/2021	$44.59	$10.75	$18.76	$0.00	$74.10
	08/01/2021	$45.71	$10.75	$18.92	$0.00	$75.38
	02/01/2022	$46.18	$10.75	$18.92	$0.00	$75.85

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.91	$10.75	$18.34	$0.00	$49.00
2	60	$23.89	$10.75	$18.34	$0.00	$52.98
3	70	$27.87	$10.75	$18.34	$0.00	$56.96
4	80	$31.86	$10.75	$18.34	$0.00	$60.95
5	90	$35.84	$10.75	$18.34	$0.00	$64.93

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.45	$10.75	$18.47	$0.00	$49.67
2	60	$24.54	$10.75	$18.47	$0.00	$53.76
3	70	$28.63	$10.75	$18.47	$0.00	$57.85
4	80	$32.72	$10.75	$18.47	$0.00	$61.94
5	90	$36.81	$10.75	$18.47	$0.00	$66.03

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2018	$52.10	$10.75	$20.03	$0.00	$82.88
	08/01/2018	$53.45	$10.75	$20.16	$0.00	$84.36
	02/01/2019	$54.07	$10.75	$20.16	$0.00	$84.98
	08/01/2019	$55.42	$10.75	$20.30	$0.00	$86.47
	02/01/2020	$56.05	$10.75	$20.30	$0.00	$87.10
	08/01/2020	$57.40	$10.75	$20.45	$0.00	$88.60
	02/01/2021	$58.04	$10.75	$20.45	$0.00	$89.24
	08/01/2021	$59.44	$10.75	$20.61	$0.00	$90.80
	02/01/2022	$60.01	$10.75	$20.61	$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 - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.05	$10.75	$20.03	$0.00	$56.83
2	60	$31.26	$10.75	$20.03	$0.00	$62.04
3	70	$36.47	$10.75	$20.03	$0.00	$67.25
4	80	$41.68	$10.75	$20.03	$0.00	$72.46
5	90	$46.89	$10.75	$20.03	$0.00	$77.67

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.73	$10.75	$20.16	$0.00	$57.64
2	60	$32.07	$10.75	$20.16	$0.00	$62.98
3	70	$37.42	$10.75	$20.16	$0.00	$68.33
4	80	$42.76	$10.75	$20.16	$0.00	$73.67
5	90	$48.11	$10.75	$20.16	$0.00	$79.02

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) *MILLWRIGHTS LOCAL 1121 - Zone 2*	04/01/2018	$37.17	$9.90	$18.50	$0.00	$65.57
	10/01/2018	$38.02	$9.90	$18.50	$0.00	$66.42
	04/01/2019	$38.87	$9.90	$18.50	$0.00	$67.27

Apprentice - *MILLWRIGHT - Local 1121 Zone 2*

Effective Date - 04/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$20.44	$9.90	$5.31	$0.00	$35.65
2	65	$24.16	$9.90	$15.13	$0.00	$49.19
3	75	$27.88	$9.90	$16.10	$0.00	$53.88
4	85	$31.59	$9.90	$17.06	$0.00	$58.55

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MORTAR MIXER *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$23.24	$10.50	$15.50	$0.00	$49.24
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$27.40	$10.50	$15.50	$0.00	$53.40
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2018	$49.66	$8.10	$19.55	$0.00	$77.31
	07/01/2018	$50.76	$8.10	$19.55	$0.00	$78.41
	01/01/2019	$51.86	$8.10	$19.55	$0.00	$79.51
	07/01/2019	$52.96	$8.10	$19.55	$0.00	$80.61
	01/01/2020	$54.06	$8.10	$19.55	$0.00	$81.71
	07/01/2020	$55.16	$8.10	$19.55	$0.00	$82.81
	01/01/2021	$56.26	$8.10	$19.55	$0.00	$83.91

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.83	$8.10	$0.00	$0.00	$32.93
2	55	$27.31	$8.10	$5.06	$0.00	$40.47
3	60	$29.80	$8.10	$5.52	$0.00	$43.42
4	65	$32.28	$8.10	$5.98	$0.00	$46.36
5	70	$34.76	$8.10	$16.79	$0.00	$59.65
6	75	$37.25	$8.10	$17.25	$0.00	$62.60
7	80	$39.73	$8.10	$17.71	$0.00	$65.54
8	90	$44.69	$8.10	$18.63	$0.00	$71.42

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.38	$8.10	$0.00	$0.00	$33.48
2	55	$27.92	$8.10	$5.06	$0.00	$41.08
3	60	$30.46	$8.10	$5.52	$0.00	$44.08
4	65	$32.99	$8.10	$5.98	$0.00	$47.07
5	70	$35.53	$8.10	$16.79	$0.00	$60.42
6	75	$38.07	$8.10	$17.25	$0.00	$63.42
7	80	$40.61	$8.10	$17.71	$0.00	$66.42
8	90	$45.68	$8.10	$18.63	$0.00	$72.41

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2018	$40.56	$8.10	$19.55	$0.00	$68.21
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	07/01/2018	$41.66	$8.10	$19.55	$0.00	$69.31
	01/01/2019	$42.76	$8.10	$19.55	$0.00	$70.41
	07/01/2019	$43.86	$8.10	$19.55	$0.00	$71.51
	01/01/2020	$44.96	$8.10	$19.55	$0.00	$72.61
	07/01/2020	$46.06	$8.10	$19.55	$0.00	$73.71
	01/01/2021	$47.16	$8.10	$19.55	$0.00	$74.81

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - New*

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.28	$8.10	$0.00	$0.00	$28.38
2	55	$22.31	$8.10	$5.06	$0.00	$35.47
3	60	$24.34	$8.10	$5.52	$0.00	$37.96
4	65	$26.36	$8.10	$5.98	$0.00	$40.44
5	70	$28.39	$8.10	$16.79	$0.00	$53.28
6	75	$30.42	$8.10	$17.25	$0.00	$55.77
7	80	$32.45	$8.10	$17.71	$0.00	$58.26
8	90	$36.50	$8.10	$18.63	$0.00	$63.23

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.83	$8.10	$0.00	$0.00	$28.93
2	55	$22.91	$8.10	$5.06	$0.00	$36.07
3	60	$25.00	$8.10	$5.52	$0.00	$38.62
4	65	$27.08	$8.10	$5.98	$0.00	$41.16
5	70	$29.16	$8.10	$16.79	$0.00	$54.05
6	75	$31.25	$8.10	$17.25	$0.00	$56.60
7	80	$33.33	$8.10	$17.71	$0.00	$59.14
8	90	$37.49	$8.10	$18.63	$0.00	$64.22

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2018	$38.62	$8.10	$19.55	$0.00	$66.27
	07/01/2018	$39.72	$8.10	$19.55	$0.00	$67.37
	01/01/2019	$40.82	$8.10	$19.55	$0.00	$68.47
	07/01/2019	$41.92	$8.10	$19.55	$0.00	$69.57
	01/01/2020	$43.02	$8.10	$19.55	$0.00	$70.67
	07/01/2020	$44.12	$8.10	$19.55	$0.00	$71.77
	01/01/2021	$45.22	$8.10	$19.55	$0.00	$72.87

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint*

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.31	$8.10	$0.00	$0.00	$27.41
2	55	$21.24	$8.10	$5.06	$0.00	$34.40
3	60	$23.17	$8.10	$5.52	$0.00	$36.79
4	65	$25.10	$8.10	$5.98	$0.00	$39.18
5	70	$27.03	$8.10	$16.79	$0.00	$51.92
6	75	$28.97	$8.10	$17.25	$0.00	$54.32
7	80	$30.90	$8.10	$17.71	$0.00	$56.71
8	90	$34.76	$8.10	$18.63	$0.00	$61.49

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.86	$8.10	$0.00	$0.00	$27.96
2	55	$21.85	$8.10	$5.06	$0.00	$35.01
3	60	$23.83	$8.10	$5.52	$0.00	$37.45
4	65	$25.82	$8.10	$5.98	$0.00	$39.90
5	70	$27.80	$8.10	$16.79	$0.00	$52.69
6	75	$29.79	$8.10	$17.25	$0.00	$55.14
7	80	$31.78	$8.10	$17.71	$0.00	$57.59
8	90	$35.75	$8.10	$18.63	$0.00	$62.48

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS) *LABORERS - ZONE 2*	12/01/2017	$32.83	$7.70	$13.60	$0.00	$54.13
	06/01/2018	$33.67	$7.70	$13.60	$0.00	$54.97
	12/01/2018	$34.51	$7.70	$13.60	$0.00	$55.81
	06/01/2019	$35.38	$7.70	$13.60	$0.00	$56.68
	12/01/2019	$36.24	$7.70	$13.60	$0.00	$57.54
	06/01/2020	$37.13	$7.70	$13.60	$0.00	$58.43
	12/01/2020	$38.02	$7.70	$13.60	$0.00	$59.32
	06/01/2021	$38.94	$7.70	$13.60	$0.00	$60.24
	12/01/2021	$39.85	$7.70	$13.60	$0.00	$61.15
For Apprentice rates see "Apprentice- LABORER"						
PAINTER / TAPER (BRUSH, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	01/01/2018	$39.16	$8.10	$19.55	$0.00	$66.81
	07/01/2018	$40.26	$8.10	$19.55	$0.00	$67.91
	01/01/2019	$41.36	$8.10	$19.55	$0.00	$69.01
	07/01/2019	$42.46	$8.10	$19.55	$0.00	$70.11
	01/01/2020	$43.56	$8.10	$19.55	$0.00	$71.21
	07/01/2020	$44.66	$8.10	$19.55	$0.00	$72.31
	01/01/2021	$45.76	$8.10	$19.55	$0.00	$73.41

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER - Local 35 Zone 2 - BRUSH NEW*

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.58	$8.10	$0.00	$0.00	$27.68
2	55	$21.54	$8.10	$5.06	$0.00	$34.70
3	60	$23.50	$8.10	$5.52	$0.00	$37.12
4	65	$25.45	$8.10	$5.98	$0.00	$39.53
5	70	$27.41	$8.10	$16.79	$0.00	$52.30
6	75	$29.37	$8.10	$17.25	$0.00	$54.72
7	80	$31.33	$8.10	$17.71	$0.00	$57.14
8	90	$35.24	$8.10	$18.63	$0.00	$61.97

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.13	$8.10	$0.00	$0.00	$28.23
2	55	$22.14	$8.10	$5.06	$0.00	$35.30
3	60	$24.16	$8.10	$5.52	$0.00	$37.78
4	65	$26.17	$8.10	$5.98	$0.00	$40.25
5	70	$28.18	$8.10	$16.79	$0.00	$53.07
6	75	$30.20	$8.10	$17.25	$0.00	$55.55
7	80	$32.21	$8.10	$17.71	$0.00	$58.02
8	90	$36.23	$8.10	$18.63	$0.00	$62.96

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2018	$37.22	$8.10	$19.55	$0.00	$64.87
	07/01/2018	$38.32	$8.10	$19.55	$0.00	$65.97
	01/01/2019	$39.42	$8.10	$19.55	$0.00	$67.07
	07/01/2019	$40.52	$8.10	$19.55	$0.00	$68.17
	01/01/2020	$41.62	$8.10	$19.55	$0.00	$69.27
	07/01/2020	$42.72	$8.10	$19.55	$0.00	$70.37
	01/01/2021	$43.82	$8.10	$19.55	$0.00	$71.47

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 2 - BRUSH REPAINT*

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.61	$8.10	$0.00	$0.00	$26.71
2	55	$20.47	$8.10	$5.06	$0.00	$33.63
3	60	$22.33	$8.10	$5.52	$0.00	$35.95
4	65	$24.19	$8.10	$5.98	$0.00	$38.27
5	70	$26.05	$8.10	$16.79	$0.00	$50.94
6	75	$27.92	$8.10	$17.25	$0.00	$53.27
7	80	$29.78	$8.10	$17.71	$0.00	$55.59
8	90	$33.50	$8.10	$18.63	$0.00	$60.23

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.16	$8.10	$0.00	$0.00	$27.26
2	55	$21.08	$8.10	$5.06	$0.00	$34.24
3	60	$22.99	$8.10	$5.52	$0.00	$36.61
4	65	$24.91	$8.10	$5.98	$0.00	$38.99
5	70	$26.82	$8.10	$16.79	$0.00	$51.71
6	75	$28.74	$8.10	$17.25	$0.00	$54.09
7	80	$30.66	$8.10	$17.71	$0.00	$56.47
8	90	$34.49	$8.10	$18.63	$0.00	$61.22

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2012	$30.28	$9.07	$8.00	$0.00	$47.35
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2017	$41.52	$9.90	$21.15	$0.00	$72.57
	08/01/2018	$42.93	$9.90	$21.15	$0.00	$73.98
	08/01/2019	$44.61	$9.90	$21.15	$0.00	$75.66
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2017	$41.52	$9.90	$21.15	$0.00	$72.57
	08/01/2018	$42.93	$9.90	$21.15	$0.00	$73.98
	08/01/2019	$44.61	$9.90	$21.15	$0.00	$75.66

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PILE DRIVER - Local 56 Zone 2*

Effective Date - 08/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	0	$0.00	$0.00	$0.00	$0.00	$0.00

Notes: Apprentice wages shall be no less than the following Steps;
(Same as set in Zone 1)
1$53.19/2$57.61/3$62.04/4$64.25/5$66.47/6$66.47/7$70.89/8$70.89

Apprentice to Journeyworker Ratio:1:5

PIPELAYER *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
PLUMBER & PIPEFITTER *PLUMBERS & PIPEFITTERS LOCAL 51*	09/01/2017	$40.69	$10.00	$17.60	$0.00	$68.29
	09/01/2018	$42.69	$10.00	$17.60	$0.00	$70.29

Apprentice - *PLUMBER/PIPEFITTER - Local 51*

Effective Date - 09/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$16.28	$10.00	$2.50	$0.00	$28.78
2	50	$20.35	$10.00	$2.50	$0.00	$32.85
3	60	$24.41	$10.00	$7.60	$0.00	$42.01
4	70	$28.48	$10.00	$12.16	$0.00	$50.64
5	80	$32.55	$10.00	$15.70	$0.00	$58.25

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.08	$10.00	$2.50	$0.00	$29.58
2	50	$21.35	$10.00	$2.50	$0.00	$33.85
3	60	$25.61	$10.00	$7.60	$0.00	$43.21
4	70	$29.88	$10.00	$12.16	$0.00	$52.04
5	80	$34.15	$10.00	$15.70	$0.00	$59.85

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.) *PLUMBERS & PIPEFITTERS LOCAL 51*	09/01/2017	$40.69	$10.00	$17.60	$0.00	$68.29
	09/01/2018	$42.69	$10.00	$17.60	$0.00	$70.29

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER *LABORERS - ZONE 2*	12/01/2017	$33.83	$7.70	$13.60	$0.00	$55.13
	06/01/2018	$34.67	$7.70	$13.60	$0.00	$55.97
	12/01/2018	$35.51	$7.70	$13.60	$0.00	$56.81
	06/01/2019	$36.38	$7.70	$13.60	$0.00	$57.68
	12/01/2019	$37.24	$7.70	$13.60	$0.00	$58.54
	06/01/2020	$38.13	$7.70	$13.60	$0.00	$59.43
	12/01/2020	$39.02	$7.70	$13.60	$0.00	$60.32
	06/01/2021	$39.94	$7.70	$13.60	$0.00	$61.24
	12/01/2021	$40.85	$7.70	$13.60	$0.00	$62.15
For apprentice rates see "Apprentice- LABORER"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.63	$10.50	$15.50	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.63	$10.50	$15.50	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$31.80	$10.50	$15.50	$0.00	$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER *TEAMSTERS LOCAL 59*	06/01/2008	$19.00	$5.10	$4.21	$0.00	$28.31
RECLAIMERS *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) *ROOFERS LOCAL 33*	02/01/2018	$42.36	$11.35	$14.80	$0.00	$68.51
	08/01/2018	$43.46	$11.35	$14.80	$0.00	$69.61
	02/01/2019	$44.61	$11.35	$14.80	$0.00	$70.76

Apprentice - *ROOFER - Local 33*

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.18	$11.35	$3.44	$0.00	$35.97
2	60	$25.42	$11.35	$14.80	$0.00	$51.57
3	65	$27.53	$11.35	$14.80	$0.00	$53.68
4	75	$31.77	$11.35	$14.80	$0.00	$57.92
5	85	$36.01	$11.35	$14.80	$0.00	$62.16

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.73	$11.35	$3.44	$0.00	$36.52
2	60	$26.08	$11.35	$14.80	$0.00	$52.23
3	65	$28.25	$11.35	$14.80	$0.00	$54.40
4	75	$32.60	$11.35	$14.80	$0.00	$58.75
5	85	$36.94	$11.35	$14.80	$0.00	$63.09

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*	02/01/2018	$42.61	$11.35	$14.80	$0.00	$68.76
	08/01/2018	$43.71	$11.35	$14.80	$0.00	$69.86
	02/01/2019	$44.86	$11.35	$14.80	$0.00	$71.01
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER *SHEETMETAL WORKERS LOCAL 17 - B*	04/01/2018	$34.96	$12.20	$16.30	$1.90	$65.36
	10/01/2018	$35.46	$12.20	$16.30	$1.90	$65.86
	04/01/2019	$35.96	$12.20	$16.30	$1.90	$66.36

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SHEET METAL WORKER - Local 17-B*

Effective Date - 04/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$13.98	$12.20	$4.02	$0.92	$31.12
2	45	$15.73	$12.20	$4.52	$0.99	$33.44
3	50	$17.48	$12.20	$10.48	$1.23	$41.39
4	55	$19.23	$12.20	$10.48	$1.28	$43.19
5	60	$20.98	$12.20	$13.37	$1.40	$47.95
6	65	$22.72	$12.20	$13.61	$1.46	$49.99
7	70	$24.47	$12.20	$13.85	$1.52	$52.04
8	75	$26.22	$12.20	$14.10	$1.58	$54.10
9	80	$27.97	$12.20	$14.34	$1.64	$56.15
10	85	$29.72	$12.20	$14.58	$1.70	$58.20

Effective Date - 10/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$14.18	$12.20	$4.02	$0.93	$31.33
2	45	$15.96	$12.20	$4.52	$1.00	$33.68
3	50	$17.73	$12.20	$10.48	$1.23	$41.64
4	55	$19.50	$12.20	$10.48	$1.29	$43.47
5	60	$21.28	$12.20	$13.37	$1.41	$48.26
6	65	$23.05	$12.20	$13.61	$1.47	$50.33
7	70	$24.82	$12.20	$13.85	$1.53	$52.40
8	75	$26.60	$12.20	$14.10	$1.59	$54.49
9	80	$28.37	$12.20	$14.34	$1.65	$56.56
10	85	$30.14	$12.20	$14.58	$1.71	$58.63

Notes:

Apprentice to Journeyworker Ratio:1:3

SIGN ERECTOR *PAINTERS LOCAL 35 - ZONE 2*	06/01/2013	$25.81	$7.07	$7.05	$0.00	$39.93

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SIGN ERECTOR - Local 35 Zone 2*

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$12.91	$7.07	$0.00	$0.00	$19.98
2	55	$14.20	$7.07	$2.45	$0.00	$23.72
3	60	$15.49	$7.07	$2.45	$0.00	$25.01
4	65	$16.78	$7.07	$2.45	$0.00	$26.30
5	70	$18.07	$7.07	$7.05	$0.00	$32.19
6	75	$19.36	$7.07	$7.05	$0.00	$33.48
7	80	$20.65	$7.07	$7.05	$0.00	$34.77
8	85	$21.94	$7.07	$7.05	$0.00	$36.06
9	90	$23.23	$7.07	$7.05	$0.00	$37.35

Notes:
Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.44	$10.91	$10.89	$0.00	$54.24
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.73	$10.91	$10.89	$0.00	$54.53
SPRINKLER FITTER *SPRINKLER FITTERS LOCAL 550 - (Section B) Zone 2*	03/01/2018	$52.00	$9.12	$18.15	$0.00	$79.27
	10/01/2018	$53.35	$9.12	$18.15	$0.00	$80.62
	01/01/2019	$53.35	$9.47	$18.35	$0.00	$81.17
	03/01/2019	$54.70	$9.47	$18.35	$0.00	$82.52
	10/01/2019	$56.05	$9.47	$18.35	$0.00	$83.87
	03/01/2020	$57.40	$9.47	$18.35	$0.00	$85.22
	10/01/2020	$58.75	$9.47	$18.35	$0.00	$86.57
	03/01/2021	$60.10	$9.47	$18.35	$0.00	$87.92

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SPRINKLER FITTER - Local 550 (Section B) Zone 2*

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$18.20	$9.12	$8.90	$0.00	$36.22
2	40	$20.80	$9.12	$8.90	$0.00	$38.82
3	45	$23.40	$9.12	$8.90	$0.00	$41.42
4	50	$26.00	$9.12	$8.90	$0.00	$44.02
5	55	$28.60	$9.12	$8.90	$0.00	$46.62
6	60	$31.20	$9.12	$10.40	$0.00	$50.72
7	65	$33.80	$9.12	$10.40	$0.00	$53.32
8	70	$36.40	$9.12	$10.40	$0.00	$55.92
9	75	$39.00	$9.12	$10.40	$0.00	$58.52
10	80	$41.60	$9.12	$10.40	$0.00	$61.12

Effective Date - 10/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$18.67	$9.12	$8.90	$0.00	$36.69
2	40	$21.34	$9.12	$8.90	$0.00	$39.36
3	45	$24.01	$9.12	$8.90	$0.00	$42.03
4	50	$26.68	$9.12	$8.90	$0.00	$44.70
5	55	$29.34	$9.12	$8.90	$0.00	$47.36
6	60	$32.01	$9.12	$10.40	$0.00	$51.53
7	65	$34.68	$9.12	$10.40	$0.00	$54.20
8	70	$37.35	$9.12	$10.40	$0.00	$56.87
9	75	$40.01	$9.12	$10.40	$0.00	$59.53
10	80	$42.68	$9.12	$10.40	$0.00	$62.20

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 *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN *ELECTRICIANS LOCAL 223*	03/01/2018	$34.27	$9.40	$10.46	$0.00	$54.13
	09/01/2018	$34.76	$9.65	$10.81	$0.00	$55.22
	03/01/2019	$35.25	$9.90	$11.14	$0.00	$56.29
	09/01/2019	$35.78	$10.15	$11.45	$0.00	$57.38
	03/01/2020	$36.27	$10.40	$11.78	$0.00	$58.45

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TELECOMMUNICATION TECHNICIAN - Local 223*

Effective Date - 03/01/2018

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
Steps are 750hrs
Telecom Apprentice Wages shall be the same as the Electrician Apprentice Wages

Apprentice to Journeyworker Ratio:2:3***

TERRAZZO FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2018	$51.00	$10.75	$20.03	$0.00	$81.78
	08/01/2018	$52.35	$10.75	$20.16	$0.00	$83.26
	02/01/2019	$52.99	$10.75	$20.16	$0.00	$83.90
	08/01/2019	$54.34	$10.75	$20.30	$0.00	$85.39
	02/01/2020	$54.98	$10.75	$20.30	$0.00	$86.03
	08/01/2020	$56.33	$10.75	$20.45	$0.00	$87.53
	02/01/2021	$56.97	$10.75	$20.45	$0.00	$88.17
	08/01/2021	$58.37	$10.75	$20.61	$0.00	$89.73
	02/01/2022	$58.96	$10.75	$20.61	$0.00	$90.32

Apprentice - *TERRAZZO FINISHER - Local 3 Marble & Tile*

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.50	$10.75	$20.03	$0.00	$56.28
2	60	$30.60	$10.75	$20.03	$0.00	$61.38
3	70	$35.70	$10.75	$20.03	$0.00	$66.48
4	80	$40.80	$10.75	$20.03	$0.00	$71.58
5	90	$45.90	$10.75	$20.03	$0.00	$76.68

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER *LABORERS - FOUNDATION AND MARINE*	12/01/2017	$38.85	$7.70	$14.95	$0.00	$61.50
	06/01/2018	$39.80	$7.70	$14.95	$0.00	$62.45
	12/01/2018	$40.75	$7.70	$14.95	$0.00	$63.40
	06/01/2019	$41.75	$7.70	$14.95	$0.00	$64.40
	12/01/2019	$42.75	$7.70	$14.95	$0.00	$65.40
	06/01/2020	$43.74	$7.70	$14.95	$0.00	$66.39
	12/01/2020	$44.72	$7.70	$14.95	$0.00	$67.37
	06/01/2021	$45.74	$7.70	$14.95	$0.00	$68.39
	12/01/2021	$46.75	$7.70	$14.95	$0.00	$69.40

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING DRILLER HELPER *LABORERS - FOUNDATION AND MARINE*	12/01/2017	$37.57	$7.70	$14.95	$0.00	$60.22
	06/01/2018	$38.52	$7.70	$14.95	$0.00	$61.17
	12/01/2018	$39.47	$7.70	$14.95	$0.00	$62.12
	06/01/2019	$40.47	$7.70	$14.95	$0.00	$63.12
	12/01/2019	$41.47	$7.70	$14.95	$0.00	$64.12
	06/01/2020	$42.46	$7.70	$14.95	$0.00	$65.11
	12/01/2020	$43.44	$7.70	$14.95	$0.00	$66.09
	06/01/2021	$44.46	$7.70	$14.95	$0.00	$67.11
	12/01/2021	$45.47	$7.70	$14.95	$0.00	$68.12
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2017	$37.45	$7.70	$14.95	$0.00	$60.10
	06/01/2018	$38.40	$7.70	$14.95	$0.00	$61.05
	12/01/2018	$39.35	$7.70	$14.95	$0.00	$62.00
	06/01/2019	$40.35	$7.70	$14.95	$0.00	$63.00
	12/01/2019	$41.35	$7.70	$14.95	$0.00	$64.00
	06/01/2020	$42.34	$7.70	$14.95	$0.00	$64.99
	12/01/2020	$43.32	$7.70	$14.95	$0.00	$65.97
	06/01/2021	$44.34	$7.70	$14.95	$0.00	$66.99
	12/01/2021	$45.35	$7.70	$14.95	$0.00	$68.00
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.17	$10.50	$15.50	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$33.02	$10.91	$10.89	$0.00	$54.82
TUNNEL WORK - COMPRESSED AIR *LABORERS (COMPRESSED AIR)*	12/01/2017	$49.73	$7.70	$15.35	$0.00	$72.78
	06/01/2018	$50.68	$7.70	$15.35	$0.00	$73.73
	12/01/2018	$51.63	$7.70	$15.35	$0.00	$74.68
	06/01/2019	$52.63	$7.70	$15.35	$0.00	$75.68
	12/01/2019	$53.63	$7.70	$15.35	$0.00	$76.68
	06/01/2020	$54.62	$7.70	$15.35	$0.00	$77.67
	12/01/2020	$55.60	$7.70	$15.35	$0.00	$78.65
	06/01/2021	$56.62	$7.70	$15.35	$0.00	$79.67
	12/01/2021	$57.63	$7.70	$15.35	$0.00	$80.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) *LABORERS (COMPRESSED AIR)*	12/01/2017	$51.73	$7.70	$15.35	$0.00	$74.78
	06/01/2018	$52.68	$7.70	$15.35	$0.00	$75.73
	12/01/2018	$53.63	$7.70	$15.35	$0.00	$76.68
	06/01/2019	$54.63	$7.70	$15.35	$0.00	$77.68
	12/01/2019	$55.63	$7.70	$15.35	$0.00	$78.68
	06/01/2020	$56.62	$7.70	$15.35	$0.00	$79.67
	12/01/2020	$57.60	$7.70	$15.35	$0.00	$80.65
	06/01/2021	$58.62	$7.70	$15.35	$0.00	$81.67
	12/01/2021	$59.63	$7.70	$15.35	$0.00	$82.68
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR *LABORERS (FREE AIR TUNNEL)*	12/01/2017	$41.80	$7.70	$15.35	$0.00	$64.85
	06/01/2018	$42.75	$7.70	$15.35	$0.00	$65.80
	12/01/2018	$43.70	$7.70	$15.35	$0.00	$66.75
	06/01/2019	$44.70	$7.70	$15.35	$0.00	$67.75
	12/01/2019	$45.70	$7.70	$15.35	$0.00	$68.75
	06/01/2020	$46.69	$7.70	$15.35	$0.00	$69.74
	12/01/2020	$47.67	$7.70	$15.35	$0.00	$70.72
	06/01/2021	$48.69	$7.70	$15.35	$0.00	$71.74
	12/01/2021	$49.70	$7.70	$15.35	$0.00	$72.75
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) *LABORERS (FREE AIR TUNNEL)*	12/01/2017	$43.80	$7.70	$15.35	$0.00	$66.85
	06/01/2018	$44.75	$7.70	$15.35	$0.00	$67.80
	12/01/2018	$45.70	$7.70	$15.35	$0.00	$68.75
	06/01/2019	$46.70	$7.70	$15.35	$0.00	$69.75
	12/01/2019	$47.70	$7.70	$15.35	$0.00	$70.75
	06/01/2020	$48.69	$7.70	$15.35	$0.00	$71.74
	12/01/2020	$49.67	$7.70	$15.35	$0.00	$72.72
	06/01/2021	$50.69	$7.70	$15.35	$0.00	$73.74
	12/01/2021	$51.70	$7.70	$15.35	$0.00	$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.44	$10.91	$10.89	$0.00	$54.24
WAGON DRILL OPERATOR *LABORERS - ZONE 2*	12/01/2017	$33.08	$7.70	$13.60	$0.00	$54.38
	06/01/2018	$33.92	$7.70	$13.60	$0.00	$55.22
	12/01/2018	$34.76	$7.70	$13.60	$0.00	$56.06
	06/01/2019	$35.63	$7.70	$13.60	$0.00	$56.93
	12/01/2019	$36.49	$7.70	$13.60	$0.00	$57.79
	06/01/2020	$37.38	$7.70	$13.60	$0.00	$58.68
	12/01/2020	$38.27	$7.70	$13.60	$0.00	$59.57
	06/01/2021	$39.19	$7.70	$13.60	$0.00	$60.49
	12/01/2021	$40.10	$7.70	$13.60	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2017	$46.63	$10.50	$15.50	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER *PLUMBERS & PIPEFITTERS LOCAL 51*	09/01/2017	$40.69	$10.00	$17.60	$0.00	$68.29
	09/01/2018	$42.69	$10.00	$17.60	$0.00	$70.29
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/03/2017	$27.14	$7.75	$1.81	$0.00	$36.70
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/03/2017	$38.45	$7.75	$9.53	$0.00	$55.73
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/03/2017	$31.66	$7.75	$9.44	$0.00	$48.85
For apprentice rates see "Apprentice- LINEMAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	$24.88	$7.75	$1.75	$0.00	$34.38
EQUIPMENT OPERATOR (Class A CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	$38.45	$7.75	$13.61	$0.00	$59.81
EQUIPMENT OPERATOR (Class B CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	$33.92	$7.75	$10.21	$0.00	$51.88
GROUNDMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	$24.88	$7.75	$1.75	$0.00	$34.38
GROUNDMAN -Inexperienced (<2000 Hrs.) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	$20.35	$7.75	$1.61	$0.00	$29.71
JOURNEYMAN LINEMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/03/2017	$45.23	$7.75	$16.61	$0.00	$69.59

Apprentice - *LINEMAN (Outside Electrical) - East Local 104*

Effective Date - 09/03/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$27.14	$7.75	$3.31	$0.00	$38.20
2	65	$29.40	$7.75	$3.38	$0.00	$40.53
3	70	$31.66	$7.75	$3.45	$0.00	$42.86
4	75	$33.92	$7.75	$5.02	$0.00	$46.69
5	80	$36.18	$7.75	$5.09	$0.00	$49.02
6	85	$38.45	$7.75	$5.15	$0.00	$51.35
7	90	$40.71	$7.75	$7.22	$0.00	$55.68

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	01/01/2016	$28.98	$4.25	$3.12	$0.00	$36.35
TELEDATA LINEMAN/EQUIPMENT OPERATOR *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	01/01/2016	$27.31	$4.25	$3.07	$0.00	$34.63
TELEDATA WIREMAN/INSTALLER/TECHNICIAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	01/01/2016	$27.31	$4.25	$3.07	$0.00	$34.63
TREE TRIMMER *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is not on the ground. This classification does not apply to wholesale tree removal.	01/31/2016	$18.51	$3.55	$0.00	$0.00	$22.06
TREE TRIMMER GROUNDMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is on the ground. This classification does not apply to wholesale tree removal.	01/31/2016	$16.32	$3.55	$0.00	$0.00	$19.87

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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.

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SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.01 LOCATION OF WORK

A. The work of this Contract is located at the Owner's High Hill Reservoir potable water storage facility located in Dartmouth, Massachusetts. High Hill Reservoir is a 75-million-gallon (MG) finished potable water storage facility located along Faunce Corner Road in Dartmouth, Massachusetts that supplies the Owner's entire water distribution system. It provides finished potable water for pressure equalization, supplying peak demand periods, providing fire flows, and providing emergency storage to the Owner's entire water distribution system.

B. See Section 01014 – Suggested Construction Sequence and Special Work Requirements for additional information on site conditions and operations.

1.02 SCOPE OF WORK

A. Furnish all labor, materials, equipment, tools and incidentals required and construct the High Hill Reservoir Rehabilitation project in its entirety as shown on the Drawings and as specified herein.

B. The Work includes, but is not necessarily limited to:

1. Removing and replacing existing valves and installing new valves on 24-, 36, and 42-inch water transmission mains.

2. Installation of a new 24-inch water main.

3. Removing and replacing the existing sluice gates in the reservoir's inlet structure with new valves.

4. Removing and replacing valves in the reservoir's outlet structure with new valves.

5. Dewatering and draining the reservoir to facilitate the replacement of existing sluice gates and valves as well as internal structural inspections, structural repairs and repair of the reservoir roof.

6. Removal and disposal of accumulated sediment on the reservoir floor.

7. Facilitating in-the-dry structural inspections by the Engineer.

8. Performing structural repairs to the reservoir roof.

9. Performing other structural and ancillary repairs inside the reservoir.

10. Cleaning the entire reservoir.

11. Disinfection and refilling the reservoir to return it to normal operation.

12. All required site work, cleanup and demobilization.

1.03 WORK BY OTHERS

A. The following work will be performed by others concurrently with the Work of this Contract.

1. The Owner is currently performing a rehabilitation project at their Quittacas Water Treatment Plant (WTP), which includes rehabilitation of the entire electrical system at the WTP. Coordination with this project is required as described in Section 01014 – Suggested Construction Sequence and Special Work Requirements.

B. Refer to Article 7 of the General Conditions for additional requirements.

1.04 WORK SEQUENCE

A. Perform Work as specified in Section 01014 – Suggested Sequence of Construction and Special Work Requirements.

1.05 CONTRACTOR'S USE OF PREMISES

A. Contractor shall limit the use of the premises for his/her Work and for storage to allow for:

1. Work by other contractors.

2. Owner occupancy.

B. Coordinate use of premises with Owner and Engineer.

C. Contractor shall assume full responsibility for security of all his/her and his/her subcontractor’s materials and equipment stored on the site.

D. If directed by the Owner or Engineer, move any stored items which interfere with operations of Owner or other contractors.

E. Obtain and pay for use of additional storage or work areas if needed to perform the Work.

1.06 OWNER OCCUPANCY

A. Owner will occupy premises during performance of the work for the conduct of his/her normal operations. Coordinate all construction operations with Owner and Engineer to minimize conflict and to facilitate Owner usage.

END OF SECTION

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SECTION 01014
SUGGESTED CONSTRUCTION SEQUENCE AND SPECIAL WORK REQUIREMENTS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. The water system must provide continuous service to all customers during the construction period and meet all demands required.

B. In general, no work which affects or could affect water system operations or water quality shall be performed without a specific detailed plan by the Contractor approved in advance by the Engineer and the Owner. All requests shall be in writing to the Owner and Engineer. The safety and integrity of the water system are of prime importance. The Engineer and Owner reserve the right to stop the work at any time if the safety and integrity of the water system is jeopardized. Engineer and Owner also reserve the right to limit the amount of water mains and water facilities that are out of service at any time.

C. As specified in Section 00100, Contractor shall visit the site before preparing a Bid to become familiar with local conditions that may in any manner affect cost, progress or performance of the Work and to meet requirements as specified herein, including reviewing and verifying all the conditions that exist prior to construction and the restoration needed to restore all areas to conditions equal to or better than what existed prior to construction. Contractor shall contact and coordinate all site visits directly with the Owner for access to the site and shall contact Ymane Galotti, Superintendent of Water, at Ymane.Galotti@newbedford-ma.gov or 508-979-1550 ext. 67323 to arrange for access to the site.

D. Construction progress schedules required shall reflect the conditions presented in this section.

1.02 REFERENCE STANDARDS

A. American Water Works Association (AWWA)

1. AWWA C652 – Disinfection of Water Storage Facilities.

B. National Sanitation Foundation (NSF)

1. NSF 61 - Drinking Water System Components Health Effects.

1.03 DEFINITIONS AND TERMS

A. System Operational Constraints: The constraints to performance of the work required because of system operations which must be maintained at all times are identified in this section. These constraints shall be included in the Contractor's schedules and plans.

B. Construction Scheduling Constraints: The constraints to performance of the work required because of special sequencing with other parts of the work, calendar time constraints and special testing, commissioning and work procedures are identified in this Section. These constraints are in addition to the standard procedural constraints such as shop drawings, testing, commissioning, training, etc. and the above system operational constraints. These constraints shall be included in the Contractor's schedules and plans.

C. Special Conditions: Certain special conditions, if any, related to performance of the work are identified in this section. If they affect the scheduling of the work, they shall be included in the Contractor's schedules and plans.

1.04 SUBMITTALS

A. All submittals shall be in accordance with Section 01300.

B. Contractor is required to submit the following for Engineer and Owner review and approval. The Contractor is not allowed to start any work without approval of the following submittals. The safety and integrity of the water system is of prime importance and Engineer and Owner reserve the right to review and approve the following required submittals from the Contractor:

1. Construction approach and sequence, with detailed sequence of work and schedule for all parts of the project.

2. Shut down, isolation and dewatering plans for all existing water mains and water facilities to be shut down to facilitate construction of the work.

3. Plans to maintain water supply as specified herein to the entire water system and all water customers.

4. Temporary bypass piping plans (if needed, based on Contractor’s proposed approach).

5. Plans and procedures for any work required to be performed in-the-wet in potable water, including all disinfection and protection of the water supply.

6. Plan to dewater and drain High Hill Reservoir, including dechlorination/dechloramination of all water discharged.

7. Plans to clean the reservoir in accordance with the requirements specified herein and on the Drawings.

8. Plans to protect the active basin of High Hill Reservoir and the potable water that remains online and in operation to supply the water system while the opposite basin is offline for construction work.

9. Plans to protective active portions of High Hill Reservoir from any outside contamination, based on Contractor’s proposed means and methods.

10. Plans to clean and disinfect High Hill Reservoir, including the inlet and outlet structures and the entire reservoir, in accordance with AWWA C652 – Disinfection of Water Storage Facilities.

11. Plans to reactive High Hill Reservoir following completion of construction work and all cleaning and disinfection in accordance with AWWA C652 – Disinfection of Water Storage Facilities.

1.05 NOTIFICATION REQUIREMENT

A. Give a minimum of 14 days advance notice to the Engineer and Owner of each component proposed for shutdown or disruption, all of which shall be subject to Owner and Engineer approval and limitations.

1.06 TIE-IN PREPARATIONS

A. Where new piping shall be tied-into existing piping that are required to be shutdown to make the tie-in, the new piping shall be fully prepared in anticipation of the tie-in to minimize downtime of the existing system. The new piping shall be fully tested to the maximum extent possible prior to the tie-in. Measurements shall be taken to ensure that the new piping is of the correct size, length and alignment to complete the tie-in. Supply a list of all materials and equipment needed to accomplish the tie-in and review the proposed tie-in with the Engineer and Owner.

1. Once initiated, work shall proceed continuously until the tie-in is completed. Ensure that all materials, labor and equipment required to complete the work are available at the site of the tie-in prior to the initiation of work.

1.07 SITE CONDITIONS

A. High Hill Reservoir is a 75-million-gallon (MG) finished potable water storage facility located along Faunce Corner Road in Dartmouth, Massachusetts that supplies the Owner's entire water distribution system. It provides finished potable water for pressure equalization, supplying peak demand periods, providing fire flows, and providing emergency storage to the Owner's entire water distribution system. The overall plan dimensions of High Hill Reservoir are about 1,000 feet in the north-south direction and 500 feet in the east-west direction. There is a center dividing wall in High Hill Reservoir that divides it into two equal basins (north and south basins) when the water elevation is below 213 feet, each with plan dimensions of about 500 feet by 500 feet. Existing, available historical drawings from the Owner are provided in the appendices of these Specifications – these are provided for Contractor's convenience only and the accuracy or completeness of these drawings and information is not warranted to be correct. High Hill Reservoir is the only storage facility for the Owner's entire water system.

B. Finished potable water from the Owner's Quittacas Water Treatment Plant (WTP) in Freetown, Massachusetts is pumped about 8 miles through two parallel 48-inch transmission mains (the north 48-inch main is riveted steel and the south 48-inch main is reinforced concrete pipe) to the High Hill Reservoir storage facility in Dartmouth, Massachusetts.

C. Flow from the two 48-inch transmission mains combine in a common chamber in the inlet structure of High Hill Reservoir. Flow in this first chamber of the inlet structure spills over a weir wall with a top elevation of about 217 feet into a second chamber in the inlet structure, where it then flows into each basin (north and south basins of High Hill Reservoir) of the reservoir through masonry tunnels. The masonry tunnels to each basin (north and south) include a sluice gate to isolate the inlet structure from each basin of the reservoir; however, the operability of the existing sluice gates is uncertain and for the purposes of this work they should be considered inoperable. The two sluice gates in the inlet structure are located at the bottom of the reservoir, each with a bottom elevation of about 196 feet, at the concrete floor elevation of the reservoir.

D. The concrete floor elevation of High Hill Reservoir is 196 feet. The center dividing wall that divides the reservoir into two equal north and south basins is about 17 feet high above the concrete floor (top of center dividing wall is at elevation 213 feet). When the water level in the reservoir exceeds elevation 213 feet, the reservoir is essentially one combined tank. The Owner's normal maximum high operating water level in the reservoir is at an elevation of about 218 feet. The maximum possible water level in High Hill Reservoir is at an elevation of about 219.25 feet. There is no overflow at High Hill Reservoir. The sides of the reservoir along its perimeter are sloped up to the side walls at approximately a 2:1 slope.

1. Based on the maximum water level in High Hill Reservoir and the floor elevation, the maximum pressure at the bottom of the reservoir (elevation 196 feet) is about 10 psi. For the purposes of the work on this project, the maximum pressure inside the entire reservoir shall consider a safety factor of 2:1 and shall be considered 20 psi.

2. The operating pressure in all the water transmission mains entering, leaving and surrounding High Hill Reservoir on the reservoir site shall be considered to be a maximum 60 psi for the purposes of this project.

E. The outlet structure of High Hill Reservoir is comprised of four individual chambers – two chambers in series on each side of the center dividing wall. Flow from each basin (north and south) enters the initial chamber in the outlet structure through upper and lower masonry openings. There are existing 36-inch butterfly valves on these lower and upper masonry openings from both the north and south basins to the first chamber in the outlet structure (two 36-inch butterfly valves on each side of the dividing wall – one each on the lower and upper masonry openings – for a total of four 36-inch outlet butterfly valves from the reservoir to the outlet structure). The centerline elevation of the two lower 36-inch outlet valves is about 197.75 feet and the centerline elevation of the two upper 36-inch outlet valves is about 208.75 feet. Currently, the two existing lower 36-inch outlet valves are corroded and inoperable, stuck in the closed position. The two upper 36-inch outlet valves are currently open and were found operable; however, their operability at the time of construction is not guaranteed. The first chambers (north and south side) in the outlet structure are interconnected by a "cross-over" masonry opening with a 30-inch butterfly valve (this existing valve is corroded and currently inoperable, stuck in the open position) in the north chamber, which allows flow to mix in the outlet structure from both the north and south basins. Flow then travels from these two initial outlet structure chambers through masonry openings with an invert elevation of about 196 feet to two additional chambers in the outlet structure, one on the north and one on the south side. There are existing 36-inch butterfly valves in these first outlet structure chambers that isolate the first outlet chambers from the second chambers in the outlet structure and allow flow to exit the outlet structure to two parallel 36-inch cast-iron (CI) transmission mains – these existing 36-inch valves are currently in the open position, but corroded and inoperable. The second chambers in series in the outlet chamber are also connected by a 12-inch cast-iron wall pipe with gate valves – the operability of these gate valves is not known and they shall be considered inoperable for construction purposes and Contractor shall temporarily bulkhead as required to facilitate construction work for this project. Two 36-inch (CI) transmission mains then convey water from the outlet structure to the Owner's entire water distribution system – the north compartment feeds one of the 36-inch transmission mains and the south compartment supplies the other 36-inch transmission main.

F. The two 36-inch water transmission mains convey potable water to the Owner's entire water distribution system from High Hill Reservoir. The south 36-inch transmission main is cast-iron (CI) and was originally installed in 1896. The north 36-inch transmission main is cast-iron (CI)

and was originally installed in 1910. Many of the existing valves on these 36-inch mains at the High Hill Reservoir site are original to the pipelines and will be replaced as part of this project. Downstream of the High Hill Reservoir site, new valves were installed on these 36-inch transmission mains in 2015 and 2016.

G. A chloramination facility provides supplemental disinfection of water supplied from High Hill Reservoir as it flows to the water distribution system through the two parallel 36-inch water transmission mains. The supplemental disinfection from the chloramination facility is introduced into the flow in the 36-inch transmission mains within the basement of the old chlorination facility building on the reservoir site.

H. A 42-inch pre-stressed concrete cylinder pipe (PCCP) water transmission main is supplied by the 36-inch water transmission mains downstream of the old chlorination facility building. This 42-inch water transmission mains supplies the southern portion of the Owner's water distribution system and supplies the Owner's Durfee Street pumping station, which boosts pressures and provides fire flows to the Owner's Hathaway Road high service area and replenishes the Hathaway Road high service area's dedicated Hathaway Road storage tank. New valves were installed on this 42-inch transmission main downstream of High Hill Reservoir from 2001 to 2003.

I. A 24-inch water transmission main downstream of High Hill Reservoir provides interconnections between the 36-inch transmission mains just downstream of the reservoir and interconnections between the two 36-inch transmission mains and the 42-inch transmission main just downstream of the old chlorination building. This 24-inch main also provides supply from High Hill Reservoir and the Owner's water system to a pumping station owned and operated by the Town of Dartmouth, Massachusetts. The Town of Dartmouth's pumping station does not operate continuously, but on an as-needed basis to supplement Dartmouth's own water supply to meet all their needed water demands or during water supply emergencies. Typically, the Town of Dartmouth operates this pumping station during the months of May, June, July, August, September and October.

J. On the upstream/inlet side of High Hill Reservoir, there is a 36-inch bypass transmission main that is normally closed. This 36-inch bypass main, connected to both the 48-inch transmission mains, allows water to flow directly from the 48-inch water transmission mains from the Quittacas WTP to the two 36-inch water transmission mains (it is connected to both 36-inch transmission mains) on the downstream side of High Hill Reservoir and also on the downstream side of the chloramination facility.

K. There is a network of drainage pipes and drain valves in High Hill Reservoir, in the reservoir basins and the inlet and outlet structures, which all drain through an 8-inch pipe on the east/inlet side of High Hill Reservoir. However, the condition of these drainage lines and the condition and operability of the existing drain valves are unknown. Therefore, these drainage lines and valves should not be considered as an available option for dewatering purposes for this project.

L. Storm water drainage from the existing High Hill Reservoir roof is collected in a combination of drainage troughs and is then collected in a network of 30- and 36-inch drainage pipes around the perimeter of High Hill Reservoir. All the roof storm water drainage combines in a common drain manhole on the east/inlet side of High Hill Reservoir and flows down a 30- and 36-inch reinforced concrete (RC) pipe to a 36-inch storm water outfall that discharges over rip rap and a shallow ditch about 770 feet east of this drain manhole.

M. Underwater inspections of the reservoir were recently performed, which included sampling the accumulated sediment on the reservoir floor. These inspection reports and sampling results are included in the appendices of these Specifications.

1.08 OPERATIONAL CONSTRAINTS

A. The following is a list of operational constraints to consider in developing an overall plan of construction. This list is not intended to release the Contractor from the responsibility to coordinate the work in any manner which will ensure project completion within the time allowed or to complete the work while maintaining the safety and integrity of the water system. These requirements are such that the Owner can maintain proper flow, pressures and fire flows to the water system at all times throughout construction. The safety and integrity of the water system is of prime importance.

1. The Owner is currently performing a rehabilitation project at their Quittacas Water Treatment Plant (WTP), which includes rehabilitation of the entire electrical system and replacement of pumps. Under no circumstances will the Contractor be allowed to shut down or dewater High Hill Reservoir to facilitate work on this project or perform any other work as part of this project until all electrical rehabilitation and pump replacement work is complete at the Quittacas WTP. High Hill Reservoir and all water transmission mains must be in full, normal operation while the electrical and pump replacement work at the Quittacas WTP is ongoing. At this time, it is anticipated that all electrical and pump replacement work at the Quittacas WTP will be completed by the end of May 2019. Contractor shall coordinate with the Owner and Engineer on an acceptable schedule for when work can be performed.

2. Continuous and uninterrupted water supply must be maintained in one 48-inch water transmission main (north or south 48-inch main) to High Hill Reservoir at all times during construction of this project. Only one 48-inch transmission main (north or south 48-inch transmission main) will be allowed to be offline at any time during construction and one 48-inch water transmission main (north or south 48-inch transmission main) must always be in service at all times unless otherwise specified herein. At no time will both 48-inch transmission mains (north and south 48-inch transmission main) be allowed to concurrently be out of service during construction – one 48-inch transmission main must always be online to supply High Hill Reservoir and provide flow to the 36-inch High Hill Reservoir inlet bypass main.

3. Continuous and uninterrupted water supply must be maintained in one 36-inch water transmission main to the distribution system (north or south 36-inch water transmission main) at all times during construction of this project. Only one 36-inch transmission main (north or south 36-inch transmission main) will be allowed to be offline at any time during construction and one 36-inch water transmission main (north or south 36-inch transmission main) must always be in service at all times unless otherwise specified herein. At no time will both 36-inch transmission mains (north and south 36-inch transmission main) be allowed to concurrently be out of service during construction – one 36-inch transmission main must always be online to supply the water system and the 42-inch transmission main downstream of High Hill Reservoir.

4. Continuous and uninterrupted water supply must be maintained to the 42-inch transmission main downstream of High Hill Reservoir at all times during construction except for permitted temporary shutdowns – this main must be in service at all times during

construction. For any temporary shut downs that are needed to facilitate work on the 42-inch transmission mains, both 36-inch transmission mains downstream of High Hill Reservoir must be online and in service supplying the entire water system. Any work requiring temporary shutdown of the 42-inch transmission main must be expedited and proceed continuously to return the 42-inch transmission main to full service. All temporary shut downs are subject to review and approval by the Owner and Engineer.

5. The 36-inch inlet bypass main is normally closed. It will only be allowed to be used in special circumstances as specified herein to route the flow of water through the new 24-inc bpayss main being constructed as part of this project. Under no circumstances will water be allowed to flow down the 36-inch inlet bypass main to the two parallel 36-inch transmission mains downstream of High Hill Reservoir. Use of the 36-inch bypass main shall be subject to review and approval by the Owner and Engineer.

6. If one of the 48-inch supply mains needs to be temporarily shut down during construction, both 36-inch outlet transmission mains must be online and in service. Both 36-inch transmission mains are required to be in service if one of the 48-inch transmission mains needs to temporarily be shut down during construction.

7. If one of the 36-inch mains needs to be temporarily shut down during construction, both 48-inch transmission mains and the 42-inch transmission main must be online and in service. Both 48-inch transmission mains and the 42-inch transmission main are required to be in service if one of the 36-inch transmission mains needs to temporarily be shut down during construction.

8. Continuous and uninterrupted water service must be maintained at all times during construction to the Town of Dartmouth's pumping station that is supplied by the Owner's water system through the 24-inch water transmission main downstream of High Hill Reservoir. If temporary shut downs are needed or proposed to facilitate installation of new piping and valves, this work must be coordinated with the Engineer, Owner and Town of Dartmouth. Temporary shut downs on the 24-inch transmission main will not be allowed during the months of May, June, July, August, September and October. Temporary shut downs on the 24-inch transmission main to facilitate new work will only be considered for approval during the time period from November through April and shall be reviewed and approved by the Engineer and Owner and coordinated with the Engineer, Owner and Town of Dartmouth.

9. To facilitate work inside High Hill Reservoir for this project, the reservoir will need to be drained and dewatered by the Contractor. One basin (north or south) of High Hill Reservoir needs to be online and in service at all times to provide pressure equalization, supply peak demand periods, provide fire flows, and provide emergency storage to the Owner's entire water distribution system. To facilitate work on this project, each basin (north and south) of High Hill Reservoir will need to be drained and dewatered by the Contractor separately and independently while the other, opposite basin remains in service – under no circumstances will the entire High Hill Reservoir be allowed to be completely drained and dewatered. Contractor is responsible for all protection measures inside the reservoir to protect the drinking water in the active side that is online during all construction activities. Contractor is required to submit to Engineer and Owner for review and approval proposed plans, procedures and methods for protection of the active side of the reservoir from active construction work. Engineer and Owner reserve the right to review Contractor's proposed plans and no work shall commence inside the reservoir until Engineer and Owner have

approved the Contractor's protection plan – the safety and integrity of the water system is of prime importance.

10. With one basin (north or south) of High Hill Reservoir in service to supply the water system and the opposite basin dewatered and out of service for work on this project, the maximum allowable water level in the active basin is 3 feet below the top of the center dividing wall at elevation 210 feet. The minimum allowable water level to supply proper pressure to the Owner's entire water distribution system is 209 feet. System operations shall be coordinated with the Engineer and Owner.

11. The chloramination facility at High Hill Reservoir must remain in service at all times during construction and any water supplied from High Hill Reservoir to the water system must be provided with supplemental disinfection through the two parallel 36-inch water transmission mains (north and south 36-inch mains) by flowing through the injection points within the basement of the old chlorination facility building. Supply must be maintained to all service connections to the chloramination facility at all times during construction. The purpose of the new 24-inch bypass water transmission main being installed as part of this project is to provide flow around the High Hill Reservoir inlet structure and provide flow into the reservoir through the outlet structure, allowing the reservoir to float (fill and draw) on the water system, with all flow leaving High Hill Reservoir into the water distribution system through the two parallel 36-inch transmission mains and continuing to pass through the injection points in the old disinfection facility for supplemental disinfection provided by the chloramination facility.

12. Shut down of existing water transmission mains and High Hill Reservoir valves shall be coordinated by the Contractor with the Owner and Engineer. It is not warranted that existing valves will be operable at the time of construction. Contractor is required to handle leakage at each isolation valve that is closed or line stop that is installed to accomplish the work as specified in Section 02120.

13. In general, each valve work area shall be constructed one at a time and fully completed with all piping, fittings and valves and tested, disinfected and reactivated before the Contractor begins construction on another valve work area. The Contractor may be allowed to complete multiple valve work areas at the same time, subject to the approval of the Engineer and Owner, if these work areas require that the same valves be shut down to isolate the same sections of existing water mains required to complete construction of the work areas and the safety and integrity of the water system is not jeopardized based on the requirements specified herein.

1.09 CONSTRUCTION SCHEDULING CONSTRAINTS

A. The following is a list of scheduling constraints to consider in developing an overall plan of construction. This list is not intended to release the Contractor from the responsibility to coordinate the work in any manner which will ensure project completion within the time allowed. The following areas are not necessarily listed in their order of priority or required sequence of construction.

1. Contractor is required to coordinate activities with other contractors as specified to allow orderly and timely completion of all required work. Contractor shall coordinate all work with the Engineer, Owner and the contractor performing the concurrent Quittacas WTP Rehabilitation project. Under no circumstances will the Contractor be allowed to shut

down or dewater High Hill Reservoir to facilitate work on this project or perform any other work as part of this project until all electrical rehabilitation and pump replacement work is complete at the Quittacas WTP. High Hill Reservoir and all water transmission mains must be in full, normal operation while the electrical and pump replacement work at the Quittacas WTP is ongoing. At this time, it is anticipated that all electrical and pump replacement work at the Quittacas WTP will be completed by the end of May 2019. Contractor shall coordinate with the Owner and Engineer an acceptable schedule for when work can be performed.

2. High Hill Reservoir cannot be drained and dewatered during the months of June, July, August, and September (the months with high/peak water demands). Any work that requires the reservoir to be drained and dewatered must be performed during times of non-peak water demands. All work must be planned and scheduled so that it can be completed to restore the reservoir to full service for the high/peak water demand periods of June, July, August, and September.

3. If the Contractor proposes to shut down both 36-inch transmission mains (north and south 36-inch mains) at the same time to complete required work, Engineer and Owner will only consider allowing the contractor to shut down both 36-inch transmission mains (north and south 36-inch main) at the same time if the 42-inch transmission main to the distribution system is in service and if this work is proposed during times of non-peak water demands – under no circumstances will this be allowed during time periods of high/peak water demands during the months of June, July, August and September. Shutting down both 36-inch water transmission mains (north and south 36-inch mains) at the same time is not guaranteed and is subject to the review and approval of both the Engineer and the Owner during construction and is also subject to the requirements and restrictions as specified herein. The safety and integrity of the water system is of prime importance. If permission is granted to the Contractor by both the Engineer and Owner to temporarily shut down both 36-inch transmission mains at the same time to facilitate construction, Contractor shall perform construction continuously in such a manner that will restore supply in one 36-inch transmission main (north or south 36-inch main), including the proper disinfection of all components, while the remaining work is being completed.

4. Temporary shut downs that are needed or proposed to facilitate installation of new piping and valves on the existing 24-inch transmission main downstream of High Hill Reservoir must be coordinated with the Engineer, Owner and Town of Dartmouth. Temporary shut downs on the 24-inch transmission main will not be allowed during the months of May, June, July, August, September and October. Temporary shut downs on the existing 24-inch transmission main to facilitate new work will only be considered for approval during the time period from November through April and shall be reviewed and approved by the Engineer and Owner and coordinated with the Engineer, Owner and Town of Dartmouth.

5. If based on the Contractor's proposed approach and sequence of work, any temporary bypass piping and temporary service connections are needed to maintain water supply to any service connections, temporary bypass piping will not be allowed to be used between November 1st and April 15th in order to prevent freezing of the temporary bypass piping.

6. Following installation of any needed line stops to facilitate shut downs to accomplish new construction, new valves shall be installed and pipelines reactivated as soon as possible so that the line stops can be removed as quickly and as soon as possible.

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1.10 SPECIAL CONDITIONS AND REQUIREMENTS

A. The following is a list of special conditions to consider in developing an overall plan of construction. This list is not intended to release the Contractor from the responsibility to coordinate the work in any manner which will ensure project completion within the time allowed. The following areas are not necessarily listed in their order of priority or required sequence of construction.

1. Work shall be performed at High Hill Reservoir that provides for continuous and uninterrupted Owner access for day-to-day operations and Owner's operations and maintenance of existing facilities.

2. Engineer and Owner reserve the right to limit the amount of water mains and water facilities that are out of service at any time. The safety and integrity of the water system is of prime importance.

3. All new valves 24-inches and larger for water transmission mains and for the inlet and outlet structures as specified in Division 2 and Division 15 shall be pressure and leakage tested on-site prior to installation as specified in the procedures in Section 02640.

4. It is recommended that the Contractor complete all site work for valve replacements and new piping early in the project, before any work inside High Hill Reservoir, as these valves are necessary to provide control of water supply operations during work inside High Hill Reservoir.

5. The 30- and 36-inch RC storm water outfall that discharges over rip rap and a shallow ditch about 770 feet east of High Hill Reservoir may be utilized for dewatering and draining the reservoir in order to facilitate construction of this work.
   a. All dewatering and discharge must be in accordance with all federal, state, and local regulations, laws, ordinances and requirements. See Section 01170 – Special Provisions for additional requirements.
   b. All water must be dechloraminated/dechlorinated prior to discharge in accordance with all federal, state, and local regulations, laws, ordinances and requirements.
   c. The Contractor will be permitted to dewater High Hill Reservoir for a maximum of up to 8 hours each working day (Monday through Friday) between the hours of 8:00 AM and 4:00 PM. No dewatering will be allowed on Saturdays, Sundays, holidays, the day before a holiday or holiday weekend, and the day after a holiday or holiday weekend. All dewatering shall be at the discretion of the Engineer and Owner and shall be reviewed and approved by the Engineer and Owner.
   d. Contractor will not be permitted to dewater High Hill Reservoir on the day of or the two days following any rainfall event. All dewatering shall be at the discretion of the Engineer and Owner and shall be reviewed and approved by the Engineer and Owner.
   e. The maximum discharge rate that the Contractor will be allowed to dewater High Hill Reservoir through the 30- and 36-inch storm water outfall is 2,000 gallons per minute (gpm) and Contractor is responsible for providing means to measure the dewatering flow rate to ensure that this requirement is met. All dewatering operations are subject to the continuous review and approval by the Engineer and Owner and Owner and Engineer reserve the right to suspend Contractor's dewatering operations at any time and for any reason.
   f. Contractor shall anticipate needing to dewater and drain up to 30-million-gallons (MG) each from both the north and south basins of High Hill Reservoir.

g. Any property damage caused by Contractor's dewatering operations shall be repaired and/or replaced by the Contractor at Contractor's sole expense to a condition equal to or better than what existed prior to this work.
h. All dewatering operations are subject to the continuous review and approval by the Engineer and Owner and Owner and Engineer reserve the right to suspend Contractor's dewatering operations at any time and for any reason.

6. All work inside High Hill Reservoir, including work to be performed in-the-wet with the reservoir active and online, shall be performed with materials in full accordance with NSF 61 – Drinking Water System Components Health Effects and all materials and personnel in active potable water shall be thoroughly disinfected. All equipment used within High Hill Reservoir shall also be suitable for use in a potable water facility.

7. As part of the work of this project, Contractor shall provide for a TV inspection of the existing drain lines in the High Hill Reservoir inlet structure, north and south basins, the outlet structure, and the 8-inch drain line discharge on the east/inlet side of High Hill Reservoir. The purpose of the TV inspection will be to assess the condition of the existing drain lines. Contractor shall schedule the TV inspection within the overall sequence of work specified herein.

8. Cleaning and Disinfection of High Hill Reservoir:
   a. For all cleaning of the reservoir required, specified herein and as specified on the Drawings, Contractor shall clean by power washing or other means acceptable to the Engineer to fully clean all surfaces, remove all coatings, efflorescence, dirt and foreign matters so that all surfaces are clean as acceptable to the Engineer. Contractor is responsible for disposing of all water and dirt, debris and foreign matter from all cleaning work in accordance with all federal, state, and local laws, regulations and requirements.
   b. Following completion of all work inside High Hill Reservoir and its inlet and outlet structures and before any part of the reservoir is reactivated and returned to service, the reservoir shall be cleaned and disinfected according to AWWA C652 – Disinfection of Water Storage Facilities.

1.11 SUGGESTED WORK SEQUENCE

A. Perform work in a sequence to complete all work within the Contract Time and to meet all the requirements specified herein.

B. Perform work in a sequence to accommodate Owner's occupancy during the construction period and for completion of the work in the Contract Time. Completion dates of the various stages or time restrictions for completing certain portions of the work shall be as specified herein, in accordance with the overall Contract Time, and in accordance with the construction schedule submitted by the Contractor and reviewed and approved by the Owner and Engineer.

C. The following is a suggested approach and work sequence to facilitate the work. This suggested approach and work sequence is not intended to release the Contractor from the responsibility to sequence, coordinate and perform the work in any manner which will ensure project completion within the time allowed. The suggested approach and work sequence is provided to the Contractor as a guide for the Contractor's convenience only and it does not relieve the Contractor from the responsibility of developing a detailed sequence of construction to complete the proposed work nor does it preclude the Contractor from proposing a different

sequence that meets the specified requirements to accomplish the work. The approach and work sequence may need to be adjusted based on other constraints specified herein and the Contractor's proposed approach and sequence of work. Water mains or facilities that may need to be temporarily shut down to facilitate the work are also listed as a guide to the Contractor and the Contractor shall coordinate with the Engineer and Owner any existing valves to be closed to fully isolate all components needed to facilitate construction of new work. Contractor shall examine Owner's water system plans to determine the extent of required shut downs and shall coordinate any needed shut downs with the Engineer and the Owner. Contractor should refer to Drawing C-6 (Valve Identification Plan) and the table at the end of this section along with this suggested sequence of work for valve identification numbers – the valves listed herein for opening and closing to facilitate the suggested sequence of work are provided for Contractor's convenience only and it is not warranted that all valves that need to be opened and closed are listed.

1. Remove and replace existing 36-inch valves and install new valves, piping and fittings at Area "E" (Area "E" on Drawing C-3 and Enlarged Plan "E" on Drawing C-5) for the connections between the north and south 36-inch water transmission mains and the 36-inch High Hill Reservoir inlet bypass main.

2. Remove and replace existing 36-inch and 24-inch valves and install new valves, piping and fittings at Area "B" (Area "B" on Drawing C-3 and Enlarged Plan "B" on Drawing C-4) just downstream of the High Hill Reservoir outlet structure.

3. Remove and replace existing 36-inch and 42-inch valves and install new valves, piping and fittings at Area "D" (Area "D" on Drawing C-3 and Enlarged Plan "D" on Drawing C-5) downstream of High Hill Reservoir.

4. Construct and activate the new 24-inch bypass water transmission main between the 36-inch High Hill Reservoir inlet bypass water transmission main and the 24-inch water transmission main downstream of High Hill Reservoir (see Drawing C-3), including replacing existing 24-inch valves with new 24-inch valves, piping and fittings at Area "C" (Area "C" on Drawing C-3 and Enlarged Plan "C" on Drawing C-5) on the 24-inch water transmission main. This work is anticipated to need temporary shut downs of the existing 24-inch transmission main. Therefore, based on the operational and scheduling constraints specified herein, this work cannot be constructed during the months of May through October and must be performed from November through April. This new 24-inch bypass main must be constructed, tested, disinfected and activated before the inlet structure of High Hill Reservoir can be bypassed to facilitate work in the inlet structure.

5. Install new 8-inch insertion valves on the 8-inch drain line at Area "A" (Area "A" on Drawing C-3 and Enlarged Plan "A" on Drawing C-4) just upstream of the High Hill Reservoir inlet structure.

6. Isolate and bypass the inlet structure (back feed the reservoir via the new 24-inch main and through the outlet structure) of High Hill Reservoir to facilitate replacement of the sluice gates in the inlet structure:
   a. Open and/or confirm that the following valves are open:
      1) Valve 36-1
      2) Valve 36-2
      3) Valve 36-3
      4) Valve 24-1

5) Valve 24-2
6) Valve 24-6
7) Valve 24-7
8) Valve 24-3
9) Valve 24-4
10) Valve 24-5
11) Valve 36-5
12) Valve 36-6
13) Valve 36-7
14) Valve 36-8

b. Close and/or confirm that the following valves are closed:
1) Valve 48-1
2) Valve 48-3
3) Valve 36-4
4) Valve 36-18

c. All other valves shall remain in their normal operating position (open or normally closed).

d. Isolate the inlet structure of the reservoir by bulkheading the openings from the inlet structure into both the north and south basins of the reservoir. Bulkheading the openings from the inlet structure into both the north and south basin of the reservoir will need to be performed in-the-wet with the reservoir active and online.

7. Dewater and drain the inlet structure of High Hill Reservoir to facilitate all work required in the inlet structure.

8. Provide for an in-the-dry structural inspection of the inlet structure to be performed by the Engineer. Contractor shall provide a time period of at least one week for Engineer's in-the-dry structural inspection and shall provide for a time period of at least an additional 4 weeks following this inspection for Engineer to provide any additional information and direction related to repairs to the inlet structure and inlet structure floor.

9. Perform all work in the inlet structure of High Hill Reservoir, including replacement of all valves and repairs and modifications to the existing floor.

10. Clean, disinfect and reactivate the inlet structure of High Hill Reservoir in accordance with AWWA C652 – Disinfection of Water Storage Facilities:
a. Perform bacteriological sampling and analysis of the replacement water in accordance with AWWA C652. Re-disinfect, if necessary, until all requirements of the Commonwealth of Massachusetts and the Owner are met. Contractor shall make payment for all required sampling, testing and analysis as specified herein and in accordance with Owner's requirements. The inlet structure shall not be returned to service until all requirements are met. Additional testing by a qualified individual for heterotrophic plate count (HPC) and volatile organic carbon (VOCs) shall be completed and recorded on forms as required by the Commonwealth of Massachusetts. Contractor shall forward to the Engineer and Owner all sampling and analysis forms to the Commonwealth of Massachusetts as required. Disinfection and final water quality results shall be consistent with the existing water quality in the Owner's water system in accordance with the Owner's Construction Standards and Specifications.

11. Reactive the inlet structure of High Hill Reservoir upon successfully meeting all the requirements of AWWA C652 – Disinfection of Water Storage Facilities and with the approval of both the Engineer and Owner:
    a. Remove bulkheading from the openings from the inlet structure into both the north and south basin of the reservoir.
    b. Return all valves to their normal operating position (open or normally closed).
    c. Coordinate all water system operations with Owner and Engineer.

12. Bulkhead the 30-inch and 12-inch "cross-over" openings in the south side of the outlet structure of High Hill Reservoir. Bulkheading these "cross-over" openings will need to be performed in-the-wet with the reservoir active and online.

13. Coordinate with Engineer and Owner water system operations so that the water level elevation in High Hill Reservoir can be lowered down to elevation 210 feet by supplying system demands by gravity from the reservoir.

14. After the water level in High Hill Reservoir is lowered to 210 feet, close and isolate the north basin of the reservoir while the opposite south basin remains active and in service to supply the water system:
    a. Open and/or confirm that the following valves are open:
        1) Inlet 48-2
        2) Valve 48-2
        3) Valve 48-3
        4) Valve 36-6
        5) Valve 36-8
    b. Close and/or confirm that the following valves are closed:
        1) Inlet 48-1
        2) Valve 48-1
        3) Valve 36-5
        4) Valve 24-3
        5) Valve 24-5
    c. All other valves shall remain in their normal operating position (open or normally closed).

15. Dewater and drain the north side of the outlet structure and dewater and drain the north basin of High Hill Reservoir to an elevation that will not remove any sediment on the reservoir floor during dewatering operations – dewatering of the north basin will not be allowed lower than 197 feet to not remove any of the sediment on the reservoir floor during dewatering.

16. Complete all work in the north basin of High Hill Reservoir and the north side of the outlet structure:
    a. Protect the south basin of the reservoir at the center dividing wall from all construction activities while it remains in service throughout the construction duration to supply the water system while work is performed in the north basin.
    b. Remove and dispose of the remaining water and accumulated sediment on the floor of the north basin. Laboratory analysis of the sediment on the reservoir floor is included in the appendices of these Specifications.
    c. Clean the north basin of High Hill Reservoir and the north side of the outlet structure.
    d. Provide for an in-the-dry structural inspection of the north basin to be performed by the Engineer. Contractor shall provide a time period of at least one week for

Engineer's in-the-dry structural inspection and shall provide for a time period of at least 6 weeks for Engineer to provide any additional information, details, drawings and directives related to repairs in the north basin and outlet structure.

e. Replace the lower and upper 36-inch valves from the north basin into the outlet structure.
f. Replace the 30-inch and 12-inch "cross-over" valves in the north side of the outlet structure.
g. Replace the 36-inch outlet valve from the outlet structure to the 36-inch transmission main.
h. Replace drain valves in the outlet structure.
i. Demolish and remove existing mechanical screens in the outlet structure.
j. Perform all repairs to the floor of the outlet structure.
k. Perform all repairs to the reservoir roof on the north basin side.
l. Perform all other structural repairs and other repairs inside the north basin of the reservoir as directed by the Engineer (see Item 16d above).
m. Remove any temporary bulkheading installed to facilitate construction.

17. Clean and disinfect the north basin of High Hill Reservoir and the north side of the outlet structure in accordance with AWWA C652 – Disinfection of Water Storage Facilities. Perform bacteriological sampling and analysis of the replacement water in accordance with AWWA C652. Re-disinfect, if necessary, until all requirements of the Commonwealth of Massachusetts and the Owner are met. Contractor shall make payment for all required sampling, testing and analysis as specified herein and in accordance with Owner's requirements. The north basin and north side of the outlet structure shall not be returned to service until all requirements are met. Additional testing by a qualified individual for heterotrophic plate count (HPC) and volatile organic carbon (VOCs) shall be completed and recorded on forms as required by the Commonwealth of Massachusetts. Contractor shall forward to the Engineer and Owner all sampling and analysis forms to the Commonwealth of Massachusetts as required. Disinfection and final water quality results shall be consistent with the existing water quality in the Owner's water system in accordance with the Owner's Construction Standards and Specifications.

18. Coordinate water system operations with the Owner and Engineer to refill and reactivate the north basin of High Hill Reservoir and refill the north basin to water elevation 210 feet (keeping the south basin at water elevation 210 feet):
    a. Open and/or confirm that the following valves are open to refill the north basin to elevation 210 feet:
        1) Valve 48-1
        2) Inlet 48-1
    b. Once the north basin is refilled to water elevation 210 feet, all other valves shall remain in or be returned to their normal operating position (open or normally closed) while the water level in High Hill Reservoir is maintained at 210 feet (both north and south basins). The north basin is now back online following construction to supply the water system. No work is allowed to commence in the south basin until the north basin is refilled to elevation 210 feet and reactivated.

19. Close and isolate the south basin of the reservoir while the opposite north basin remains active and in service to supply the water system:
    a. Open and/or confirm that the following valves are open:
        1) Inlet 48-1
        2) Valve 48-1

3) Valve 36-5
4) Valve 36-7

b. Close and/or confirm that the following valves are closed:
1) Inlet 48-2
2) Valve 48-3
3) Valve 36-6
4) Valve 24-3

c. All other valves shall remain in their normal operating position (open or normally closed).

20. Dewater and drain the south side of the outlet structure and dewater and drain the south basin of High Hill Reservoir to an elevation that will not remove any sediment on the reservoir floor during dewatering operations – dewatering of the south basin will not be allowed lower than 197 feet to not remove any of the sediment on the reservoir floor during dewatering.

21. Complete all work in the south basin of High Hill Reservoir and the south side of the outlet structure:
a. Protect the north basin of the reservoir at the center dividing wall from all construction activities while it remains in service throughout the construction duration to supply the water system while work is performed in the north basin.
b. Remove and dispose of the remaining water and accumulated sediment on the floor of the south basin. Laboratory analysis of the sediment on the reservoir floor is included in the appendices of these Specifications.
c. Clean the south basin of High Hill Reservoir and the south side of the outlet structure.
d. Provide for an in-the-dry structural inspection of the south basin to be performed by the Engineer. Contractor shall provide a time period of at least one week for Engineer's in-the-dry structural inspection and shall provide for a time period of at least 6 weeks for Engineer to provide any additional information, details, drawings and directives related to repairs in the south basin and outlet structure.
e. Replace the lower and upper 36-inch valves from the south basin into the outlet structure.
f. Replace the 12-inch "cross-over" valve in the south side of the outlet structure.
g. Replace the 36-inch outlet valve from the outlet structure to the 36-inch transmission main.
h. Replace drain valves in the outlet structure.
i. Demolish and remove existing mechanical screens in the outlet structure.
j. Perform all repairs to the floor of the outlet structure.
k. Perform all repairs to the reservoir roof on the south basin side.
l. Perform all other structural repairs and other repairs inside the south basin of the reservoir as directed by the Engineer (see Item 21d above).
m. Remove any temporary bulkheading installed to facilitate construction.

22. Clean and disinfect the south basin of High Hill Reservoir and the south side of the outlet structure in accordance with AWWA C652 – Disinfection of Water Storage Facilities. Perform bacteriological sampling and analysis of the replacement water in accordance with AWWA C652. Re-disinfect, if necessary, until all requirements of the Commonwealth of Massachusetts and the Owner are met. Contractor shall make payment for all required sampling, testing and analysis as specified herein and in accordance with Owner's requirements. The south basin and south side of the outlet structure shall not be returned to service until all requirements are met. Additional testing by a qualified individual for

heterotrophic plate count (HPC) and volatile organic carbon (VOCs) shall be completed and recorded on forms as required by the Commonwealth of Massachusetts. Contractor shall forward to the Engineer and Owner all sampling and analysis forms to the Commonwealth of Massachusetts as required. Disinfection and final water quality results shall be consistent with the existing water quality in the Owner's water system in accordance with the Owner's Construction Standards and Specifications.

23. Coordinate water system operations with the Owner and Engineer to refill and reactivate the south basin of High Hill Reservoir and refill the south basin to water elevation 210 feet (keeping the north basin at water elevation 210 feet):
    a. Open and/or confirm that the following valves are open to refill the south basin to elevation 210 feet:
        1) Inlet 48-2
        2) Valve 48-3

24. Once the south basin is refilled to water elevation 210 feet (with the north basin remaining at water elevation 210 feet), all valves shall be returned to their normal operating position (open or normally closed) to reactivate both the north and south basins and refill them to the Owner’s normal operating levels and return High Hill Reservoir to full, normal operation.

25. Complete any remaining work and all remaining site work, cleanup and demobilization.

D. Work will depend on the closure of existing valves. Owner will operate all valves. Some of these valves are old and may not seal properly. Coordinate with the Owner personnel prior to any such closure and handle leakage as specified in Section 02120 to perform the work at no additional cost to the Owner.

E. Coordinate the activities with the other contractors, if any, to allow orderly and timely completion of all the work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

CITY OF NEW BEDFORD, MASSACHUSETTS
HIGH HILL RESERVOIR REHABILITATION
VALVE IDENTIFICATION TABLE

VALVE ID	PIPELINE / LOCATION	DESCRIPTION	NORMAL STATUS
VALVE-48-1	48-inch north main to High Hill Reservoir from Quittacas WTP	Transmission main to High Hill Reservoir from Quittacas WTP.	Open
VALVE-48-2	48-inch south main to High Hill Reservoir from Quittacas WTP	Transmission main to High Hill Reservoir from Quittacas WTP.	Open
VALVE-48-3	48-inch south main to High Hill Reservoir from Quittacas WTP	Transmission main to High Hill Reservoir from Quittacas WTP.	Open
VALVE-42-1	42-inch main from High Hill Reservoir to distribution system	Transmission main to distribution system for connection with 36-inch south transmission main.	Open
VALVE-42-2	42-inch connection between 24-inch, 36-inch and 42-inch mains from High Hill Reservoir to distribution system	Connection between 42-inch transmission main to distribution system and 36-inch and 24-inch transmission mains downstream of High Hill Reservoir.	Open
VALVE-42-3	42-inch connection between 24-inch, 36-inch and 42-inch mains from High Hill Reservoir	Connection between 42-inch transmission main to distribution system and 36-inch and 24-inch transmission mains downstream of High Hill Reservoir.	Open
VALVE-36-1	36-inch High Hill Reservoir inlet bypass	Connection between 36-inch inlet bypass and 48-inch north transmission main from Quittacas WTP.	Open
VALVE-36-2	36-inch High Hill Reservoir inlet bypass	Connection between 36-inch inlet bypass and 48-inch transmission mains from Quittacas WTP.	Normally Closed
VALVE-36-3	36-inch High Hill Reservoir inlet bypass	High Hill Reservoir inlet bypass at connection to 24-inch High Hill bypass main.	Open
VALVE-36-4	36-inch High Hill Reservoir inlet bypass	High Hill Reservoir inlet bypass at connection to 24-inch High Hill bypass main.	Open
VALVE-36-5	36-inch main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-6	36-inch main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-7	36-inch main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open

CITY OF NEW BEDFORD, MASSACHUSETTS
HIGH HILL RESERVOIR REHABILITATION
VALVE IDENTIFICATION TABLE

VALVE ID	PIPELINE / LOCATION	DESCRIPTION	NORMAL STATUS
VALVE-36-8	36-inch main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-9	36-inch south main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-10	36-inch north main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-11	36-inch south main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-12	36-inch north main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-13	36-inch south main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-14	36-inch south main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-15	36-inch north main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-16	36-inch north main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-36-17	36-inch High Hill Reservoir inlet bypass	Connection between 36-inch High Hill Reservoir inlet bypass main and 36-inch south transmission main to distribution system.	Open
VALVE-36-18	36-inch High Hill Reservoir inlet bypass	Connection between 36-inch High Hill Reservoir inlet bypass main and 36-inch transmission mains to distribution system.	Normally Closed
VALVE-36-19	36-inch High Hill Reservoir inlet bypass	Connection between 36-inch High Hill Reservoir inlet bypass main and 36-inch north transmission main to distribution system.	Open
VALVE-24-1	24-inch High Hill Reservoir bypass	High Hill Reservoir bypass main.	Normally Closed

CITY OF NEW BEDFORD, MASSACHUSETTS
HIGH HILL RESERVOIR REHABILITATION
VALVE IDENTIFICATION TABLE

VALVE ID	PIPELINE / LOCATION	DESCRIPTION	NORMAL STATUS
VALVE-24-2	24-inch High Hill Reservoir bypass	High Hill Reservoir bypass main.	Open
VALVE-24-3	24-inch main from High Hill Reservoir to distribution system	Connection between 24-inch transmission main and 36-inch transmission main downstream of High Hill Reservoir.	Open
VALVE-24-4	24-inch main from High Hill Reservoir to distribution system	Connection between 24-inch transmission main and 36-inch transmission main downstream of High Hill Reservoir.	Open
VALVE-24-5	24-inch connection between 36-inch and 24-inch mains from High Hill Reservoir	Connection between 24-inch transmission main and 36-inch transmission main downstream of High Hill Reservoir.	Open
VALVE-24-6	24-inch High Hill Reservoir bypass	High Hill Reservoir bypass main.	Normally Closed
VALVE-24-7	24-inch main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
VALVE-24-8	24-inch main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system at Town of Dartmouth pumping station.	Open
VALVE-24-9	24-inch main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system at Town of Dartmouth pumping station.	Open
VALVE-24-10	24-inch connection to Town of Dartmouth pumping station	Connection to Town of Dartmouth pumping station from 24-inch transmission main.	Open
VALVE-24-11	24-inch main from High Hill Reservoir to distribution system	Transmission main from High Hill Reservoir to distribution system.	Open
INLET-48-1	48-inch Inlet Structure to High Hill Reservoir North Basin	Inlet Structure to High Hill Reservoir North Basin.	Open
INLET-48-2	48-inch Inlet Structure to High Hill Reservoir South Basin	Inlet Structure to High Hill Reservoir South Basin.	Open
OUTLET-36-1	36-inch High Hill Reservoir North Basin (Upper) to Outlet Structure	High Hill Reservoir North Basin (Upper) to Outlet Structure.	Open
OUTLET-36-2	36-inch High Hill Reservoir North Basin (Lower) to Outlet Structure	High Hill Reservoir North Basin (Lower) to Outlet Structure.	Open

CITY OF NEW BEDFORD, MASSACHUSETTS
HIGH HILL RESERVOIR REHABILITATION
VALVE IDENTIFICATION TABLE

VALVE ID	PIPELINE / LOCATION	DESCRIPTION	NORMAL STATUS
OUTLET-36-3	36-inch High Hill Reservoir South Basin (Upper) to Outlet Structure	High Hill Reservoir South Basin (Uppper) to Outlet Structure.	Open
OUTLET-36-4	36-inch High Hill Reservoir South Basin (Lower) to Outlet Structure	High Hill Reservoir South Basin (Lower) to Outlet Structure.	Open
OUTLET-36-5	36-inch High Hill Reservoir Outlet Structure to 36-inch transmission main to distribution system.	High Hill Reservoir Outlet Structure to 36-inch transmission main to distribution system.	Open
OUTLET-36-6	36-inch High Hill Reservoir Outlet Structure to 36-inch transmission main to distribution system.	High Hill Reservoir Outlet Structure to 36-inch transmission main to distribution system.	Open
OUTLET-30-1	30-inch cross-over interconnection between High Hill Reservoir North and South Basins.	Interconnection between High Hill Reservoir North and South Basins.	Open
OUTLET-12-1	12-inch cross-over interconnection between High Hill Reservoir North and South Basins.	Interconnection between High Hill Reservoir North and South Basins.	Open
OUTLET-12-2	12-inch cross-over interconnection between High Hill Reservoir North and South Basins.	Interconnection between High Hill Reservoir North and South Basins.	Open

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SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 REMOVAL AND REPLACEMENT OF EXISTING VALVES AND INSTALLATION OF NEW VALVES AT VALVE WORK AREAS “A” AND “B” ON DRAWING C-3 AND ENLARGED PLANS “A” AND “B” ON DRAWING C-4 (BID ITEMS 1 AND 2)

A. Measurement

1. Removal of existing valves, piping and manholes and the installation of new valves, insertion valves, pipe, fittings, couplings, manholes, appurtenances and all other required work for Valve Work Areas (Valve Work Areas “A” and “B” shown on Drawing C-3 and shown on Enlarged Plans “A” and "B” on Drawing C-4) as shown on the Drawings shall be measured at the Lump Sum prices for each area installed and accepted by the Engineer under Items 1 and 2 in the Bid Form.

B. Payment

1. Payment for removing existing valves, piping and manhole assemblies and furnishing and installing new valves, insertion valves, pipe, fittings, couplings, manholes, appurtenances and all other required work of the sizes and types shown on the Drawings and as specified for Valve Work Areas “A” and “B” shown on Drawing C-3 (and Enlarged Plans “A” and “B” on Drawing C-5) will be made for the respective quantities as above determined, at the applicable price bid under Items 1 and 2 in the Bid Form. Such price and payment shall be full compensation for all work as shown on the Drawings, which includes but is not limited to environmental protection procedures; erosion and sedimentation control; all needed test pits for the Valve Work Areas (whether shown on or not specifically called for on the Drawings) to confirm depth and location of existing utilities and/or take measurements and determine pipe outside diameters for materials fabrication; saw cutting existing pavement; trench excavation of all material of every description and of whatever substance encountered (excluding rock and boulder excavation and excavation below normal grade, which will be paid for under separate bid items); sheeting and bracing; excavation support and protection; protection and support of existing utilities including furnishing and placing screened gravel for all utility crossings; dust control; dewatering and drainage; dewatering and dechlorinating/dechloraminating all existing water mains shut down to facilitate construction of new work; handling leakage in water mains as specified; furnishing and installing any geotextile filter fabric required; disposal of excess excavated material; removal and disposal of existing water main piping, valves, and manhole structures where noted on the Drawings or as required by Engineer; capping and restraining existing water mains if required; capping existing water mains shut down to prevent debris intrusion during construction; hydrostatically and leakage testing new butterfly valves in accordance with Section 02640 prior to installation; furnishing, laying and jointing new butterfly valves and manual air release assemblies, including specified pipe and couplings, brass wedges, all pipe and fittings; furnishing and installing all required joint restraints and thrust blocks (all joints must be restrained); furnishing and installing position indicators and overtorque protectors required for new valves as specified; furnishing and installing any flanged coupling adapters or other fittings and adapters necessary to complete connections of new piping based on Contractor’s specific proposed sequence of work, whether or not they are shown on the Drawings; removing existing hydrants and furnishing and installing

new fire hydrants (if new hydrants are shown within work area payment limits); furnishing and installing insertion valves of the sizes and types specified; furnishing and installing joint restraints or thrust blocks for existing water mains as required; testing of all pipe, valves, fittings and appurtenances in accordance with Section 01445 prior to backfilling for leaks as specified; cleaning and disinfection of all pipe, fittings, valves and appurtenances as specified to clean and disinfect new pipes and existing pipes shut down to facilitate new work, all of which shall be performed in accordance with AWWA standards as specified; filling of all dewatered sections of existing and new piping and the flushing and dechloramination of one complete volume of the section; bacteriological testing of the section and rechlorination of the section if bacteriological tests fail and the repeat flushing, disinfection and testing as required at no additional cost to the Owner; furnishing and installing valve boxes and covers, extension shafts, and position indicators; furnishing, installing and placing controlled density fill (CDF)/controlled low strength material (CLSM) to completely backfill all new valves, piping, fittings and couplings as shown on the Drawings for trench backfill; furnishing and installing granular fill materials as shown on the Drawings and as specified; compaction and backfilling; restoring the trench to surface grade; restoring all physical features to grade and to the condition existing prior to construction, including furnishing and installing gravel and all materials for pavement subbase, initial pavement and permanent trench-width pavement as specified in Section 02576 for any pavement disturbed during construction, loaming and seeding and all other restoration required to restore the area to a condition equal to or better than what existed prior to construction; and all other work necessary to complete the work.

1.02 NEW 24-INCH WATER MAIN FROM EXISTING 36-INCH HIGH HILL RESERVOIR INLET BYPASS MAIN TO EXISTING 24-INCH WATER TRANSMISSION MAIN DOWNSTREAM OF HIGH HILL RESERVOIR ON DRAWING C-3, INCLUDING VALVE WORK AREA “C” ON DRAWING C-3 AND ENLARGED PLAN “C” ON DRAWING C-5 (BID ITEM 3)

A. Measurement

1. Removal of existing water transmission main valves, piping and manholes and the installation of new valves, pipe, fittings, couplings, check valves, hydrants, manholes, appurtenances and all other required work to install the new 24-inch water main from the existing 36-inch High Hill Reservoir inlet bypass to the existing 24-inch water transmission main downstream of High Hill Reservoir as shown on Drawing C-3, including Valve Work Area “C” (Enlarged Plan “C” as shown on Drawing C-5), shall be measured at the Lump Sum price installed and accepted by the Engineer under Item 3 in the Bid Form.

B. Payment

1. Payment for removing existing water transmission main valves, piping and manhole assemblies and furnishing and installing new water transmission main valves, pipe, fittings, couplings, check valves, hydrants, manholes, appurtenances and all other required work of the sizes and types shown on Drawing C-3 and as specified to install the new 24-inch water main from the existing 36-inch High Hill Reservoir inlet bypass to the existing 24-inch water transmission main downstream of High Hill Reservoir, including Valve Work Area “C” (Enlarged Plan “C” on Drawing C-5), will be made for the respective quantities as above determined, at the applicable price bid under Item 3 in the Bid Form. Such price and payment shall be full compensation for all work as shown on the Drawings, which includes

but is not limited to environmental protection procedures; erosion and sedimentation control; all needed test pits (whether shown on or not specifically called for on the Drawings) to confirm depth and location of existing utilities and/or take measurements and determine pipe outside diameters for materials fabrication; saw cutting existing pavement; trench excavation of all material of every description and of whatever substance encountered (excluding rock and boulder excavation and excavation below normal grade, which will be paid for under separate bid items); sheeting and bracing; excavation support and protection; protection and support of existing utilities including furnishing and placing screened gravel for all utility crossings; dust control; dewatering and drainage; dewatering and dechlorinating/dechloraminating all existing water mains shut down to facilitate construction of new work; handling leakage in water mains as specified; furnishing and installing any geotextile filter fabric required; disposal of excess excavated material; removal and disposal of existing water main piping, valves, and manhole structures where noted on the Drawings or as required by Engineer; capping and restraining existing water mains if required; capping existing water mains shut down to prevent debris intrusion during construction; hydrostatically and leakage testing new butterfly valves in accordance with Section 02640 prior to installation; furnishing, laying and jointing all new piping, butterfly valves, fittings, check valves in manholes, hydrants, manual air release assemblies, couplings, brass wedges, all pipe and fittings; furnishing and installing all required joint restraints and thrust blocks (all joints must be restrained); furnishing and installing position indicators and overtorque protectors required for new valves as specified; furnishing and installing any flanged coupling adapters or other fittings and adapters necessary to complete connections of new piping based on Contractor's specific proposed sequence of work, whether or not they are shown on the Drawings; removing existing hydrants and furnishing and installing new fire hydrants (if new hydrants are shown within work area payment limits); furnishing and installing joint restraints or thrust blocks for existing water mains as required; testing of all pipe, valves, fittings and appurtenances in accordance with Section 01445 prior to backfilling for leaks as specified; cleaning and disinfection of all pipe, fittings, valves and appurtenances as specified to clean and disinfect new pipes and existing pipes shut down to facilitate new work, all of which shall be performed in accordance with AWWA standards as specified; filling of all dewatered sections of existing and new piping and the flushing and dechloramination of one complete volume of the section; bacteriological testing of the section and rechlorination of the section if bacteriological tests fail and the repeat flushing, disinfection and testing as required at no additional cost to the Owner; furnishing and installing valve boxes and covers, extension shafts, and position indicators; furnishing, installing and placing controlled density fill (CDF)/controlled low strength material (CLSM) to completely backfill all new valves, piping, fittings and couplings as shown on the Drawings for trench backfill; furnishing and installing granular fill materials as shown on the Drawings and as specified; compaction and backfilling; restoring the trench to surface grade; restoring all physical features to grade and to the condition existing prior to construction, including furnishing and installing gravel and all materials for pavement subbase, initial pavement and permanent trench-width pavement as specified in Section 02576 for any pavement disturbed during construction, loaming and seeding and all other restoration required to restore the area to a condition equal to or better than what existed prior to construction; and all other work necessary to complete the work.

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1.03 REMOVAL AND REPLACEMENT OF EXISTING WATER TRANSMISSION MAIN VALVES AND INSTALLATION OF NEW WATER TRANSMISSION MAIN VALVES AT VALVE WORK AREAS “D” AND “E” ON DRAWING C-3 AND ENLARGED PLANS “D” AND “E” ON DRAWING C-5 (BID ITEMS 4 AND 5)

A. Measurement

1. Removal of existing water transmission main valves, piping and manholes and the installation of new valves, pipe, fittings, couplings, manholes, appurtenances and all other required work for Valve Work Areas “D” and “E” on Drawing C-3 and Enlarged Plans “D” and "E" on Drawing C-5 shall be measured at the Lump Sum prices for each area installed and accepted by the Engineer under Items 4 and 5 in the Bid Form.

B. Payment

1. Payment for removing existing water transmission main valves, piping and manhole assemblies and furnishing and installing new water transmission main valves, pipe, fittings, couplings, manholes, appurtenances and all other required work of the sizes and types shown on the Drawings and as specified for Valve Work Areas “D” and “E” on Drawing C-3 and Enlarged Plans “D” and “E” on Drawing C-5 will be made for the respective quantities as above determined, at the applicable price bid under Items 4 and 5 in the Bid Form. Such price and payment shall be full compensation for all work as shown on the Drawings, which includes but is not limited to environmental protection procedures; erosion and sedimentation control; all needed test pits for the Valve Work Areas (whether shown on or not specifically called for on the Drawings) to confirm depth and location of existing utilities and/or take measurements and determine pipe outside diameters for materials fabrication; saw cutting existing pavement; trench excavation of all material of every description and of whatever substance encountered (excluding rock and boulder excavation and excavation below normal grade, which will be paid for under separate bid items); sheeting and bracing; excavation support and protection; protection and support of existing utilities including furnishing and placing screened gravel for all utility crossings; dust control; dewatering and drainage; dewatering and dechlorinating/dechloraminating all existing water mains shut down to facilitate construction of new work; handling leakage in water mains as specified; furnishing and installing any geotextile filter fabric required; disposal of excess excavated material; removal and disposal of existing water main piping, valves, and manhole structures where noted on the Drawings or as required by Engineer; capping and restraining existing water mains if required; capping existing water mains shut down to prevent debris intrusion during construction; hydrostatically and leakage testing new butterfly valves in accordance with Section 02640 prior to installation; furnishing, laying and jointing new butterfly valves and manual air release assemblies, including specified pipe and couplings, brass wedges, all pipe and fittings; furnishing and installing all required joint restraints and thrust blocks (all joints must be restrained); furnishing and installing position indicators and overtorque protectors required for new valves as specified; furnishing and installing any flanged coupling adapters or other fittings and adapters necessary to complete connections of new piping, whether or not they are shown on the Drawings; removing existing hydrants and furnishing and installing new fire hydrants (if new hydrants are shown within work area payment limits); furnishing and installing joint restraints or thrust blocks for existing water mains as required; testing of all pipe, valves, fittings and appurtenances in accordance with Section 01445 prior to backfilling for leaks as specified; cleaning and disinfection of all pipe, fittings, valves and appurtenances as specified to clean and disinfect new pipes and existing pipes shut down to

facilitate new work, all of which shall be performed in accordance with AWWA standards as specified; filling of all dewatered sections of existing and new piping and the flushing and dechloramination of one complete volume of the section; bacteriological testing of the section and rechlorination of the section if bacteriological tests fail and the repeat flushing, disinfection and testing as required at no additional cost to the Owner; furnishing and installing valve boxes and covers, extension shafts, and position indicators; furnishing, installing and placing controlled density fill (CDF)/controlled low strength material (CLSM) to completely backfill all new valves, piping, fittings and couplings as shown on the Drawings for trench backfill; furnishing and installing granular fill materials as shown on the Drawings and as specified; compaction and backfilling; restoring the trench to surface grade; restoring all physical features to grade and to the condition existing prior to construction, including furnishing and installing gravel and all materials for pavement subbase, initial pavement and permanent trench-width pavement as specified in Section 02576 for any pavement disturbed during construction, loaming and seeding and all other restoration required to restore the area to a condition equal to or better than what existed prior to construction; and all other work necessary to complete the work.

1.04 LINE STOPS TO FACILITATE SHUT DOWNS FOR WATER TRANSMISSION MAIN VALVE REMOVAL AND INSTALLATION OF NEW WATER TRANSMISSION MAIN VALVES (BID ITEM 6)

A. Measurement

1. Line stops and concrete thrust blocks to facilitate water transmission main valve removal and installation of new water transmission main valves shall be measured as the number of each line stop and concrete thrust block installed and accepted by the Engineer under Item 6 in the Bid Form.

B. Payment

1. Payment for furnishing and installing 36-inch line stops of the class and size specified will be made for the respective quantities as above determined, at the applicable price bid under Item 6 in the Bid Form. Such price and payment shall be full compensation for all work as specified in Section 02767, which includes but is not limited to trench excavation of all material of every description and of whatever substance encountered (excluding rock and boulder excavation and excavation below normal grade); sheeting and bracing; excavation support and protection; dust control; dewatering and drainage; all measures necessary for environmental protection; disposal of excess excavated material; supporting and protecting existing utility lines in the trench; installing concrete thrust blocks as required to restrain existing water mains; furnishing and installing the tapping sleeve and line stops as specified; disinfecting and testing the line stop; maintaining the line stop location throughout the required construction duration; removing the line stops when work is complete as specified; furnishing and installing all backfill material including common fill and select common fill; backfilling; compaction; restoring the trench surface to grade, including furnishing and installing all pavement subbase and base materials, initial pavement and permanent trench-width pavement as specified in Section 02576 to restore any pavement disturbed during construction, loaming and seeding and all other restoration required to restore the area to a condition equal to or better than what existed prior to construction; restoring all physical features to grade and to the condition existing prior to construction; cleaning; and all else incidental thereto for which separate payment is not provided under other Items in the Bid Form.

1.05 HIGH HILL RESERVOIR INLET STRUCTURE MODIFICATIONS (BID ITEMS 7A AND 7B)

A. Measurement

1. High Hill Reservoir Inlet Structure Modifications, including removal and replacement of existing sluice gates and all valves in and adjacent to the Inlet Structure as shown on Drawing M-1, shall be measured at the Lump Sum price bid under Item 7A in the Bid Form.

2. High Hill Reservoir Inlet Structure Modifications, including all labor, materials, equipment and incidentals to complete removal and disposal of the existing floor including but not limited to 5/8-inch plywood, timber grate (2-5/8 inch x 1-3/4 inch) floor and structural steel beams and plates and replace with a new aluminum stiffened diamond cover plate supported by aluminum beams and channels. The work shall be measured at the Lump Sum price bid under item 7B in the Bid Form.

B. Payment

1. Payment for High Hill Reservoir Inlet Structure Modifications shown on Drawing M-1 for removing and replacing existing sluice gates and all valves in and adjacent to the Inlet Structure as shown on Drawing M-1 will be made for the respective quantities as above determined, at the applicable price bid under Item 7A in the Bid Form. Such price and payment shall be full compensation for all work, which includes but it not limited to all materials, tools, equipment, labor and all other incidentals and required work to furnish and install temporary bulkheads in-the-wet as required to isolate the inlet structure from the reservoir; all required work to dewater and drain the Inlet Structure to facilitate the work, including dechlorinating/dechloraminating all water discharged in accordance with all federal, state and local regulations, laws, ordinances and requirements; handling leakage as specified; removing and disposing of existing sluice gates and valves; hydrostatically and leakage testing new butterfly valves in accordance with Section 02640 prior to installation; furnishing and installing all new valves, fittings, appurtenances and all required materials; all required work to disinfect and reactivate the Inlet Structure in accordance with AWWA C652; removal of temporary bulkheads following successful disinfection in accordance with AWWA C652; all materials and work to restore the Inlet Structure to conditions equal to or better than what existed before construction; and all other work necessary and required to complete the work, whether or not it is shown on the Drawings or including in the Specifications and for which no other separate payment is included on the Bid Form.

2. Payment for High Hill Reservoir Inlet Structure Modifications, removal and replacement of the existing floor, will be made for the respective quantities as above determined, at the applicable price bid under Item 7B in the Bid Form. Such price and payment shall be full compensation for all work, which includes but is not limited to providing for an in-the-dry inspection by the Engineer following dewatering of the inlet structure as specified in Section 01014, all materials, tools, equipment, labor and all other incidentals and required work to remove and replace the floor of the High Hill Reservoir Inlet Structure floor following replacement of all sluice gates and valves.

1.06 HIGH HILL RESERVOIR OUTLET STRUCTURE MODIFICATIONS (BID ITEM 8)

A. Measurement

1. High Hill Reservoir Outlet Structure Modifications, including removal and replacement of all existing valves in and adjacent to the Outlet Structure and demolition and removal of the existing mechanical screens as shown on Drawing M-2 and replacement of the Outlet Structure floor as shown on Drawings S-5 thru S-7, shall be measured at the Lump Sum price bid under Item 8 in the Bid Form.

B. Payment

Payment for High Hill Reservoir Outlet Structure Modifications shown on Drawing M-2 for removing and replacing existing valves in the Outlet Structure and demolition and removal of the existing mechanical screens as shown on Drawing M-2 and replacement of the Outlet Structure floor as shown on Drawings S-5 thru S-7 will be made for the respective quantities as above determined, at the applicable price bid under Item 8 in the Bid Form. Such price and payment shall be full compensation for all work, which includes but it not limited to all materials, tools, equipment, labor and all other incidentals and required work to dewater and drain the Outlet Structure to facilitate the work, including furnishing and installing temporary bulkheads as required and in-the-wet and dechlorinating/dechloraminating all water discharged in accordance with all federal, state and local regulations, laws, ordinances and requirements; handling leakage as specified; removing and disposing of existing valves; removing and disposing of the existing mechanical screens; hydrostatically and leakage testing new butterfly valves in accordance with Section 02640 prior to installation; furnishing and installing all new valves, fittings, appurtenances and all required materials; all materials, tools, equipment, labor and all other incidentals and required work to replace the floor of the High Hill Reservoir Outlet Structure following replacement of all valves and as shown on Drawings S-5 thru S-7; all required work to disinfect and reactivate the Outlet Structure in accordance with AWWA C652; removal of all temporary bulkheads following successful disinfection in accordance with AWWA C652; restoring the Outlet Structure to conditions at equal to or better than what existed before construction; and all other work necessary and required to complete the work, whether or not it is shown on the Drawings or including in the Specifications and for which no other separate payment is included on the Bid Form.

1.07 DEWATER AND DRAIN HIGH HILL RESERVOIR TO FACILITATE CONSTRUCTION OF NEW WORK (BID ITEM 9)

A. Measurement

1. Dewatering and draining High Hill Reservoir (both the north and south basins) shall be measured at the Lump Sum price bid under Item 9 in the Bid Form.

B. Payment

1. Payment for dewatering and draining High Hill Reservoir (both the north and south basins and the outlet structure) will be made for the respective quantities as above determined, at the applicable price bid under Item 9 in the Bid Form. Such price and payment shall be full compensation for all work, which includes but it not limited to all materials, tools, equipment, labor and all other incidentals and required work to dewater and drain High

Hill Reservoir to facilitate construction of new work and as specified, including dechlorinating/dechloraminating all water discharged in accordance with all federal, state and local regulations, laws, ordinances and requirements as specified.

1.08 CLEANING HIGH HILL RESERVOIR (BID ITEM 10)

A. Measurement

1. Cleaning High Hill Reservoir (both the north and south basins and the inlet and outlet structures) shall be measured at the Lump Sum price bid under Item 10 in the Bid Form.

B. Payment

1. Payment for cleaning High Hill Reservoir (both the north and south basins and the inlet and outlet structures) will be made for the respective quantities as above determined, at the applicable price bid under Item 10 in the Bid Form. Such price and payment shall be full compensation for all work, which includes but it not limited to all materials, tools, equipment, labor and all other incidentals and required work to clean High Hill Reservoir as specified, including but not limited to power washing or cleaning by other means acceptable to the Engineer to clean all surfaces, remove all coatings, efflorescence, dirt and foreign matters so that all surfaces are clean; and disposal of all dirt, debris and foreign matter from cleaning operations in accordance with all federal, state and local regulations, laws, ordinances and requirements.

1.09 REMOVAL AND DISPOSAL OF ACCUMLATED SEDIMENT ON THE HIGH HILL RESERVOIR FLOOR (BID ITEM 11)

A. Measurement

1. Removing and disposing of the accumulated sediment on the floor of High Hill Reservoir (both the north and south basins and the inlet and outlet structures) shall be measured at the price bid under Item 11 in the Bid Form.

B. Payment

1. Payment for removing and disposing of the accumulated sediment on the floor of High Hill Reservoir (both the north and south basins and the inlet and outlet structures) will be made for the respective quantities as above determined, at the applicable price bid under Item 11 in the Bid Form. Such price and payment shall be full compensation for all work, which includes but is not limited to all materials, tools, equipment, labor and all other incidentals and required work to remove and dispose of the accumulated sediment on the floor of High Hill Reservoir as specified and in accordance with all federal, state and local regulations, laws, ordinances and requirements.

1.10 STRUCTURAL REPAIRS AND MODIFICATIONS TO HIGH HILL RESERVOIR (BID ITEM 12)

A. Measurement

1. Structural Repairs and Modifications to High Hill Reservoir as shown on Drawings S-1, S-2, S-3 and S-4 (Detail L) shall be measured at the Lump Sum price bid under Item 12 in the Bid Form.

B. Payment

1. Payment for all Structural Repairs and Modifications to High Hill Reservoir as shown on Drawings S-1, S-2, S-3 and S-4 (Detail L) will be made for the respective quantities as above determined, at the applicable price bid under Item 12 in the Bid Form. Such price and payment shall be full compensation for all work, which includes but it not limited to all materials, tools, equipment, labor and all other incidentals and required work to make all structural repairs and modifications to High Hill Reservoir as shown on Drawings S-1, S-2, S-3 and S-4 (Detail L). Payment for this item includes all work shown on these drawings with the exception of the repair work with unit Bid Items in Item 13.

1.11 HIGH HILL RESERVOIR STRUCTURAL AND RELATED RESERVOIR REPAIRS AS DIRECTED BY ENGINEER FOLLOWING ENGINEER'S IN-THE-DRY INSPECTIONS (BID ITEMS 13A THROUGH 13G)

A. Measurement

1. The work under Item 13A for repairing cracked/spalled/void/unsound concrete at the reservoir walls up to 6-inches deep shall include furnishing all labor, materials, equipment and incidentals required for repair of cracked/spalled/void/unsound concrete as shown on Drawings S-1, S-2 and S-3, as indicated by the Engineer after the Engineer's inspections, and as specified in Divisions 0, 1 and 3 inclusive. Measurement will be the number of square feet of polymer-modified repair mortar required to fill the cavities based on measurements made prior to placing the repair mortar. The work for these items shall also include coordination with all other Contractors and subcontractors.

2. The work under Item 13B for epoxy grout injection repair of concrete cracks in columns shall include furnishing all labor, materials, equipment and incidentals required for epoxy grout to be installed in cracks as indicated by the Engineer after the Engineer's inspections and as specified in Divisions 0, 1 and 3 inclusive. Measurement will be the actual number of linear feet of sealed and accepted cracks measured in place. The work for these items shall also include coordination with all other Contractors and subcontractors.

3. The work under Item 13C for repairing cracked/spalled/void/unsound concrete in columns up to 2-inches deep shall include furnishing all labor, materials, equipment and incidentals required for repair of cracked/spalled/void/unsound concrete as shown on Drawings S-1, S-2, and S-3, as indicated by the Engineer after the Engineer's inspection, and as specified in Divisions 0, 1 and 3 inclusive. Measurement will be the number of square feet of polymer-modified repair mortar required to fill the cavities based on measurements made prior to placing the repair mortar. The work for these items shall also include coordination with all other Contractors and subcontractors.

4. The work under Item 13D for repairing exposed rebar at columns shall include furnishing all labor, materials, equipment and incidentals required for repair of Exposed Rebar at Columns as shown on Drawing S-2, as indicated after the Engineer's inspections, and as specified in Divisions 0, 1 and 3 inclusive. Measurement will be the number of linear feet of exposed rebar based on measurements made prior to placing the repair mortar. The work for these items shall also include coordination with all other Contractors and subcontractors.

5. The work under Item 13E for injection gel epoxy repair of concrete cracks in the concrete floor liner shall include furnishing all labor, materials, equipment and incidentals required for the crack surface to be routed and for injection gel epoxy to be installed in cracks as shown on Drawings S-1, S-2 and S-4, as indicated by the Engineer after the Engineer's inspection, and as specified in Divisions 0, 1 and 3 inclusive. Measurement will be the number of linear feet of sealed and accepted cracks measured in place. The work for these items shall also include coordination with all other Contractors and subcontractors.

6. The work under Item 13F for removal and replacement of sealant at construction joints shall include furnishing all labor, materials, equipment and incidentals required to remove and replace sealant at construction joints as shown on Drawings S-1, S-2 and S-4, as indicated by the Engineer after the Engineer's inspections, and as specified in Divisions 0, 1 and 3 inclusive. Measurement will be the number of linear feet of sealant required to replace the existing sealant based on measurements made prior to placing the new sealant. The work for these items shall also include coordination with all other Contractors and subcontractors.

7. Measurement for removal and replacement of eave closure around the roof edge of High Hill Reservoir to seal the entire reservoir where it meets the side wall will be measured as the number of linear feet of eave closure required to be removed and replaced.

B. Payment

1. Payment for the above determined quantity in Item 13A will be at the price per square foot bid for Item 13A in the Bid Form and shall be full compensation for furnishing all labor, materials, equipment and incidentals required, including scaffolding and supports, and repairing cracked/spalled/deteriorated/unsound concrete, including saw cutting and chipping out cracked/spalled/deteriorated/unsound concrete; cleaning the exposed reinforcing steel; installing replacement reinforcing steel; preparing the concrete surface; placing, supporting and curing the repair mortar; and all else incidental thereto.

2. Payment for the above determined quantity in Item 13B shall be at the price per linear foot bid for Item 13B in the Bid Form and shall be full compensation for furnishing all labor, materials, equipment and incidentals required, including all scaffolding and supports and filling the cracks, including concrete surface preparation, preparing and placing the epoxy adhesive, removing and sealing injection ports, and all else incidental thereto.

3. Payment for the above determined quantity in Item 13C will be at the price per square foot bid for Item 13C in the Bid Form and shall be full compensation for furnishing all labor, materials, equipment and incidentals required, including scaffolding and supports, and repairing cracked/spalled/deteriorated/unsound concrete, including saw cutting and chipping out cracked/spalled/deteriorated/unsound concrete; cleaning the exposed

reinforcing steel; installing replacement reinforcing steel; preparing the concrete surface; placing, supporting and curing the repair mortar; and all else incidental thereto.

4. Payment for the above determined quantity in Item 13D will be at the price per linear foot bid for Item 13D in the Bid Form and shall be full compensation for furnishing all labor, materials, equipment and incidentals required, including scaffolding and supports, and repairing exposed rebar, including saw cutting and chipping out cracked/spalled/deteriorated/unsound concrete; cleaning the exposed reinforcing steel; installing replacement reinforcing steel; preparing the concrete surface; placing, supporting and curing the repair mortar; and all else incidental thereto.

5. Payment for the above determined quantity in Item 13E shall be at the price per linear foot bid for Item 13E in the Bid Form and shall be full compensation for furnishing all labor, materials, equipment and incidentals required, including all scaffolding and supports and sealing the cracks, including routing the surface of the crack, concrete surface preparation, preparing and placing the injection gel epoxy, and all else incidental thereto.

6. Payment for the above determined quantity in Item 13F shall be at the price per linear foot bid for Item 13F in the Bid Form and shall be full compensation for furnishing all labor, materials, equipment and incidentals required, and replacing sealant at construction joints, including removing the existing sealant, cleaning the exposed joint, installing replacement foam backer material; preparing the concrete surface; placing the sealant, and all else incidental thereto.

7. Payment for removal and replacement of the eave closure around the roof edge of High Hill Reservoir to seal the entire reservoir where it meets the side wall shall will be made for the respective quantities as above determined, at the applicable price bid under Item 13G in the Bid Form. Such price and payment shall be full compensation for all work, which includes but is not limited to all required and needed labor, materials, tools, equipment, supplies and incidentals required to remove and replace the eave closure around the roof edge of High Hill Reservoir to completely seal the entire reservoir where it meets the side wall.

1.12 DISINFECTION OF HIGH HILL RESERVOIR (BID ITEM 14)

A. Measurement

1. Disinfecting High Hill Reservoir (both the north and south basins and the inlet and outlet structures) in full accordance with AWWA C652 – Disinfection of Water Storage Facilities shall be measured at the Lump Sum price bid under Item 14 in the Bid Form.

B. Payment

1. Payment for disinfecting High Hill Reservoir (both the north and south basins and the inlet and outlet structures) in full accordance with AWWA C652 – Disinfection of Water Storage Facilities will be made for the respective quantities as above determined, at the applicable price bid under Item 14 in the Bid Form. Such price and payment shall be full compensation for all work, which includes but is not limited to all required and needed labor, materials, tools, equipment, supplies and incidentals required to disinfect High Hill Reservoir (including both the north and south basins and the inlet and outlet structures) in full accordance with AWWA C652 standards and as specified herein.

1.13 ROCK AND BOULDER EXCAVATION AND EXCVATION BELOW NORMAL GRADE (ITEMS 15A, 15B AND 15C)

A. Measurement

1. When rock is encountered, the material shall be uncovered and the Engineer notified. The Engineer will take cross sections of the rock surface. If the Contractor fails to uncover the rock and notify the Engineer to allow ample time for cross-sectioning the undisturbed material, the Contractor shall have no right-of-claim to any classification other than that allowed by the Engineer. Removal of old concrete foundations, reinforced concrete subbase, cobblestones and trolley tracks found beneath pavement, if any, shall be classified as rock.

2. Measurements of rock excavation will extend 12 inches below the bottom of pipe. Maximum trench widths will be indicated in Section 01046 (maximum trench width corresponds to initial trench paving).

3. Boulders of more than 1 cubic yard in volume when encountered in earth or trench excavation will be measured for payment.

4. The quantity of rock and boulder excavation to be paid for will be the number of cubic yards of rock or boulders measured in place, as directed by the Engineer, within the limits herein specified.

5. Measurement of earth excavation and refill below normal grade (Item 15C) will extend only downward from a normal grade to a depth determined by the Engineer in the field, for a maximum width of trench as specified in Section 01046 (maximum trench width corresponds to initial trench paving).

6. If the trench bottom is below normal grade through error by the Contractor or if improper drainage softens the subgrade and additional excavation in the trench is required before laying the pipe, such removal and replacement of material will not be measured for payment under Item 15C. No allowance will be made for shrinkage or compaction of gravel in place. Measurement by truck count will not be permitted.

7. Screened gravel used in accordance with the Specifications to replace excavation below normal grade or for rock and boulder removal is a part of this work and will not be measured for separate payment under the Bid Item for Screened Gravel.

B. Payment

1. Payment for rock and boulder excavation (Items 15A and 15B) will be made for the quantities as above determined, measured in cubic yards, at the unit price bid in the Bid Form, which price and payment will be full compensation for excavation; breaking and disposing of rock, following all requirements of other utility agencies to protect other utilities (i.e., gas, electric, cable, telephone, etc.) in adjacent trenches; backfilling and providing screened gravel for any deficiency of trench backfill; and all work incidental thereto, for which payment is not provided under other items.

2. Old concrete foundations, reinforced concrete subbase, cobblestones and trolley tracks, if any are encountered during excavation, will be measured and paid for as rock excavation

and removal. Price and payment shall include delivery of removed cobblestones and trolley tracks removed to the Owner at a location designated by the Owner.

3. Payment for earth excavation and refill below normal grade will be made for the quantity as above-determined at the price per cubic yard bid for Item 15C in the Bid Form. Price and payment shall be full compensation for excavation and disposal of all materials below normal grade; furnishing, placing and compacting screened gravel; and all other work incidental thereto for which separate payment is not provided under other items in the Bid Form.

1.14 FILL MATERIALS (BID ITEMS 16A AND 16B)

A. Measurement

1. Controlled Density Fill (CDF)/Controlled Low Strength Material (CLSM) used in conjunction with utility crossings and at other miscellaneous locations when its use is ordered by the Engineer under Item 16A will be measured in cubic yards at actual in-place dimensions as determined by the Engineer. If used in trenches, the payment limits shall not exceed the trench widths as Specified in Section 01046 for initial trench paving. CDF/CLSM used for trench backfill as part of Valve Work Areas and water main installation work will be paid for under the respective Bid Items and will not be measured for separate payment under Bid Item 16A.

2. Screened gravel (Item 16B) when used for unspecified and miscellaneous purposes as directed by the Engineer and incorporated in the work will be measured in cubic yards as directed by the Engineer. Under no circumstances will measurement for payment under this item be made unless specifically ordered by the Engineer.

B. Payment

1. Payment for furnishing and placing Controlled Density Fill (CDF)/Controlled Low Strength Material (CLSM) as specified locations when its use is ordered by the Engineer will be made for the quantity determined above at the respective unit prices bid for Item 16A in the Bid Form. Price and payment shall be full compensation for furnishing, hauling, and placing or pumping CDF/CLSM, and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.

2. Payment for furnishing and placing screened gravel for miscellaneous purposes when its use is ordered by the Engineer will be made for the quantity determined above at the respective unit prices bid for Item 16B. Price and payment shall be full compensation for furnishing, hauling, placing, and compacting gravel and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.

1.15 MISCELLANEOUS CONCRETE (BID ITEM 17)

A. Measurement

1. Concrete (Item 17) for miscellaneous purposes as directed by the Engineer shall be measured in place in the completed work by average dimensions in each of three planes. Slip measurement shall not be allowed.

B. Payment

1. Payment for concrete used for miscellaneous purposes when ordered by the Engineer shall be made for the quantity measured in place (cubic yards) at the unit price bid in the Bid Form for Item 17 and shall be full compensation for all work required for, or incidental to the satisfactory completion of the Item as specified herein for which separate payment is not provided under other items in the Bid Form.

1.16 TEST PITS (BID ITEM 18)

A. Measurement and Payment

1. Test pits for the purpose of locating underground utilities; exposing, repairing and replacing existing valves; determining pavement depth/material and for other purposes as ordered by the Engineer or as shown on the Drawings are specified under Section 02221. Test pits shall be made where shown on the Drawings and as directed by the Engineer. Test pits shall be paid at the unit price bid in Item 18 in the Bid Form and shall be full compensation for cutting pavement; all excavation (excluding rock and boulder excavation); sheeting and bracing; excavation support and protection; backfilling and compaction; and all other work required for or incidental to the satisfactory completion of this Item. The measured quantity of excavation for test pits will be in cubic yards in accordance with the following test pit depths and established volumes per vertical foot:

Test Pit Depth	Cubic Yards per Vertical Foot
0 to 8 feet	1.5
Over 8 feet	2.0

2. Test pits for Valve Work Areas will not be measured and paid for under Item 18 and shall be included under the respective Bid Items in the Bid Form.

1.17 MISCELLANEOUS WORK AND CLEANUP (BID ITEM 19)

A. Measurement and Payment

1. Payment for Miscellaneous Work and Cleanup (Item 19) will be made at the lump sum price bid in the Bid Form. This price shall include costs incurred by the Contractor for usage of public supply water as specified and defined in Section 01046, and shall be full compensation for all labor, materials, tools, equipment, supplies and incidentals required to do all the work specified in Section 02901 including work not specifically included under other items but which are obviously necessary for the proper completion of the Contract. Work under Miscellaneous Work and Cleanup is as specified in Section 02901 and includes but is not limited to submittals; furnishing and providing temporary facilities in accordance with Section 01500, including the procuring all required equipment as specified in Section 01500; staked haybales, silt fences and catch basin drop inlet sediment filters; coordinating with Owner obtaining required police details for Contractor's work; coordination with other contractors and connection to work by others; photographic and video documentation; all work required to furnish, install, maintain and remove temporary bypass service pipe, service connections and hydrants (if required based on Contractor's proposed approach and sequence of construction); crossing and relocating existing utilities;

repair of existing utilities damaged during construction; protection of existing water system facilities during construction and all needed and incidental work to meet the requirements of Section 01014; restoration and replacement of driveways, sidewalks, fences and curbing disturbed by construction, including the replacement of sidewalks and curbing where noted within new paving limits as shown on the Drawings; protection and/or removal and reinstallation of signs, lampposts and mailboxes; protection and bracing of utility poles; restoring easements and Right-Of-Ways; loaming and seeding; all other restoration work; cleaning up; and all other incidental work required for the successful completion of the project.

1.18 MOBILIZATION (BID ITEM 20)

A. Measurement

1. Measurement for payment of mobilization costs shall be on a Lump Sum basis but the cost shall not exceed five percent of the base bid price.

B. Payment

Payment of the Lump Sum price bid in the Bid form for Item 20 shall be full compensation for all costs associated with initiating the Contract, exclusive of the cost of materials. Payment shall include compensation for all insurance, bonds, permits, project signs, site preparation, and in general the costs associated with establishing the work on-site and to ensure that the construction will proceed in a continuous manner.

END OF SECTION

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SECTION 01026
APPLICATION FOR PAYMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit Applications for Payment to the Engineer in accordance with the schedule established by Conditions of the Contract and Agreement between Owner and Contractor.

B. The accepted Schedule of Values, Section 01370, shall be used as the basis for the Contractor's Application for Payment.

1.02 RELATED WORK

A. Agreement between Owner and Contractor is included in Section 00500.

B. Standard General Conditions of the Construction Contract are included in Section 00700.

C. Schedule of Values are included in Section 01370.

D. Construction Photographs are included in Section 01322.

E. Contract Closeout is included in Section 01700.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, Application for Payment, with itemized data typed on 8-1/2-inch by 11-inch or 8-1/2-inch by 14-inch white paper continuation sheets.

B. Provide itemized data on continuation sheet.

1. Format, schedules, line items and values: Those of the Schedule of Values accepted by the Engineer.

C. Provide construction photographs in accordance with Section 01322.

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form

1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.

2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.

3. Execute certification with signature of a responsible officer of Contract firm.

B. Continuation Sheets

1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.

2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.
   a. Round off values to nearest dollar, or as specified for Schedule of Values.

3. List each Change Order executed prior to date of submission, at the end of the continuation sheets.
   a. List by Change Order Number and description, as for an original component item of work.

4. To receive approval for payment on component material stored on site, submit copies of the original paid invoices with the application for payment.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the Owner or the Engineer requires substantiating data, submit suitable information, with a cover letter identifying.

1. Project.

2. Application number and date.

3. Detailed list of enclosures.

4. For stored products:
   a. Item number and identification as shown on application.
   b. Description of specific material.

B. Submit one copy of data and cover letter for each copy of application.

C. As a prerequisite for payment, submit a "Surety Acknowledgement of Payment Request" letter showing amount of progress payment which the Contractor is requesting.

D. Maintain an updated set of drawings to be used as record drawings in accordance with Section 01720. As a prerequisite for monthly progress payments, exhibit the updated record drawings for review by the Owner and the Engineer.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in Application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700.

C. Submit all Project Record Documents in accordance with Section 01700.

1.07 SUBMITTAL PROCEDURE

A. Submit Applications for Payment to the Engineer at the times stipulated in the Agreement.

B. Number: Five copies of each Application.

C. When the Engineer finds Application properly completed and correct, he/she will transmit certificate for payment to Owner, with copy to Contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01038
REQUESTS FOR INFORMATION

PART 1 GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. This Section specifies the general methods and requirements of Requests for Information (RFIs).

1.02 RELATED WORK

A. Additional requirements may be specified in the General Conditions.

B. Submittals are included in Section 01300.

C. Project Record Documents are included in Section 01720.

1.03 REQUESTS FOR INFORMATION

A. When the Contractor believes that additional information or clarification of a contract requirement is needed, it may initiate a Request for Information

B. RFIs may relate to Technical matters or Administrative matters. The RFI process shall be limited to the clarification of technical and/or administrative matters. While the response to an RFI might lead to a change in the contract scope, cost or time, RFIs are not a substitute to the notification requirements stipulated in the General Conditions.

C. A response to an RFI may authorize minor changes to the contract consistent with the terms of the contract related to the responsibilities and limitations of authority of the Engineer.

D. A response to an RFI is not an authorization to perform any additional work that would require that change order or written amendment to the contract. If the Contractor believes the response an RFI requires a change to the contract, Contractor shall promptly provide written notice to the Owner and Engineer in accordance with the General Conditions.

E. RFIs are not a substitute for the Submittals process specified elsewhere.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 ORIGINATION

A. The Contactor shall originate RFIs using the form appended to this Section.

1. RFIs shall be numbered consecutively. In the event that an answered RFI results in a follow-up inquiry, the follow-up shall maintain the same number as the original, appended with a suffix.

2. Include Specification Section(s), Drawing(s), or detail(s) for which information is requested.

3. Attach drawings, sketches, photographs or other relevant information.

4. If the question concerns an interpretation of the Contract Documents, enter the Contractor's interpretation.

5. Indicate the date by which the Contractor requests a reply.

6. Sign the upper portion of the form.

B. RFIs may not be submitted by subcontractors or suppliers. When a subcontractor or supplier generates a request for information or clarification to the Contractor, Contractor shall incorporate such requests into the required format, assign the next number, and sign.

C. Contractor shall maintain a log of all RFIs including the date originated, date delivered, and date answered.

3.02 PROCESSING

A. Contractor shall submit all RFIs to the Engineer for processing.

B. Technical RFIs will generally be reviewed and answered by the respective discipline engineer or architect.

C. Administrative RFIs will generally be reviewed and answered by the Engineer in consultation with the Owner.

D. The Engineer will generally respond to RFIs within 7 to 14 calendar days of receipt – depending on the complexity of the inquiry.

3.03 RESPONSES

A. If the RFI contains sufficient clarity, the Engineer will insert a response in the lower portion of the RFI form, sign and date the response; and, return the completed form to the Contractor.

B. If the RFI does not contain sufficient clarity, the Engineer may request additional information from the Contractor.

C. Engineer will distribute copies to the Owner and project files.

D. Engineer will maintain a log of all RFIs including the date received and date returned to Contractor.

3.04 RECORD INFORMATION

A. Contractor shall include all clarifications obtained through the RFI process into the record information in accordance with Section 01720.

END OF SECTION
(Standard RFI Form Follows)

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Request for Information

Project Name:		
Owner's Project No.:	**CDM Smith Project No.:**	
Contractor:	**RFI No.:**	
	Date:	
Subject:		
Spec Section:	**Drawing:**	**Detail:**

QUESTION:
If the above question concerns an interpretation of the Contract Documents, the Contractor's interpretation is:
Please Respond by This Date:
Submitted by Contractor: **Date:**
Received by (CDM Smith): **Date:**

RESPONSE:	
By:	**Date:**
Distribution: Contractor, Owner, File, Field, RFI Notebook	

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SECTION 01045
CUTTING, CORING AND PATCHING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This Section covers the cutting, coring, rough and finished patching of holes and openings Holes and opening maybe in existing construction, or in parts of new construction. Procedures for cutting and patching will be the same for either condition.

B. All cutting, coring, and rough patching shall be performed by the Contractor. Finish patching shall be the responsibility of the Contractor and shall be performed by the trade associated with the application of the particular finish.

C. Provide all cutting, fitting and patching, including attendant excavation and backfill, required to complete the work or to:

1. Make its several parts fit together properly.

2. Uncover portions of the work to provide for installation of ill-timed or improperly scheduled work.

3. Remove and replace defective work.

4. Remove and replace work not conforming to requirements of Contract Documents.

5. Remove samples of installed work as specified for testing.

6. Provide penetrations of structural surfaces and materials for installation of piping, ductwork, equipment and electrical conduit.

7. Provide penetrations of non-structural surfaces and materials for installation of piping, ductwork, equipment and electrical conduit. The determination of what is a nonstructural surface or material shall be made by the Engineer.

8. Remove, install, or relocate materials or equipment.

1.02 RELATED WORK

A. Summary of Work is included in Section 01010.

B. Site work is included in Division 2.

C. Concrete is included in Division 3.

D. Pipe penetrations and assemblies are included in Section 01180.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, a written request prior to executing any cutting or alteration which is not shown or detailed on the contract documents which affects or requires:

1. Cutting structural members.

2. Holes drilled in beams or other structural members.

3. Work of the Owner or any separate contractor.

4. Structural value or integrity of any element of the project.

5. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.

6. Efficiency, operational life, maintenance or safety of operational elements.

7. Visual qualities of sight-exposed elements.

B. Request shall include:

1. Identification of the project.

2. Description of affected work.

3. The reason for cutting, alteration or excavation.

4. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of project.

5. Description of proposed work:
   a. Method and extent of cutting, patching, alteration, or excavation.
   b. Trades who will execute the work.
   c. Products proposed to be used.
   d. Extent of refinishing to be done.

6. Alternatives to cutting and patching.

7. If the work is considered out of scope, provide a cost proposal.

8. Confirmation of coordination with any separate contractor whose work will be affected.

9. Related shutdown requests if required to do the work.

10. Request for hot work permit if required to do the work.

C. Submit written notice to the Engineer designating the date and the time the work will be uncovered.

D. When a written request is required, do not proceed with the work until a written notice to proceed is received from the Engineer.

PART 2 PRODUCTS

2.01 MATERIALS

A. Comply with specifications and standards for each specific product involved. Where there is no equivalent specification, notify the Engineer who will provide a specification for the materials to be used.

B. Concrete and grout for rough patching shall be as specified in Division 3.

C. Materials for finish patching shall be equal to those of adjacent construction. Where existing materials are no longer available, use materials with equivalent properties and that will provide the same appearance. The materials are to be approved by the Engineer prior to their use.

PART 3 EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of project, including elements subject to damage or to movement during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of products, or performance of work.

C. Report unsatisfactory or questionable conditions to the Engineer in writing; do not proceed with work until the Engineer has provided further instructions.

3.02 PREPARATION

A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.

B. Protect surrounding materials and equipment prior to starting work.

C. Contain and control cooling liquids and slurry produced by the cutting and coring operations.

D. When the cutting or coring will result in the structure or equipment being exposed to provide adequate weather protection.

E. Provide dewatering for excavation work in accordance with Section 02140.

3.03 PERFORMANCE

A. Execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work. When excavating in close proximity to piping, duct banks or other items subject to damage, use hand excavation.

C. All equipment and workplace safety shall conform to OSHA standards and specifications pertaining to plugs, noise and fume pollution, wiring and maintenance.

D. Where possible, employ original installer or fabricator to perform cutting and patching for:

1. Weather-exposed or moisture-resistant elements.

2. Sight-exposed finished surfaces.

E. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

F. Restore work which has been cut or removed; install new products to provide completed work in accordance with requirements of Contract Documents.

G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:

1. For continuous surfaces, refinish to nearest intersection.

2. For an assembly, refinish entire unit.

H. Remove rubble and excess patching materials from the premises.

3.04 CORING

A. All coring shall be performed in such a manner as to limit the extent of patching. Locate the rebar before coring to minimize cut throughs.

B. Coring shall be performed with an approved non-impact rotary tool with diamond core drills.

C. Size of holes shall be suitable for pipe, conduit, sleeves, equipment or mechanical seals to be installed.

D. Fit work to minimize space to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

E. Fit to pipes and other penetrations in tanks to be water tight using seals or other methods defined in the specifications.

F. All holes cut through concrete and masonry walls, slabs or arches shall be core drilled unless otherwise approved. All work shall be performed by mechanics skilled in this type of work.

G. If holes are cored through floor slabs they shall be drilled from below where possible. If holes are drilled from above, provide protection and containment below the area being drilled to catch the plug and contain liquid and slurry.

3.05 CUTTING

A. All cutting shall be performed in such a manner as to limit the extent of patching.

B. Fit work to minimize space to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

C. Cutting shall be performed with a concrete saw and diamond saw blades of proper size.

D. Provide for control of slurry generated by sawing operation on both sides of wall and from below if cutting a floor.

E. When cutting a reinforced concrete wall or floor, the cutting shall be done so as not to damage the bond between the concrete and reinforcing steel left in structure. Cut shall be made so that steel neither protrudes nor is recessed from face of the cut.

F. Adequate bracing of area to be cut shall be installed prior to start of cutting. Check area during sawing operations for partial cracking and provide additional bracing as required to prevent a partial release of cut area during sawing operations.

G. Provide equipment of adequate size to remove cut panel.

H. Saw cut concrete and masonry prior to breaking out sections.

I. Install work at such time as to require the minimum amount of cutting and patching.

J. All cutting of structural members shall be done in a manner directed by the Engineer.

K. Cut opening only large enough to allow easy installation of the equipment, ducting, piping or conduit.

L. When existing conduits or pipe sleeves are cut off at the floor line or wall line, they shall be filled with grout or suitable patching material.

3.06 PROTECTION

A. Provide devices and methods to protect other portions of project from damage.

B. Provide protection from elements for that portion of the project which may be exposed by cutting and patching work.

C. Maintain excavations free from water.

3.07 PATCHING

A. Rough patching shall be such as to bring the cut or cored area flush with existing construction unless otherwise shown.

B. Finish patching shall match existing surfaces as approved.

C. Patching shall be of the same kind and quality of material as was removed.

D. The completed patching work shall restore the surface to its original appearance or better.

E. Patching of waterproofed surfaces shall render the area of the patching completely waterproofed to include the joint between the existing material and the patch.

F. Equipment damaged during cutting and patching shall be replaced or repaired by the equipment manufacturer, at the Engineer's sole discretion and at the expense of the Contractor doing the work.

G. Repaint any damage to factory applied paint finishes using touch-up paint furnished by the equipment manufacturer. The entire damaged panel or section shall be repainted as directed by the Engineer at the expense of the Contractor doing the work.

H. Slurry or tailings resulting from coring or cutting operations shall be contained and vacuumed or otherwise removed from the area following drilling or cut.

I. Equipment shall be protected against mechanical and water damage during cutting and patching. Provide protective covers or use other means such as temporary relocation to protect equipment that is at risk of damage from the cutting and patching

J. Provide protection for existing equipment, utilities and critical areas against water or other damage caused by drilling operation.

END OF SECTION

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SECTION 01046
CONTROL OF WORK

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish materials and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the Contract Time. If at any time such materials and equipment appears to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, Engineer may order the Contractor to increase the efficiency, change the character or increase the equipment and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

B. Before beginning any work on the site, Contractor shall review and discuss with the Engineer the methods and equipment proposed to be used in the performance of the work and for protecting the site and adjacent areas from damage of any kind.

C. Contractor shall confirm in writing that all health and safety requirements associated with the work and confined space entry procedures will be fulfilled.

1.02 SCHEDULE

A. Once the work has begun, Contractor shall maintain a daily schedule of work at the site until the work is completed.

1.03 INSPECTION

A. Surface preparation, painting and cleaning will be inspected as the work progresses. Keep the Engineer fully informed of the work schedule. Failure to keep the Engineer so informed may be sufficient cause to require the Contractor to reclean and/or repaint uninspected areas at the Contractor's expense.

B. Maintain adequate and secure rigging facilities. Scaffolding, boatswain chairs and other rigging removed prior to inspection shall be replaced as required by the Engineer at the Contractor's expense.

1.04 PRIVATE LAND

A. Do not enter or occupy private land outside of easements, except by permission of the land owner.

1.05 EXISTING WATER FACILITIES

A. The Contractor shall interrupt water facilities and disrupt the normal functioning of the water system as little as possible. Contractor shall notify the Owner and Engineer at least 7 days in advance of any requirement for dewatering or isolating of any water facilities, so that water customers may be notified and the necessary arrangements may be made. The Owner and Engineer reserve the right to review and approve the Contractor’s proposed work plans to verify

that the proposed amount of impacted water system facilities, the proposed amount of existing piping shut down, and the amount of temporary bypass piping (if needed) proposed are in direct proportion to the requirements to facilitate the installation of new work. The safety and integrity of the water system is of prime importance.

B. When water or fire services are to be interrupted for an extended period of time (longer than 8 hours), the Contractor will provide temporary service piping and service lines. Inconvenience of water services shall be kept at a minimum. The safety and integrity of the system is of prime importance in scheduling work. The Contractor shall provide temporary water service to all impacted water service locations as required through temporary bypass pipe and service connections.

C. The installation and operation of all temporary bypass pipe and service connections will not be allowed between November 1st and April 15th in order to prevent freezing of the temporary piping.

D. Existing service connection meters that require removal to allow temporary service connections to be made by the Contractor shall be removed under the direct supervision of Owner's personnel. The Owner, subject to Owner's discretion and approval, may allow the Contractor to remove the existing service connection meters to allow temporary service connections to be made by the Contractor. The Owner reserves the right to restrict the removal of all existing service connection meters to Owner personnel.

E. Water service locations and sizes shall be obtained from the available Owner records as required.

F. The Contractor is required to meet the requirements specified in Section 02666 for the use of any temporary bypass piping (if needed).

G. Construction Sequence and Special Work Requirements are as specified in Section 01014.

1.06 PIPE LOCATIONS

A. Locate pipelines, fittings, valves and appurtenances substantially as indicated on the Drawings. The Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

1.07 OPEN EXCAVATIONS

A. Adequately safeguard all open excavations by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. Provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Remove bridges provided for access during construction when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street and requiring that the trench shall not remain open overnight.

B. Take precautions to prevent injury to the public due to open trenches. Provide adequate light at all trenches, excavated material, equipment, or other obstacles which could be dangerous to the public at night.

C. As mandated by Chapter 82A of the Massachusetts General Law (MGL), the trench safety regulations require that all Contractors, 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 shall be road plates at least 3/4-inches thick or equivalent; barricades shall be fences at least 6-feet high with no openings greater than 4-inches between vertical supports; backfilling shall be sufficient to eliminate the trench. Alternatively, Contractors may choose to attend trenches at all times, for instances by hiring a police detail, security guard or other attendant who shall be present during times when the trench will be unattended by the Contractor. For purposes of this Paragraph, a "trench" shall be defined as an excavation which is narrow in relation to its length, made below the surface ground in excess of 3 feet below grade and the depth of which is, in general, greater than the width, but the width of the trench, as measured at the bottom, is no greater than 15 feet and the words "excavator", "excavation" and "emergency" shall have the same meanings as defined in Section 40 of Chapter 82 of the MGL. The word "excavator" as used in this Paragraph shall also mean "Contractor".

1.08 TEST PITS

A. Excavate test pits, at the direction of the Engineer, to locate underground pipelines or structures or confirm dimensions, measurements and pipe outside diameters for materials fabrication, in advance of the construction. Backfill test pits immediately after their purpose has been satisfied and restore and maintain the surface in a manner satisfactory to the Engineer.

1.09 MAINTENANCE OF TRAFFIC

A. Unless permission to close a street is received in writing from the proper authority, place all excavated material so that vehicular and pedestrian traffic may be maintained at all times. If the construction operations cause traffic hazards, repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the Engineer.

B. Detours around construction will be subject to the approval of the Owner and the Engineer. Where detours are permitted, provide all necessary barricades and signs as required to divert the flow of traffic. Expedite construction operations while traffic is detoured. Periods when traffic is being detoured will be strictly controlled by the Owner.

C. Take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. Be fully responsible for damage or injuries whether or not police protection has been provided.

D. Use of police for traffic control shall be in conformance with Part II of the Supplementary Conditions.

1.10 CARE AND PROTECTION OF PROPERTY

A. Be responsible for the preservation of all public and private property and use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or

private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, restore such property to a condition similar or equal to that existing before the damage was done, or make good the damage in other manner acceptable to the Engineer.

1.11 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

A. Assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains and electric and telephone cables, whether or not they are shown on the Drawings. Carefully support and protect all such structures and utilities from injury of any kind. Immediately repair any damage resulting from the construction operations.

B. At pipe crossings and where designated by the Engineer, furnish and place screened gravel bedding so that the existing utility or pipe is firmly supported for its entire exposed length. The bedding shall extend to the mid-diameter of the pipe crossed. Payment for screened gravel at pipe crossings will be made according to the Bid Form and Measurement and Payment.

C. Assistance will be given the Contractor in determining the location of existing services. The Contractor, however, shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines and sewers), whether or not they are shown on the Drawings. Maintain services to buildings and pay costs or charges resulting from damage thereto.

D. Notify all utility companies in writing at least 72 hours (excluding Saturdays, Sundays and Legal holidays) before excavating in any public way. Also notify Massachusetts Dig Safe, telephone 1-888-344-7233 at least 72 hours prior to start of work.

E. If, in the opinion of the Engineer, permanent relocation of a utility owned by the Owner is required, the Engineer may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for at the Contract unit prices, if applicable, or as extra work under Article 11 of the Supplementary Conditions. If relocation of a privately-owned utility is required, the Owner will notify the Utility to perform the work as expeditiously as possible. Cooperate with the Owner and Utility. No claim for delay will be allowed due to such relocation.

F. Coordinate the removal and replacement of traffic loops and signals, if required for the performance of the work, at no additional cost to the Owner. Payment for this work to replace any traffic loops and signals disturbed by Contractor's operations and required construction shall be included in the Contractor's price for Miscellaneous Work and Cleanup.

G. Existing water transmission mains shall be protected at all times during construction while they are active and online. Traveling across the existing live transmission mains with construction equipment is strictly prohibited where the depth of burial of these mains is less than 4-feet from either the existing or proposed grade to the crown of the pipe. In no case shall the Contractor stockpile soil or other material above existing water transmission mains.

1.12 WATER FOR CONSTRUCTION PURPOSES

A. In locations where public water supply is available, the Contractor may be allowed to use water without charge for construction purposes, such as but not limited to flushing and filling water mains.

B. The express approval of the Owner shall be obtained before water is used. Waste of water shall be sufficient cause for withdrawing the privilege of unrestricted use. Hydrants shall only be operated by the Owner's personnel or under the supervision of the Owner's personnel.

C. The Owner requires the use of hydrant meters to record the volume of water used for construction purposes for Owner's yearly estimate of non-revenue water. The Contractor shall provide hydrant meters or rent hydrant meters from the Owner to measure the volume of all water used for construction purposes. The Contractor shall also provide a means of back flow prevention for connection to all hydrants that is acceptable to the Owner. During the shop drawing process, the Contractor shall submit information on the hydrant meters intended for use while metering water used for construction purposes. With the submittal, the Contractor shall provide calibration information and testing results on the hydrant meters to be used during construction. All hydrant meters shall be reviewed and approved by the Engineer and Owner prior to use. The Contractor shall document all water used for construction that passes through all hydrant meters in a form that is acceptable to both the Owner and Engineer.

D. The Owner will operate all hydrants and hydrant valves while assisting the Contractor with the installation of all hydrant meters. The Owner reserves the right to restrict use of hydrants for any reason. It shall be the responsibility of the Contractor to protect all hydrant meters from damage, loss and tampering. The Contractor shall be responsible for providing all hoses and special fittings needed for utilizing the Owner's water supply. The Contractor shall notify the Owner, local Fire Department and local Police Department when public safety is affected by use of hydrants for construction purposes. The Contractor will be responsible for any damage caused by water which passes through the hydrant meter, whether it is used or wasted. If damage does occur, Contractor shall incur all responsibility and costs for repair of any damage and returning the site to its original condition.

1.13 MAINTENANCE OF FLOW

A. Provide for the flow of sewers, drains and water courses interrupted during the progress of the work, and immediately cart away and remove all offensive matter. Discuss the entire procedure of maintaining existing flow with the Engineer well in advance of the interruption of any flow.

1.14 COOPERATION WITHIN THIS CONTRACT

A. All firms or persons authorized to perform any work under this Contract shall cooperate with General Contractor and Subcontractors or trades and assist in incorporating the work of other trades where necessary or required.

B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Engineer.

C. At some locations, construction on other pipelines or buildings may be carried on during the same period as construction under this Contract. It will be necessary for the Contractor to plan work and cooperate with the other Contractor(s) insofar as connections required to each other's work and to prevent any interference and delay for which the Contractor shall receive no other compensation.

1.15 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

A. During the course of the work, keep the site of operations as clean and neat as possible. Dispose of all residue resulting from the construction work and, at the conclusion of the work, remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures and any other refuse remaining from the construction operations and leave the entire site of the work in a neat and orderly condition.

B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, comply with all applicable Federal, State and local laws and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and in other related sections.

C. Disposal of excess excavated material in wetlands, stream corridors and plains is strictly prohibited even if the permission of the property owner is obtained. 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, with a request that appropriate action be taken against the offending parties. The Contractor will be required to remove the fill and restore the area impacted at no increase in the Contract Price.

D. Snow plowing, removal and disposal, if required prior to or during construction, shall be performed by the Contractor in accordance with all local, State and Federal requirements.

1.16 RESTORATION

A. Restore all areas to conditions that existed prior to construction. Restoration outside of pipe trench limits required as a result of the installation of the pipeline shall be at the Contractor's own expense. Restoration within the pipe trench limits is included in the pipe items in the Bid Form.

B. Existing public and private driveways and sidewalks disturbed by the construction shall be replaced to the limits and thicknesses existing prior to construction and as specified in Section 02901.

C. Existing signs, lampposts and mailboxes which are damaged by the Contractor or removed by the Contractor during the course of the work shall be reinstalled in a vertical position at the same location from which they were removed. Damaged items shall be replaced with an item equal to or better than the damaged items. A concrete anchor shall be provided as necessary, at no additional cost, to ensure a rigid alignment. Care shall be exercised in the reinstallation of all items to prevent damage to the newly installed pipelines.

D. Existing concrete, bituminous, timber or granite curbing shall be protected. If necessary, curbing shall be removed and replaced after backfilling. Curbing which is damaged during construction shall be replaced with curbing of equal quality and dimension at the Contractor's expense. Granite curbing removed and reset shall conform to the Owner’s and MassDOT Standards. Joints between sections shall be pointed as required after resetting. Bituminous berms shall conform to the Owner’s and MassDOT Standards.

E. Any modifications to existing facilities required based on Contractor’s means and methods shall be restored to conditions that existing prior to construction. Any modifications made or items damaged by the Contractor shall be replaced in-kind with an item equal to or better than the

modified or damaged item at the Contractor's own expense and at no additional cost to the Owner.

1.17 PIPE TRENCH WIDTHS

A. Pipe trench widths referred to herein are the distances separating the vertical planes between which the pipe is to be laid. In computing the amount of excavation below normal grade and rock excavation for payment under the respective items on the Bid Form, trench width shall as specified for Maximum Initial Trench Pavement Widths. In computing the amount of gravel for pavement subbase under the respective items on the Bid Form, trench width shall as specified for Maximum Permanent Trench Pavement Widths

1.18 PIPE TRENCH DEPTHS

A. The top of the trench shall be the ground elevation as determined by the Engineer prior to excavation. The bottom of the trench shall be as shown on the Drawings and as specified herein. All new water mains, fittings, valves, service connections and appurtenances shall be located to match existing locations, unless otherwise shown on the Drawings or specified herein. In soil, the bottom of the trench shall be the invert elevation of the pipe which provides and at least 12-inches of granular material for pipe bedding below the bottom of new water mains as shown on the Drawings.

1.19 TRENCH PAVEMENT WIDTHS

A. Pavement widths for trench pavement shall be the widths at the top of the trench. In computing the number of square yards of paving for water main trenches to be placed, the maximum allowable widths shall be as shown in the table below.

MAXIMUM TRENCH WIDTHS FOR PAVEMENT		
NOMINAL PIPE DIAMETER (inches)	**INITIAL TRENCH PAVEMENT**	**PERMANENT TRENCH PAVEMENT**
0-24	6.5 feet	8.5 feet
36	7.0 feet	9.0 feet
42	7.5 feet	9.5 feet

END OF SECTION

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SECTION 01102
HEALTH AND SAFETY REQUIREMENTS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. This Section describes the minimum health and safety requirements for this project. Develop a detailed Health & Safety (H&S) Plan using this Section as a basis and delineating additional details and requirements as deemed necessary. The H&S plan shall establish in detail the protocols necessary for protecting workers from potential hazards encountered during all construction activities.

B. Site specific health and safety procedures including a detailed accident prevention plan are required. These procedures shall be described in a Safety, Health and Emergency Response Plan (SHERP) prepared by the Contractor. The SHERP shall be submitted to the Engineer and be reviewed and approved by the Engineer and Owner before any Work at the site can be initiated. Implement, maintain and enforce the SHERP procedures at the appropriate time prior to and during all phases of the Work.

C. Utilize the services of a health and safety professional designated the Health and Safety Manager (HSM) to develop and implement the SHERP, conduct initial site-specific training and provide support for all health and safety activities as needed, including the upgrading or downgrading of the level of personnel protection.

1. In addition, a Site Safety and Health Officer (SSHO) shall assist and represent the HSM in the continued implementation and enforcement of the SHERP. The SSHO shall be assigned to the site on a full-time basis and shall be either the Contractor's employee or a subcontractor who reports to the Contractor and the HSM in matters pertaining to site safety and health.

D. The following definitions shall be used throughout this Safety, Health and Emergency Response Plan.

1. Health and Safety Manager (HSM): The Contractor's employee assigned to develop the SHERP and assume full responsibility for the Contractor's health and safety program.

2. Site Safety and Health Officer (SSHO): The Contractor's employee assigned to the site on a full-time basis for the duration of the project with functional responsibility for implementation of the SHERP.

3. Site: For the purpose of the SHERP, the site shall be all the areas within the limits of work as shown on the Drawings.

4. Monitoring: Indicates the use of field instrumentation to provide information regarding the levels of organic vapors which are being released during remedial action. Monitoring shall be conducted to evaluate employee exposures to toxic materials.

5. Physician: A licensed physician provided by the Contractor with experience in the practice of occupational medicine.

1.02 REGULATORY REQUIREMENTS

A. OSHA 29 CFR 1926.59, Hazard Communication

B. OHSA 29 CFR 1926.62, Lead

C. OSHA 29 CFR 1926.65, Hazardous Waste Operations

D. OSHA 29 CFR 1926, Safety and Health Regulations for Construction

1.03 RELATED REQUIREMENTS

A. Summary of Work is included in Section 01010.

1.04 SUBMITTALS

A. Submit, in accordance with Section 01300, and within 14 days after issuance of Notice to Proceed or the Executed Agreement (the earlier of these dates), the following:

1. Qualifications of HSM.

2. Qualifications of SSHO.

3. H&S / SHERP

1.05 REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

A. The site specific SHERP shall be consistent with the requirements of:

1. Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29, Code of Federal Regulations, Parts 1910 and 1926 (29 CFR 1910 and 1926), including amendments as stated in Fed Reg December 19, 1986: 45654-45675. (Interim Final Rule, 29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response").

2. United States Environmental Protection Agency (USEPA) Standard Operating Guidelines Revised November 1984.

3. Corps of Engineers Accident Prevention and Safety and Health Requirements Manual, EM 385-1-1. Revised October 1984.

4. NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Site Activities, October 1985, DHHS (NIOSH) Publ. No. 85-115.

5. United States Environmental Protection Agency (USEPA) Standard Operating Procedures and Quality Assurance Manual, Region IV. April 1986.

B. The SHERP shall include but not necessarily be limited to, the following components as required by OSHA 29 CFR 1910.120(i)(2):

1. Names of key personnel and alternates responsible for site safety and health (responsibilities and chain of command)

2. Safety and health hazard assessment and risk analysis for each site task and operation (Accident Prevention Plan).
3. Site Description and Evaluation
4. Education and Training
5. Personnel Protective Equipment
6. Medical Surveillance
7. Air Monitoring
8. Standard Operating Procedures, Engineering Controls and Work Practices
9. Site Control Measures (Work Zones, Communications and Security)
10. Personnel Hygiene and Decontamination
11. Equipment Decontamination and Record Keeping
12. Emergency Equipment and First Aid Requirements
13. Personnel Protection Equipment and emergency equipment
14. Heat/Cold Stress Monitoring
15. Decontamination
16. Emergency medical treatment and first aid
17. Personnel roles, lines of authority, training and communication
18. Emergency recognition and prevention
19. Safe distances and places of refuge
20. Site security and control
21. Evacuation routes and procedures
22. Emergency alerting and response procedures
23. Pre-emergency planning
24. Emergency Response Plan and Contingency Procedures
25. Critique of response and follow-up
26. Logs, Reports and Record Keeping

C. Six copies of the site specific SHERP shall be submitted to the Engineer within 7 days following the Effective Date of the Agreement and must be approved prior to commencement of any on-site work.

D. Determination of the appropriate level of worker safety equipment and procedures shall be made by the Contractor as a result of initial site survey review of existing data and a continued safety and health monitoring program performed by the SSHO and approved by the Engineer, in accordance with the requirements specified herein.

E. Standards delineated in this Section are in addition to or an amplification of procedures and requirements of the above referenced regulations and documents.

F. Should any unforeseen or site-specific safety related factor, hazard, or condition become evident during the performance of work at this site, it shall be the Contractor's responsibility to bring such to the attention of the Engineer both verbally and in writing as quickly as possible, for resolution. In the interim, the Contractor shall take prudent action to establish and maintain safe working conditions and to safeguard employees, the public and the environment.

G. Should the Contractor seek relief from, or substitution for, any portion or provision of the SHERP, such relief or substitution shall be requested of the Engineer in writing and if approved, be authorized in writing.

H. The SHERP developed by the Contractor shall include provisions for work related to initial site preparation prior to implementation of the facilities described in this Contract. It shall be the responsibility of the Contractor to conduct whatever testing and monitoring is deemed necessary to assure a safe operation during the initial site preparation work.

I. Any temporary facilities or special construction procedures shall be the responsibility of the Contractor and shall be delineated in the SHERP.

1.06 SITE CONTROL

A. Communications

1. Provide portable two-way radio or portable vehicle telephone communication at the site and emergency numbers, including police, fire, ambulance, hospital and Owner, shall be prominently posted near the radio or telephone.

B. Security

1. Security shall be provided within all fenced areas at the site and maintained for the duration of the work in order to restrict unauthorized access to these areas. Specific components of this security operation are as follows:
   a. Vehicular access to all fenced areas shall be restricted to authorized vehicles only.
   b. Maintain a log of security incidents.
   c. Require visitors having access to all fenced areas to sign-in and sign-out and shall keep a record of all site access.
   d. All approved visitors shall be briefed on safety and security and escorted by the Contractor SSHO throughout their visit.
   e. "Warning, Construction Work Area, Do Not Enter Unless Authorized" shall be posted.

f. Sufficient lighting shall be provided to ensure effective night security at the site.

1.07 TRAINING

A. Certify that all Contractor personnel assigned for the purpose of performing or supervising work in accordance with the provisions of the H&S plan have received appropriate safety training in accordance with 29 CFR 1926.65. Training shall consist of a minimum of 40 hours of health and safety training and 8 hours refresher training annually. Documentation of all such training shall be submitted to the Engineer before any employees will be allowed in the contaminated area.

B. Additionally, the Contractor shall be responsible for, and shall guarantee that, only personnel successfully completing the required training are permitted to enter designated areas of the site where worker protection is required.

C. Additionally, guarantee that, personnel not successfully completing the required training are not permitted to enter the site to perform work.

1.08 MEDICAL SURVEILLANCE

A. Certify that the services of an occupational physician will be provided and utilized to provide the minimum medical examinations and surveillance specified herein for all workers performing or supervising work in accordance with the provisions of the H&S plan.

B. The entire medical surveillance program shall meet the requirements of OSHA standard 29 CFR 1926.65(f) including the provision requiring the Contractor to obtain a physician's written medical opinion based on site specific information furnished by the Contractor.

C. Maintain all medical surveillance records in accordance with 29 CFR 1926.65 and make these records available to the Engineer or other regulatory agencies as required.

1.09 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

A. Develop contingency plans including evacuation procedures and routes to places of refuge or safe distances from the danger area, for the following potential emergencies: chemical exposure, personal injury, potential or actual fire or explosion, and environmental accident (spill or release). In the event of any emergency, without delay: take diligent action to remove or otherwise minimize the cause of the emergency; alert the Engineer and institute whatever measures might be necessary to prevent any repetition of the conditions or actions leading to, or resulting in, the emergency.

B. Emergency medical care services shall be prearranged at a nearby medical facility with established emergency routes. The staff at the facility shall be advised of the potential medical emergencies that might result.

C. Establish emergency communications with health and emergency services. The name of this facility, name of contact, emergency routes and emergency communications arrangements shall be provided in the SHERP. In addition, the Contractor shall provide the following equipment:

1. At least one first aid kit shall be provided and maintained fully stocked at a first aid station which is in close proximity to the work. First aid kit locations shall be specially marked

and provided with adequate water and other supplies necessary to cleanse and decontaminate burns, wounds, or lesions.

2. Have at least one certified First Aid Technician on the site at any time there is work being performed. This person may perform other duties, but must be immediately available to render first aid when needed. Certification shall be by the American Red Cross or other approved agency and shall be submitted to the Engineer.

3. 2A-10 B:C type dry chemical fire extinguishers shall be provided at the site office.

1.10 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

A. Develop an emergency response and contingency plan for on-site and off-site emergencies, as specified in OSHA 29 CFR 1910.120(l), which shall address at a minimum:

1. Pre-emergency planning

2. Personnel roles, lines of authority, training and communication

3. Emergency recognition and prevention

4. Safe distances and places of refuge

5. Site security and control

6. Evacuation routes and procedures

7. Decontamination

8. Emergency medical treatment and first aid

9. Emergency alerting and response procedures

10. Critique of response and follow-up

11. Personal Protection Equipment (PPE) and emergency equipment

B. In the event of any emergency associated with Response Action, without delay: take diligent action to remove or otherwise minimize the cause of the emergency; alert the Engineer and institute whatever measures might be necessary to prevent any repetition of the conditions or actions leading to, or resulting in, the emergency.

C. Emergency medical care services shall be prearranged at a nearby medical facility with established emergency routes. The staff at the facility shall be advised of the potential medical emergencies that might result and that the patients clothing and skin might be contaminated.

D. Establish emergency communications with health and emergency services. The name of this facility, name of contact, emergency routes and emergency communications arrangements shall be posted at the site. The posted list shall include the following minimum points:

1. Contractor physician name, address and telephone number.

2. Ambulance service and fire department telephone numbers.

3. Procedure for prompt notification of Engineer and DER.

E. In the event that an accident for some other safety related incident occurs during the course of the project, the Engineer shall be telephoned immediately and receive a written notification within 24 hours. The report shall include the following items:

1. Name, organization, telephone number, and location of the Contractor.

2. Name and title of the person(s) reporting.

3. Date and time of accident/incident.

4. Location of accident/incident, including site location and facility name.

5. Brief summary of accident/incident giving pertinent details including type of operation ongoing at time of accident.

6. Cause of accident/incident, if known.

7. Casualties (fatalities, disabling injuries).

8. Details of any existing chemical hazard or contamination.

9. Estimated property damage, if applicable.

10. Nature of damage; effect on contract schedule.

11. Action taken by Contractor to ensure safety and security.

12. Other damage or injuries sustained (public or private).

1.11 PERSONAL PROTECTIVE EQUIPMENT

A. Provide all on-site personnel with appropriate personal safety equipment and protective clothing, and will ensure that all safety equipment and protective clothing is kept clean and well maintained. The Contractor's HSM shall establish upgrade/downgrade "action levels" from the specified minimum levels of protection based upon site conditions. Protocols formally changing the level of protection and the communication network for doing so shall be described in the SHERP. Any changes to the minimum level of protection shall be approved by the SSHO and the Engineer. At a minimum the following items shall be provided:

1. Protective clothing shall be furnished for on-site personnel, consisting of:
   a. Level D: use as appropriate
      1) Coveralls
      2) Gloves*
      3) Boots/shoes, chemical-resistant steel toe and shank
      4) Boots, outer, chemical-resistant (disposable)*
      5) Safety glasses or chemical splash goggles*
      6) Hard hat

7) Escape mask. Optional as applicable.
8) Face shield. Optional as applicable.

b. Level C: use as appropriate
1) Full-face or half-mask, air purifying, canister equipped (NIOSH approved).
2) Hooded chemical-resistant clothing (overalls two-piece chemical-splash suit; disposable chemical-resistant overalls).
3) Coveralls*
4) Gloves, outer, chemical-resistant
5) Gloves, inner, chemical-resistant
6) Boots, outer, chemical-resistant steel toe and shank*
7) Boot-covers, outer, chemical-resistant (disposable)*
8) Hard hat
9) Escape mask*
10) Two-way radios (worn under outside protective clothing)
11) Face shield*

*Optional as applicable.

2. All prescription eyeglasses in use on the site shall be safety glasses. Prescription lens inserts shall be provided for full face respirators. Contact lenses are prohibited in the Exclusion and Contamination Reduction Zone.

3. Footwear used on site shall be steel-toed, steel shank safety shoes or boots, with chemical resistant soles.

4. A written respiratory protection program addressing site specific respirator usage shall be developed by the Contractor's HSM and shall be submitted as part of the SHERP. Programs for respiratory protection shall conform to OSHA 1910.134.

5. All on-site personnel shall wear a hard hat when engaging in construction or drilling activities.

6. All personal protective equipment worn on site shall be decontaminated or properly disposed of at the end of the work day. The SSHO is responsible for ensuring all personal protective equipment is decontaminated before being reissued.

7. Each respirator shall be individually assigned and not interchanged between workers without cleaning and sanitizing. Cartridges/canisters and filters shall be changed daily or upon breakthrough, whichever occurs first. A procedure for assuring periodic cleaning, maintenance and changing of filters shall be provided by the Contractor and addressed in the written respiratory protection program.

8. All protective clothing including work clothing and safety boots shall be properly disposed of or decontaminated at the completion of the work day.

9. Level D shall be the minimum level of protection set for all primary operations performed, unless an upgrade is required in accordance with the Contractor’s SHERP.

1.12 PERSONAL HYGIENE AND DECONTAMINATION

A. All on-site personnel performing or supervising remedial work within a hazardous work area, or exposed or subject to exposure to hazardous chemical vapors, liquids, or contaminated solids shall observe and adhere to the personnel hygiene-related provisions of this paragraph. A detailed discussion of personnel decontamination protocols to be followed by site workers shall be submitted as part of the SHERP. Personnel found to be disregarding the personal hygiene-related provisions of the SHERP shall be barred from the site. In addition the following conditions and procedures shall be followed:

1. Provide and require use by personnel of:
   a. Storage and disposal containers for used disposable outerwear.
   b. Hand washing facilities.
   c. A facility for changing into and out of and storing work clothing separate from street clothing.
   d. A designated lunch and/or break area.
   e. A smoking area.

2. Disposable outerwear shall not be reused, and when removed, shall be placed inside disposal containers provided for this purpose.

3. Smoking and chewing shall be prohibited except in a designated Contractor provided smoking area.

4. Eating and drinking shall be prohibited except in a designated Contractor provided lunch or break area.

5. All outerwear shall be removed prior to entering the lunch area or smoking area and prior to cleansing hands.

6. Contractor personnel shall be required to thoroughly cleanse their hands and other exposed areas before entering the smoking or lunch area.

1.13 AIR MONITORING

A. General Requirements

1. The Contractor's HSM shall design, develop, and implement an Air Monitoring Program (if required) to detect the release of any volatile organic compounds.

2. Information gathered during the air monitoring program shall be used to determine appropriate safety and personnel protective measures to be implemented, during the cleanup operations and to document onsite employees exposures.

B. General Responsibilities

1. The HSM shall be responsible for establishing air monitoring strategies and protocols using an organic vapor analyzer (OVA) in order to quantify the airborne release of organic vapors during work. These strategies and protocols shall address appropriate air monitoring for volatile organic compounds in the active work zones of the site. This will include, at a minimum, areas in which intrusive activities are being conducted.

2. Establish and document baseline (background) air quality conditions prior to commencement of work, for conducting air monitoring during onsite work, and for documenting air quality conditions after completion of work.

3. All air monitoring equipment required shall be provided by the Contractor and shall be maintained and calibrated according to EPA and NIOSH analytical methods and/or manufacturers' recommendations. Such maintenance and calibration data shall be recorded.

4. All air monitoring equipment shall be operated by personnel trained in their specific use (i.e., SSHO).

5. Action levels for air monitoring will be as follows:
   a. background levels - Level D
   b. 0 to 5 ppm above background levels - Level C
   c. greater than 5 ppm above background levels - stop work and notify the Engineer

6. Provide the support necessary for air monitoring during the program, for the interpretation of the analytical results and for the recording and documentation of the results.

1.14 EQUIPMENT DECONTAMINATION

A. All vehicles and equipment shall be decontaminated prior to leaving the site. The procedures for decontamination of vehicles and equipment shall be outlined in the SHERP. Monitoring all vehicle decontamination prior to exiting the site.

1. Personnel engaged in vehicle decontamination shall wear protective equipment including disposable clothing and respiratory protection consistent with the requirements of this specification and the SHERP.

2. All equipment involved in intrusive activities in which exposure to contaminated water might occur shall undergo equipment decontamination procedures. As a minimum, this shall include a high-pressure wash area for equipment and vehicles and a steam cleaning system for use after the mud and/or site material has been cleaned from the equipment.

3. All decontamination wastewater shall be contained onsite and disposed of by the Contractor. No water residues from decontamination procedures shall be discharged to the environment.

B. The following EPA Standard Operating Procedures (SOP), as amended, for field application shall be used to wash or decontaminate all equipment that comes in contact with contaminated water.

1. Cleaning Procedures for Stainless Steel or Metal Sampling Equipment Used for the Collection of Samples for Trace Organic Compounds and/or Metals Analyses, subsection B-4, Appendix B, Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. Environmental Protection Agency, Region IV, Environmental Services Division, Athens, Georgia, April 1, 1986.
   a. Wash equipment thoroughly with a phosphate free, laboratory grade detergent and steam clean using a brush to remove any particle matter or surface film.
   b. Rinse equipment thoroughly with steam cleaner.
   c. Rinse equipment thoroughly with deionized water.

d. Rinse equipment thoroughly with pesticide grade isopropyl alcohol and allow to air dry. If not enough time is available to air dry, rinse with organic-free water.
e. Wrap equipment completely with aluminum foil to prevent contamination during storage, if necessary.

C. All water used for decontamination, excluding deionized water shall be potable, meeting FDER standards for public potable water supply.

D. Whenever handling decontaminated ("clean") equipment, disposable latex gloves shall be worn. Gloves shall be discarded once used. Whenever handling or rinsing with isopropyl alcohol, personnel shall wear eye protection, gloves, and neoprene laboratory aprons.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01110
ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water and land, and involves management of noise and solid waste, as well as other pollutants.

C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area.

D. This Section is intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.

E. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the Massachusetts Department of Environmental Protection and Local Conservation Commission. Contractor shall prepare sedimentation and erosion control drawings meeting the requirements for approval by all appropriate regulatory agencies. Upon approval, furnish two copies of the approved Drawing to the Engineer.

1.02 APPLICABLE REGULATIONS

A. Comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement.

1.03 NOTIFICATIONS

A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or local requirements. After receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly,

the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.04 IMPLEMENTATION

A. Prior to commencement of the work, meet with the Engineer to develop mutual understandings relative to compliance with these provisions and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when approved by the Engineer and incorporate permanent control features into the project at the earliest practicable time.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EROSION CONTROL

A. Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures, such as siltation basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Flow of surface water into excavated areas shall be prevented. Ditches around construction area shall also be used to carry away water resulting from dewatering of excavated areas. At the completion of the work, ditches shall be backfilled and the ground surface restored to original condition.

3.02 PROTECTION OF STREAMS AND SURFACE WATERS

A. Take all precautions to prevent, or reduce to a minimum, any damage to any stream or surface water from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, that contains oils or sediments that will reduce the quality of the water in the stream, shall not be directly returned to the stream. Divert such waters through a settling basin or filter before being directed into streams or surface waters.

B. Do not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.

C. Take all preventative measures to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the Massachusetts Department of Environmental Protection. Submit two copies of approved contingency plans to the Engineer.

D. Water being flushed from structures or pipelines after disinfection, with a Cl_2 residue of 2 mg/L or greater shall be treated with a dechlorination solution, in a method approved by the Engineer, prior to discharge. The Owner also treats finished potable water with chloramines. The Contractor must provide a proper dechlorination/dechloramination solution that effectively

removes the chloramines prior to discharging the water into the environment. This method must be approved by the Engineer prior to dechloramination

3.03 PROTECTION OF LAND RESOURCES

A. Restore land resources within the project boundaries and outside the limits of permanent work to a condition, after completion of construction that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.

B. Outside of areas requiring earthwork for the construction of the new facilities, do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.

C. Before beginning operations near them, protect trees that may possibly be defaced, bruised, injured, or otherwise damaged by the construction equipment, dumping or other operations, by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly.

D. Any trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to their original condition. The Engineer will decide the method of restoration to be used and whether damaged trees shall be treated and healed or removed and disposed of.

1. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.

2. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed and replaced.

E. The locations of the Contractor's storage and other construction buildings required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be cleared as shown on the Drawings and approved by the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for approval of the Engineer.

F. If the Contractor proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least ten days prior to scheduled start of such temporary work.

1. A layout of all temporary roads, excavations, embankments and drainage to be constructed within the work area.

2. Details of temporary road construction.

3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.

4. A landscaping drawing showing the proposed restoration of the area. Indicate the proposed removal of any trees and shrubs outside the limits of existing clearing area. Indicate locations of guard posts or barriers required to control vehicular traffic and protect trees and shrubs to be maintained undamaged. The Drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the Contractor's approved drawings 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.

G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as specified or as approved by the Engineer.

H. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.04 PROTECTION OF AIR QUALITY

A. Burning - The use of burning at the project site for the disposal of refuse and debris will not be permitted.

B. Dust Control - Maintain all excavations, embankment, stockpiles, access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.

C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may be permitted with approval from the Engineer.

D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor shall have sufficient competent equipment on the job to accomplish this. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer.

3.05 NOISE CONTROL

A. Make every effort to minimize noises caused by the construction operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with Federal and State regulations.

3.06 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

A. Maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

END OF SECTION

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SECTION 01170
SPECIAL PROVISIONS

PART 1 GENERAL

1.01 GENERAL OBLIGATIONS OF THE CONTRACTOR

A. General obligations of the Contractor shall be as set forth in the Contract Documents. Unless special payment is specifically provided in Section 01025, all incidental work and expense in connection with the completion of work under the Contract will be considered a subsidiary obligation of the Contractor and all such costs shall be included in the appropriate items in the Bid Form in connection with which the costs are incurred.

1.02 SITE INVESTIGATION

A. The Contractor shall satisfy himself as to the conditions existing within the project area, the type of equipment required to perform the work, the character, quality and quantity of the subsurface materials to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the Drawings and related Sections of the Specifications. Any failure of the Contractor to acquaint himself with the available information will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusions or interpretation made by the Contractor on the basis of the information made available by the Owner.

1.03 COORDINATION WITH LOCAL AGENCIES

A. Provide the Owner and Engineer with a list of after-hours telephone numbers by which appropriate Contractor personnel may be contacted in the event of emergencies.

B. Supply the Engineer, Owner, local Police Department, local Fire Department, and local School Department with the following information:

1. A list of streets and intersections where work will be in progress to be supplied at intervals as required by the Engineer.

2. Areas where approved road closures and/or detours are in effect.

3. Immediate notification of any water main, drain, sewer, gas, buried electric, or other utility breaks.

Contractor shall update and provide this information on a weekly basis.

C. Reimburse the Owner for the actual cost of the services of Owner personnel required during other than regular working hours.

D. Maintain pavement as specified in Division 2 and provide the Owner with an address where the Contractor may be reached when not at the site. Upon notification by the Owner or the Engineer, promptly make such repairs as necessary to paved surfaces. The Contractor shall meet all requirements of the Owner for pavement restoration.

1.04 PUBLIC UTILITIES

A. Comply with the requirements of the Commonwealth of Massachusetts Statute - Chapter 82, Section 40, for excavations in public and private property. Compliance shall include the following:

1. Notify public utility companies in writing at least 72 hours (excluding Saturdays, Sundays and legal holidays) but not more than 30 days before excavating in areas where underground utility plant (pipes, cables, manholes, etc.) exist.

2. Provide the Utility Companies with a schedule of the activities in areas where the utilities exist.

3. Notify utility companies of any damage to their utilities resulting from construction operations.

B. Notify DIGSAFE at 1-888-344-7233 at least 72 hours before digging, trenching, blasting, demolishing, boring, backfilling, grading, landscaping or other earth moving operations in any public ways, rights of way and easements.

1.05 PROGRESS SCHEDULE

A. Submit a progress schedule before starting any work, in accordance with the General Conditions. A schedule shall be provided in PDF format and updated weekly for the duration of the project.

B. Review and update the progress schedule on a weekly basis with the Owner and the Engineer. Provide sufficient detail required by the Owner, Engineer, and local and state agencies. The progress schedule shall be adjusted as required in accordance with the General Conditions.

1.06 PROVISIONS FOR DEWATERING AND DRAINAGE AND CONTROL OF EROSION

A. Take sufficient precautions during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens and calcium chloride into the supplies and surface waters of the State. Special precautions shall be taken in the use of construction equipment to prevent operations which promote erosion.

B. Disposal of drainage shall be in an area approved by the Owner. Prevent the flow or seepage of drainage back into the drainage area. Drainage shall not be disposed of until silt and other sedimentary materials have been removed. Particular care shall be taken to prevent the discharge of unsuitable drainage to a water supply or surface water body.

C. Should the Contractor propose to discharge water from dewatering and drainage operations to a wetland, stream, river, or other surface water resource, the Contractor shall prepare a Stormwater Pollution Prevention Plan and file a National Pollutant Discharge Elimination System (NPDES) Notice of Intent for discharge.

D. As a minimum, the following shall apply:

1. In cross country areas brush and stumps shall not be removed until no more than 1 week prior to the start of demolition or pipe laying in that area. The existing ground surface shall be disturbed as little as possible until no more than 1 week prior to the start of demolition or pipe laying.

2. Staked bales of hay and/or silt fence shall be provided at points where drainage from the work site leaves the site, to reduce the sediment content of the water. Sufficient bales of hay shall be provided such that all flow will filter through the hay. Other methods, which reduce the sediment content to an equal or greater degree, may be used as approved by the Engineer.

3. Drainage leaving the site shall flow in a manner to prevent erosion.

4. Loaming and seeding or mulching of cross-country areas shall take place as soon after laying of the pipeline as practicable. This shall be considered part of the pipeline work and full payment for the pipeline work may not be made until it has been completed.

E. Measures for control of erosion shall be adequate to assure that turbidity in the receiving water will not be increased more than 10 standard turbidity units (s.t.u.), or as otherwise required by the State or other controlling body, in waters used for public water supply or fish unless limits have been established for the particular water. In surface water used for other purposes, the turbidity shall not exceed 25 s.t.u. unless otherwise permitted.

1.07 PERMITS

A. Obtain all necessary permits required for proper execution of the project prior to commencement of the Work. Fill out all forms and furnish all drawings required to obtain the permits. A copy of each permit shall be submitted to the Engineer. Work shall not commence on any phase of the work requiring a permit until the permit is obtained. All fees associated with these permits shall be paid by the Contractor as part of the work.

B. Obtain required street opening permits for excavations within streets or sidewalk areas.

C. Contractor shall strictly follow the requirements of Chapter 22, Article II of the New Bedford City Code (latest version) which includes a requirement that all applications for permits to disturb City street surfaces for any reason including the installation or repair of water mains must be accompanied by a certified check in an amount to be determined by the Commissioner of the New Bedford Department of Public Infrastructure (DPI). Contractor is responsible for all fees required by the City of New Bedford in obtaining these permits with the DPI. Contractor shall determine the current permitting fees prior to submitting the Bid for this project and the Contractor shall be solely responsible for paying all permitting fees. This check is to be held by the DPI as surety that the disturbed street surface will be properly and permanently repaired by the applicant, and will be refunded to the applicant upon certification by a City Inspector that the repair is satisfactory. Any minor expense incurred by the City arising from the pavement disturbance will be deducted from this surety check before refunding same. Major expenses will continue to be handled through the applicant's bonding company. Any complaints requiring deductions from the surety deposit will be noted in the applicant's performance record in the DPI Engineering Office, and can be considered cause for refusal of future permits. The same

Ordinance amendment also makes positive a three year period following the completion of a street pavement repair during which the applicant is held responsible for the condition of the repair.

D. Contractor shall obtain all required permits by the Owner, as outlined in the City of New Bedford Construction Specifications, latest edition.

1.08 ASBESTOS CEMENT (AC) PIPE ABATEMENT REQUIREMENTS

A. The Contractor shall either be, or employ the services of a Subcontractor who is, licensed in the Commonwealth of Massachusetts to perform asbestos pipe abatement, if cutting and removing AC pipe is required. All work associated with the handling of asbestos cement pipe shall be conducted only by the licensed party.

B. Comply with all the laws, ordinances, codes, rules and regulations of the local, state and federal authorities including the requirements of the 29 CFR, Part 1910 & 1926; 40 CFR, Part 61 and 763; and 453 CMR, 6.00.

C. Execute all notifications and manifests, and obtain and pay for all permits and licenses for removing, handling and disposing of the AC pipe.

D. Existing AC pipe shall not be saw cut. The collar at each joint shall be removed and then the section of pipe shall be removed from the trench without disturbing the AC pipe to remain in service.

E. Submit to the Engineer the following items prior to the performance of work associated with asbestos cement pipe.

1. Copy of licenses to perform asbestos abatement work.

2. Copy of training certificates and Massachusetts Department of Labor and Workforce Development Certification for each worker.

3. OSHA medical surveillance documents conducted within the last 12 months for each worker.

4. Plan describing the method for performing air monitoring and sampling to be in compliance with OSHA Asbestos Standards.

5. Name, address and applicable licenses of the transporter and landfill that will handle and dispose of the asbestos cement pipe.

1.09 DISRUPTIONS TO THE EXISTING WATER SYSTEM

A. Make test pit excavations to locate existing water mains where shown on the Drawings or as directed by Engineer. If during the course of the excavation, the Contractor for whatever reason causes an existing water main to fail, restore service in the shortest possible time, working around the clock if necessary. Pay all costs associated with, or resulting from, all water main breaks. Cooperate with the Owner and local Fire Department in supplying emergency water.

B. Planned or scheduled water shutdowns require a minimum of 72 hours notice to impacted locations. Contractor shall be responsible for distributing required notices to all impacted locations for scheduled shutdowns.

C. Locations that require use of water on a daily basis shall be bypass fed during planned or long-term disruptions.

1.10 GREASE, OIL AND FUEL

A. All grease, oil, and fuel required for testing of equipment shall be furnished with the respective equipment. The Owner shall be furnished with a year's supply of required lubricants including grease and oil of the type recommended by the manufacturer with each item of equipment supplied.

1.11 TOOLS

A. Any special tools unique to a special piece of equipment (including grease guns or other lubricating devices) which may be necessary for the adjustment, operation, and maintenance of any equipment shall be furnished with the respective equipment.

B. Tools shall be furnished in heavy steel tool boxes complete with lock and duplicate keys.

1.12 NOISE LIMITATIONS

A. All equipment to be furnished under this Contract, unless specified otherwise in the Technical Specifications, shall be designed to insure that the sound pressure level does not exceed 85 decibels over a frequency range of 37.8 to 9600 cycles per second at a distance of three feet from any portion of the equipment, under any load condition, when tested using standard equipment and methods. Noise levels shall include the noise from the motor. Mufflers or external baffles shall not be acceptable for the purpose of reducing noise. Data on noise levels shall be included with the shop drawing submittal.

1.13 SPARE PARTS

A. Spare parts for certain equipment have been specified in the pertinent Sections of the Specifications. The Contractor shall collect and store all spare parts so required in an area to be designated by the Engineer. In addition, the Contractor shall furnish to the Engineer an inventory listing all spare parts, the equipment they are associated with, the name and address of the supplier, and the delivered cost of each item. Copies of actual invoices for each item shall be furnished with the inventory to substantiate the delivery cost.

B. Spare parts shall be packed in cartons, properly labeled with indelible markings with complete descriptive information including manufacturer, part number, part name and equipment for which the part is to be used, and shall be properly treated for 1 year of storage.

1.14 RIGHT TO KNOW LAW

A. The Contractor shall submit to the Department of Environmental Protection the Material Safety Data Sheets for all substances or mixture of substances used on the Project by him or his

subcontractors prior to commencing any work in accordance with the requirements of MGL Chapter 111F, Section 16.

1.15 HURRICANE AND TORNADO PREPAREDNESS PLAN

A. Within 30 days of the date of Notice to Proceed or Effective Date of the Agreement (the earlier of these dates), submit a Hurricane and Tornado Preparedness Plan to the Engineer and the Owner for approval. The Plan shall describe in detail the necessary measures which the Contractor will perform, at no additional costs to the Owner, in case of a hurricane or tornado warning. Revise Plan as required by the Engineer and Owner.

1.16 WEATHER PROTECTION

A. In the event of inclement weather, the Contractor shall protect the Work and materials from damage or injury from the weather. If, in the opinion of the Engineer, any portion of the Work or materials has been damaged by reason of failure on the part of the Contractor or subcontractors to protect the Work, such Work and materials shall be removed and replaced with new materials and Work to the satisfaction of the Engineer.

1.17 SERVICES OF MANUFACTURERS' REPRESENTATIVE AND OPERATING MANUALS

A. Bid prices for equipment furnished in all Divisions of these Specifications shall include the cost of a competent representative of the manufacturers of pipe, valves, and other equipment to supervise the installation, adjustment, and testing of the pipe, valves, equipment and corrosion protection system and to instruct the Owner's operating personnel on operation and maintenance.

B. See the detailed Specifications for additional requirements for furnishing the services of manufacturer's representatives.

C. A certificate from the manufacturer stating that the installation of the pipe, valves, and equipment system is satisfactory, that the unit has been satisfactorily tested, is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication, and care of the unit shall be submitted.

1.18 MAINTENANCE AND LUBRICATION SCHEDULES

A. Each Contractor's attention is directed to Paragraph 6.17 of the General Conditions and Section 01300 for all requirements relative to the submission of shop and working drawings for the mechanical equipment. For all mechanical and electrical equipment furnished, Contractor shall provide a list including the equipment name, and address and telephone number of the manufacturer's representative and Service Company so that service and/or spare parts can be readily obtained. In addition, a maintenance and lubrication schedule for each piece of equipment shall be submitted along with shop drawings. Submission shall be in six copies.

1.19 SEQUENCE OF CONSTRUCTION

A. Water main construction should be timed to avoid the need to place initial pavement during cold temperatures, as defined in Section 02576.

B. Final pavement may not be undertaken until the initial trench pavement or full width binder course has been in place as specified in Section 02576.

C. All work within paved areas, except maintenance of trench pavement and testing, is prohibited between November 15th and April 1st unless otherwise approved in writing by the Owner and Engineer. The Owner, subject to Owner's discretion and approval, may allow select work which does not require temporary bypass piping to proceed during this winter period. Owner will provide written authorization for any work to proceed during this period.

D. Once the Contractor begins to install pipe, fittings, valves and appurtenances within a street, the Contractor shall complete the installation prior to moving to another street or area. Relocation of sewers, drains and other work including paving can be performed on other streets if a separate crew is provided and approved by the Engineer.

E. Suggested sequence of construction and special work requirements are included in Section 01014.

1.20 COOPERATION BY THE OWNER

A. The Owner will within 48 hours of notice from the Contractor, operate all valves for isolating water mains, and for draining or admitting water to the various sections of the main, and at the request of the Contractor, dewater such sections of the mains to the extent possible by gravity, but the Contractor shall be responsible for removing the remainder of the water. No damage shall be claimed by the Contractor for delays in isolating pipelines, dewatering pipelines whether or not such dewatering is done by him or by the Owner nor shall any damage be claimed because of water leaking through closed valves after dewatering is completed. The Owner will be responsible for shutting down the necessary lines to allow the Contractor to install and restrain new valves as shown on the Drawings.

B. The water mains in the various sections of the work shall be refilled after new work is completed, and sterilized by the Contractor. All air must be purged from the mains before they can be re-pressurized, and the Contractor shall have no claim for delay while the Owner accomplishes this. The Owner may require the Contractor to make required tap for this purpose.

1.21 PLUGGED SERVICES

A. Where admittance to a premises is denied or impossible by virtue of absence and it is not possible to clear connection following the lining, the Contractor shall when directed by the Engineer make the necessary excavations at the main to restore the connections.

B. No direct payment shall be made for any work required for clearing plugged services and all costs connected therewith shall be included in the unit prices for cleaning and lining as agreed upon in the Bid Form. No claim shall be made for delays.

1.22 TRAFFIC AT INTERSECTIONS

A. The Contractor shall minimize interferences with the normal flow of traffic at all street intersections. The Contractor shall take all actions ordered by the Engineer to minimize the time his vehicles are located at street intersections. The Contractor shall establish work zones and

pedestrian safety per the Manual on Uniform Control Devices, 2000, of the MassDOT Standard Specifications, the Contract Plans and these Specifications.

1.22 INSTALLATION OF EQUIPMENT

A. Special care shall be taken to ensure proper alignment of all equipment. Units shall be carefully aligned on their foundations by qualified millwrights after their sole plates have been shimmed to true alignment at the anchor bolts. Anchor bolts shall be set in place and the nuts tightened against the shims. After the foundation alignments have been approved by the Engineer, the bedplates or wing feet of the equipment shall be securely bolted in place. The alignment of equipment shall be further checked after securing to the foundations, and after conformation of all alignments, the sole plates shall be finally grouted in place. The Contractor shall be responsible for the exact alignment of equipment with associated piping and under no circumstances, will "pipe springing" be allowed.

B. All wedges, shims, filling pieces, keys, packing, grout, or other materials necessary to properly align, level and secure apparatus in place shall be furnished by the Contractor. All parts intended to be plumb or level must be proven exactly so. Perform all grinding necessary to bring parts to proper bearing after erection.

C. Provide all openings, channels, chases, etc, in new construction and furnish and install anchor bolts and other items to be embedded in concrete, as required to complete the work under this Contract. Perform all cutting, coring and rough and finish patching required in existing construction for the work of all trades as provided in Section 01045.

D. Subcontractors shall furnish all sleeves, inserts, hangers, anchor bolts, etc., required for the execution of their work. It shall be their responsibility before the work of the Contractor is begun to furnish him with the above items and with templates, drawings or written information covering chases, openings, etc., which they require and to follow up the work of the Contractor as it progresses, making sure that their drawings and written instructions are carried out. Failing to do this, they shall be responsible for the cost of any corrective measures which may be required to provide necessary openings, etc. If the Contractor fails to carry out the directions given him, covering details and locations of openings, etc., he shall be responsible for any cutting and refinishing required to make the necessary corrections. In no case shall beams, lintels, or other structural members be cut without the approval of the Engineer.

END OF SECTION

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SECTION 01180
PIPE PENETRATIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install pipe penetration assemblies at all floor and wall penetrations as shown on the Drawings. This Section covers materials for the various pipe penetration configurations. Generally, penetration details are called out on the Drawings and referenced on the detail sheets. Where penetrations are required and not called out, it shall be assumed the most conservative penetration detail shown on the detail sheets shall be utilized as appropriate for the piping type, the wall or floor construction and the rating of the wall or floor penetrated.

1.02 SUBMITTALS

A. Submit manufacturers' literature, installation instructions, and where applicable, fire rating and certified test results of the various components on all items to be furnished in accordance with Section01300.

PART 2 PRODUCTS

2.01 PIPE SLEEVES

A. Unless otherwise shown all pipe sleeves shall be Schedule 40 galvanized steel pipe conforming to ASTM A53. Where indicated, provide a 2-inch minimum circumferential water stop welded to exterior of sleeve at its midpoint. Ends of sleeves shall be cut and ground smooth and shall be flush with the wall or ceiling and extend 2-inch above finished floors. Sleeves to be sealed with mechanical seals shall be sized in accordance with the seal manufacturer's recommendations. Sleeves to be sealed by caulking and sleeves for insulated piping shall be sized as required.

B. Where shown on Drawings for new concrete walls only and for up to 20-inch pipe diameter, install molded non-metallic high-density polyethylene sleeves (HDPE) with integral hollow, molded water-stop ring four inches larger than the outside diameter of the sleeve itself. Sleeve shall have end caps for forming and reinforcing ribs, and shall be domestically manufactured. Sleeves shall be Century-Line as manufactured by Pipeline Seal & Insulator, Inc., Houston, TX, or equal.

C. Where shown on Drawings for new concrete walls only and for pipe diameters 20 to 60 inches, install molded HDPE modular interlocking discs to make the width of the wall. Discs shall be corrugated to prevent water migration between sleeve and concrete. Discs shall be domestically manufactured, Cell-Cast as manufactured by Pipeline Seal & Insulator, Inc., Houston, TX, or equal.

D. External wall penetrations 36-inch diameter and less may be made by means of a ductile iron sleeve capable of being bolted directly to the formwork. Seal of the annular space between the carrier pipe and the sleeve shall be made by means of a confined rubber gasket and be capable of withstanding 350 psi. Sleeve shall have an integrally cast waterstop of 1/2-inch minimum thickness, 2-1/2-inch minimum height. Sleeves shall be by Omni-Sleeve, Malden, MA or equal.

2.02 WALL CASTINGS

A. Unless otherwise shown, wall castings shall be ductile iron conforming to ANSI/AWWA A21.51/C151, thickness Class 53, diameter as required. Flanges and/or mechanical joint bells shall be drilled and tapped for studs where flush with the wall. Castings shall be provided with a 2-inch minimum circumferential flange/waterstop integrally cast with or welded to the casting, located as follows: for castings set flush with walls located at the center of the overall length of the casting; for castings which extend through wall located within the middle third of the wall.

2.03 SEALING MATERIALS

A. Mechanical seals shall consist of rubber links shaped to continuously fill the annular space between the pipe and the wall opening or sleeve. Link pressure plates shall be molded of glass reinforced nylon. Hardware shall be mild steel with a 60,000 psi minimum tensile strength and 2-part Zinc Dichromate coating per ASTM B-633 and Organic Coating, tested in accordance with ASTM B-117 to pass a 1,500-hour salt spray test. Type 316 Stainless Steel hardware shall be used in chemical areas, for submerged service and for penetrations in tanks containing sludge or wastewater. Links shall be colored throughout elastomer for positive material identification. Each link shall have permanent identification of the size and manufacturer's name molded into the pressure plate and sealing element. Completed sealing system shall be duty pressure rated for 20 psig differential pressure. Link material shall be EPDM for all services except fire rated assemblies, fire rated seals shall use silicone link material. Mechanical seals shall be PSI-Thunderline/ Link-Seal as manufactured by Pipeline Seal & Insulator, Inc., Houston, TX, or pre-approved equal.

B. Sealant shall be a two-part foamed silicone elastomer by Dow Corning Co., Product No. 3-6548 silicone R.T.V.; 3M brand fire barrier products caulk C.P. 25 and 3M brand moldable putty MP+; or Flame-Safe fire stop systems FS-900 by Rectorseal. Sealant bead configuration, depth and width shall be in accordance with manufacturer's recommendations.

2.04 MISCELLANEOUS MATERIALS

A. Bonding compound shall be Sikadur Hi-Mod epoxy by Sika Corp.; Euco 452 by Euclid Chemical Corp.; Master Builders Company or equal.

B. Non-shrink grout shall be Masterflow 713 by Master Builders Co.; Euco NS by Euclid Chemical Co.; Five Star Grout by U.S. Grout Corp. or equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. Assemble and install components of pipe penetration assemblies as detailed on the Drawings.

END OF SECTION

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SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This Section includes the requirements for compiling, processing and transmitting submittals required for execution of the project.

B. Submittals are categorized into two types: Action Submittals and Informational Submittals, as follows:

1. Action Submittal: Written and graphic information submitted by the Contractor that requires the Engineer's approval. The following are examples of action submittals:
   a. Shop drawings (including working drawings, valve schedule, and product data)
   b. Samples
   c. Operation & maintenance manuals
   d. Site Usage Plan (Contractor's staging - including trailer siting and material laydown area)
   e. Schedule of values
   f. Payment application format
   g. Other requirements found within the technical specifications

2. Informational Submittal: Information submitted by the Contractor that does not require the Engineer's approval. The following are examples of informational submittals:
   a. Shop Drawing Schedule
   b. Construction Schedule
   c. Statements of Qualifications
   d. Health and Safety Plans
   e. Construction Photography and Videography
   f. Work Plans
   g. Maintenance of Traffic Plans
   h. Outage Requests
   i. Test Records and Reports
   j. Vendor Training Outlines/Plans
   k. Test and Start-Up Reports
   l. Certifications
   m. Record Drawings
   n. Record Shop Drawings
   o. Submittals required by laws, regulations and governing agencies
   p. Submittals required by funding agencies
   q. Other requirements found within the technical specifications
   r. Warranties and Bonds
   s. As-Built Surveys
   t. Contract Close-out Documents

1.02 RELATED WORK

A. Additional requirements may be specified in the General Conditions for the Contract.

B. Additional submittal requirements may be specified in the respective technical Specification Sections.

C. Contract closeout submittals are included in Section 01700.

D. Photographic and video documentation are included in Section 01322.

E. Applications for Payment are included in Section 01026.

F. Project Record Documents are included in Section 01720.

G. Requests for Information are included in Section 01038.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. All submittals shall be clearly identified as follows:

1. Date of Submission.

2. Project Number.

3. Project Name.

4. Contractor Identification.
   a. Contractor.
   b. Supplier.
   c. Manufacturer.
   d. Manufacturer or supplier representative.

5. Identification of the Product.

6. Reference to Contract Drawing.

7. Reference to specification section number, page and paragraph(s).

8. Reference to applicable standards, such as ASTM or Federal Standards numbers.

9. Indication of Contractor's approval.

10. Contractor's Certification statement.

11. Identification of deviations from the Contract Documents, if any.

12. Reference to previous submittal (for resubmittals).

13. Made in America (when required by the Contract).

B. Submittals shall be clear and legible, and of sufficient size for legibility and clarity of the presented data.

C. Submittal Log. Maintain a log of all submittals. The submittal log shall be kept accurate and up to date. This log should include the following items (as applicable):

1. Description.

2. Submittal Number.

3. Date transmitted to the Engineer.

4. Date returned to Contractor (from Engineer).

5. Status of Submittal (Approved/Not Approved/etc.).

6. Date of Resubmittal to Engineer and Return from Engineer (if applicable and repeat as necessary).

7. Date material released for fabrication.

8. Projected (or actual) delivery date .

D. Numbering System. Utilize the following submittal identification numbering system:

1. The first character shall be a D, S, M or I which represents Shop Drawing (including working drawings and product data), Sample, Manual (Operating & Maintenance) or Informational, respectively.

2. The next five digits shall be the applicable Section Number.

3. The next three digits shall be the sequential number of each separate item or drawing submitted under each Specification Section, in the chronological order submitted, starting at 001.

4. The last character shall be a letter, A to Z, indicating the submission (or resubmission) of the same submittal, i.e., "A" = 1st submission, "B" = 2nd submission, "C" = 3rd submission, etc. A typical submittal number would be as follows:
   a. D-03300-008-B.
   b. D = Shop Drawing 03300 = Section for Concrete.
   c. 008 = the eighth different submittal under this Section.
   d. B = the second submission (first resubmission) of that particular shop drawing.

E. Variances

1. Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.

2. Notify the Engineer in writing, at the time of re-submittal (resubmission), of all deviations from previous submissions of that particular shop drawing, except those deviations which are the specific result of prior comments from the Engineer.

F. Action Submittals

1. Shop Drawings, Working Drawings, Product Data and Samples.
   a. Shop Drawings.

1) Shop drawings as defined in the General Conditions, and as specified in individual Sections may include, but are not necessarily limited to, custom prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, valve schedules, wiring diagrams, coordination drawings, equipment inspection and test reports, and performance curves and certifications, as applicable to the work.
2) Contractor shall verify all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and coordinate each item with other related shop drawings and the Contract requirements.
3) All details on shop drawings shall clearly show the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted.
4) All shop drawings submitted by subcontractors and vendors shall be reviewed by the Contractor. Contractor shall confirm, materials, dimensions, catalog numbers, technical data and performance criteria; and shall coordinate with other related shop drawings and the Contract requirements. In addition, Contractor shall confirm existing field conditions and dimensions and assure that the submittal is coordinated and compatible with existing conditions. Submittals directly from subcontractors or vendors will not be accepted by the Engineer.
5) The Contractor shall be responsible the accuracy of the subcontractor's or vendor's submittal; and, for their submission in a timely manner to support the requirements of the Contractor's construction schedule. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractor or vendor to correct, before submission to the Engineer. All shop Drawings shall be approved by the Contractor.
6) Delays to construction due to the untimely submission of submittals will constitute inexcusable delays, for which Contactor shall not be eligible for additional cost nor additional contract time. Inexcusable delays consist of any delay within the Contactor's control.
7) Submittals for equipment specified shall include a listing of installations where identical or similar equipment manufactured by that manufacturer has been installed and in operation for a period of at least five years.

b. Working Drawings
1) Detailed installation drawings (sewers, equipment, piping, electrical conduits and controls, HVAC work, and plumbing, etc.) shall be prepared and submitted for review and approval by the Engineer prior to installing such work. Installation drawings shall be to-scale and shall be fully dimensioned.
2) Piping working drawings shall show the laying dimensions of all pipes, fittings, valves, as well as the equipment to which it is being connected. In addition, all pipe supports shall be shown.
3) Equipment working drawings shall show all equipment dimensions, anchor bolts, support pads, piping connections and electrical connections. In addition, show clearances required around such equipment for maintenance of the equipment.
4) Electrical working drawings shall show conduits, junction boxes, disconnects, control devices, lighting fixtures, support details, control panels, lighting and power panels, and Motor Control Centers. Coordinate all locations with the Contract Documents and the Contractor's other working drawings.

c. Product Data
   1) Product data, as specified in individual Specification Sections, include, but are not limited to, the manufacturer's standard prepared data for manufactured products (catalog data), such as the product specifications, installation instructions, availability of colors and patterns, rough-in diagrams and templates, product photographs (or diagrams), wiring diagrams, performance curves, quality control inspection and reports, certifications of compliance (as specified or otherwise required), mill reports, product operating and maintenance instructions, recommended spare parts and product warranties, as applicable.

d. Samples
   1) Furnish, samples required by the Contract Documents for the Engineer's approval. Samples shall be delivered to the Engineer as specified or directed. Unless specified otherwise, provide at least two samples of each required item. Materials or equipment for which samples are required shall not be used in the work unless and until approved by the Engineer.
   2) Samples specified in individual Specification Sections, include, but are not limited to: physical examples of the work (such as sections of manufactured or fabricated work), small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and other specified units of work.
   3) Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify and Contract Requirements.
   4) Approved samples not destroyed in testing shall be sent to the Engineer or stored at the site of the work. Approved samples of the hardware in good condition will be marked for identification and may be used in the work. Materials and equipment incorporated in work shall match the approved samples. Samples which fail testing or are not approved will be returned to the Contractor at his expense, if so requested at time of submission.

e. Professional Engineer (P.E.) Certification Form
   1) If specifically required in any of the technical Specification Sections, submit a Professional Engineer (P.E.) Certification for each item required, using the form appended to this Section.

2. Contractor's Certification
   a. Each shop drawing, working drawings, product data, and sample shall have affixed to it the following Certification Statement:
      1) "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements."
   b. Shop drawings, working drawings, and product data sheets 11-inch x 17-inch and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The transmittal cover sheet for each identified shop drawing shall fully describe the packaged data and include a listing of all items within the package.

3. The review and approval of shop drawings, working drawings, product data, or samples by the Engineer shall not relieve the Contractor from the responsibility for the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefor.

4. Project work, materials, fabrication, and installation shall conform to approved shop drawings (including working drawings and product data) and applicable samples.

5. No portion of the work requiring a shop drawing (including working drawings and product data) or sample shall be started, nor shall any materials be fabricated or installed before approval of such item. Procurement, fabrication, delivery or installation or products or materials that do not conform to approved shop drawings shall be at the Contractor's risk. Furthermore, such products or materials delivered or installed without approved shop drawings, or in non-conformance with the approved shop drawings will not be eligible for progress payment until such time as the product or material is approved or brought into compliance with approved shop drawings. Neither the Owner nor Engineer will be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

6. Operation and Maintenance Data
    a. Operation and maintenance data shall be submitted in assembled manuals as specified. Such manuals shall include detailed instructions for Owner personnel on safe operation procedures, controls, start-up, shut-down, emergency procedures, storage, protection, lubrication, testing, trouble-shooting, adjustments, repair procedures, and other maintenance requirements.

7. Schedule of Values
        1) On projects consisting of lump sums (in whole or in part) submit a proposed schedule of values providing a breakdown of lump sum items into reasonably small components – generally disaggregated by building, area, and/or discipline. The purpose of the schedule of values is for processing partial payment applications. If requested by the Engineer, provide sufficient substantiation for all or some items as necessary to determine the proposed schedule of values is a reasonable representation of the true cost breakdown of the Work. The schedule of values shall not be unbalanced to achieve early payment or over-payment in excess of the value of work or any other mis-distribution of the costs. If, in the opinion of the Engineer, the schedule of values is unbalanced, Contractor shall reallocate components to achieve a balanced schedule acceptable to Engineer.

8. Payment Application Format
        1) If an application form is included in the Contract Documents, use that form unless otherwise approved by the Engineer and Owner. If an application form is not included in the Contract Documents, Contractor may propose a form for approval.

9. Site Usage
    a. Submit a proposed site staging plan, including but not limited to the location of office trailers, storage trailers and material laydown. Such plan shall be a graphic presentation (drawing) of the proposed locations; and, shall include on-site traffic modifications, and temporary utilities, as may be applicable.

10. Other requirements of the technical Specification Sections
    a. Comply with all other requirements of the technical specifications for submittals specified requiring approval by the Engineer and/or Owner.

G. Informational Submittals

1. Shop Drawing Schedule
    a. Prepare and submit a schedule indicating when shop drawings are required to be submitted to support the as-planned construction schedule. The submittal schedule shall allow sufficient time for preparation and submittal, review and approval, and fabrication and delivery to support the construction schedule.

2. Construction Schedule
    a. Prepare and submit construction schedules and monthly status reports as specified.

3. Statements of Qualifications
    a. Provide evidence of qualification, certification, or registration, as required in the Contract Documents, to verify qualifications of licensed land surveyor, professional engineer, materials testing laboratory, specialty subcontractor, technical specialist, consultant, specialty installer, and other professionals.
    b. Health and Safety Plans
        1) When specified, prepare and submit a general company Health and Safety Plan (HSP), modified or supplemented to include job-specific considerations.

4. Construction Photography and Videography
    a. Provide periodic construction photographs and videography as specified – including but not limited to preconstruction photographs and/or video, monthly progress photos and/or video and post-construction photographs and/or video.

5. Work Plans
    a. Prepare and submit copies of all work plans needed to demonstrate to the Owner that Contractor has adequately thought-out the means and methods of construction and their interface with existing facilities.

6. Maintenance of Traffic Plans
    a. Prepare maintenance of traffic plans where and when required by the Contract Documents and by local ordinances or regulations. If Contractor is not already knowledgeable about local ordinances and regulations regarding maintenance of traffic requirements, become familiar with such requirements and include all costs for preparation and submittal of traffic management plans and all associated costs for permits and fees to implement the traffic management plan, in the bid amount. In addition, unless a supplemental payment provision is provided in the bid form, include the cost of police attendance, when required.

7. Outage Requests
    a. Provide sufficient notification of any outages required (electrical, flow processes, etc.) as may be required to tie-in new work into existing facilities. Unless specified otherwise elsewhere, a minimum of seven calendar days' notice shall be provided.

8. Proposed Testing Procedures

a. Prepare and submit testing procedures it proposes to use to perform testing required by the various technical specifications.

9. Test Records and Reports
   a. Provide copies of all test records and reports as specified in the various technical specifications.

10. Vendor Training Outlines/Plans
    a. At least two weeks before scheduled training of Owner's personnel, provide lesson plans for vendor training in accordance with the specification for O&M manuals.

11. Test and Start-up Reports
    a. Manufacture shall perform all pre-start-up installation inspection, calibrations, alignments, and performance testing as specified in the respective Specification Section. Provide copies of all such test and start-up reports.

12. Certifications
    a. Provide various certifications as required by the technical specifications. Such certifications shall be signed by an officer (of the firm) or other individual authorized to sign documents on behalf of that entity.
    b. Certifications may include, but are not limited to:
       1) Welding certifications and welders qualifications
       2) Certifications of Installation, Testing and Training for all equipment
       3) Material Testing reports furnished by an independent testing firm
       4) Certifications from manufacturer(s) for specified factory testing
       5) Certifications required to indicate compliance with any sustainability or LEEDS accreditation requirements indicated in the Contract Documents

13. Record Drawings
    a. No later than Substantial Completion, submit a record of all changes during construction not already incorporated into drawings – in accordance with specification on Project Record Documents.

14. Record Shop Drawings
    a. Before final payment is made, furnish one set of record shop drawings to the Engineer. These record shop drawings shall be in conformance with the approved documents and should show any field conditions which may affect their accuracy.
    b. Submittals required by laws, regulations and governing agencies
       1) Prepare and submit all documentation required by state or local law, regulation or government agency directly to the applicable agency. This includes, but is not limited to, notifications, reports, certifications, certified payroll (for projects subject to wage requirements) and other documentation required to satisfy all requirements. Provide to Engineer one copy of each submittal made in accordance with this paragraph.
    c. Submittals required by funding agencies
       1) Prepare and submit all documentation required by funding agencies. This includes, but is not limited to segregated pay applications and change orders when required to properly allocate funds to different funding sources; and certified payrolls for projects subject to wage requirements. Provide one copy of each submittal made in accordance with this paragraph to the Engineer.

15. Other requirements of the technical Specification Sections
    a. Comply with all other requirements of the technical specifications.

16. Warranties and Bonds
    a. Assemble a booklet or binder of all warranties and bonds as specified in the various technical specifications and in accordance with the specification on Warranties and Bonds; and provide two originals to the Engineer.

17. Contract Close-Out Documents
    a. Submit Contract documentation as indicated in the specification for Contract Close-out.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SUBMITTAL SCHEDULE

A. Provide an initial submittal schedule at the pre-construction meeting for review by Owner and Engineer. Incorporate comments from Owner or Engineer into a revised submittal schedule.

B. Maintain the submittal schedule and provide sufficient copies for review by Owner and Engineer. An up-to-date submittal schedule shall be provided at each project progress meeting.

3.02 TRANSMITTALS

A. Prepare separate transmittal sheets for each submittal. Each transmittal sheet shall include at least the following: the Contractor's name and address, Owner's name, project name, project number, submittal number, description of submittal and number of copies submitted.

B. Submittals shall be transmitted or delivered directly to the office of the Engineer, as indicated in the Contact Documents or as otherwise directed by the Engineer.

C. Provide copies of transmittals forms or cover letters (without attachments) directly to the Resident Project Representative.

3.03 PROCEDURES

A. Action Submittals

1. Contractor's Responsibilities
    a. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work of other related Sections, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required). Coordinate with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. Extensions to the Contract Time will not be approved for the Contractor's failure to transmit submittals sufficiently in advance of the Work.
    b. The submittals of all shop drawings (including working drawings and product data) shall be sufficiently in advance of construction requirements to allow for possible need of re-submittals, including the specified review time for the Engineer.

c. No less than 30 calendar days will be required for Engineer's review time for shop drawings and O&M manuals involving only one engineering discipline. No less than 45 calendar days will be required for Engineer's review time for shop drawings and O&M manuals that require review by more than one engineering discipline. Resubmittals will be subject to the same review time.
d. Submittals of operation and maintenance data shall be provided within 30 days of approval of the related shop drawing(s).
e. Before submission to the Engineer, review shop drawings as follows:
   1) make corrections and add field measurements, as required
   2) use any color for its notations except red (reserved for the Engineer's notations) and black (to be able to distinguish notations on black and white documents)
   3) identify and describe each and every deviation or variation from Contract documents or from previous submissions, except those specifically resulting from a comment from the Engineer on a previous submission
   4) include the required Contractor's Certification statement
   5) provide field measurements (as needed)
   6) coordinate with other submittals
   7) indicate relationships to other features of the Work
      highlight information applicable to the Work and/or delete information not applicable to the Work

f. Submit the following number of copies:
   1) Shop drawings (including working drawings and product data) – Submit no fewer than six, and no more than nine; five of which will be retained by the Engineer.
   2) Samples – three
   3) Site Usage Plan – three copies
   4) Schedule of values – four copies
   5) Payment application format – four copies
g. If Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, provide written notice thereof to the Engineer immediately; and do not release for manufacture before such notice has been received by the Engineer.
h. When the shop drawings have been completed to the satisfaction of the Engineer, carry out the construction in accordance therewith; and make no further changes therein except upon written instructions from the Engineer.

2. Engineer’s Responsibilities
   a. Engineer will not review shop drawings (including working drawings and product data) that do not include the Contractor's approval stamp and required certification statement. Such submittals will be returned to the Contractor, without action, for correction.
   b. Partial shop drawings (including working drawings and product data) will not be reviewed. If, in the opinion of the Engineer, a submittal is incomplete, that submittal will be returned to the Contractor for completion. Such submittals may be returned with comments from Engineer indicating the deficiencies requiring correction.
   c. If shop drawings (including working drawings and product data) meet the submittal requirements, Engineer will forward copies to appropriate reviewer(s). Otherwise, noncompliant submittals will be returned to the Contractor without action - with the Engineer retaining one copy.

d. Submittals which are transmitted in accordance with the specified requirements will be reviewed by the Engineer within the time specified herein. The time for review will commence upon receipt of submittal by Engineer.

3. Review of Shop Drawings (Including Working Drawings and Product Data) and Samples
   a. The review of shop drawings, working drawings, data and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:
      1) as permitting any departure from the Contract requirements
      2) as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials
      3) as approving departures from details furnished by the Engineer, except as otherwise provided herein
   b. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
   c. If the shop drawings (including working drawings and product data) or samples as submitted describe variations and indicate a deviation from the Contract requirements that, in the opinion of the Engineer are in the interest of the Owner and are so minor as not to involve a change in Contract Price or Contract Time, the Engineer may return the reviewed drawings without noting an exception.
   d. Only the Engineer will utilize the color "RED" in marking submittals.
   e. Shop drawings will be returned to the Contractor with one of the following codes.
      1) "APPROVED" – This code is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.
      2) "APPROVED AS NOTED" - This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
      3) "APPROVED AS NOTED/CONFIRM" - This combination of codes is assigned when a confirmation of the notations and comments is required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the confirmation.
      4) "APPROVED AS NOTED/RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the entire package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the Engineer within 30 calendar days of the date of the Engineer's transmittal requiring the resubmittal.
      5) "NOT APPROVED" – This code is assigned when the submittal does not meet the intent of the contract documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the contract documents.

6) "COMMENTS ATTACHED" – This code is assigned where there are comments attached to the returned submittal, which provide additional data to aid the Contractor.
7) "RECEIPT ACKNOWLEDGED (Not subject to Engineer's Review or Approval)" – This code is assigned to acknowledge receipt of a submittal that is not subject to the Engineer's review and approval, and is being filed for informational purposes only. This code is generally used in acknowledging receipt of means and methods of construction work plans, field conformance test reports, and health and safety plans.

f. Repetitive Reviews: Shop drawings, O&M manuals and other submittals will be reviewed no more than twice at the Owner's expense. All subsequent reviews will be performed at the Contractor's expense. Reimburse the Owner for all costs invoiced by Engineer for the third and subsequent reviews.

4. Electronic Transmission
   a. Action Submittals may be transmitted by electronic means provided the following conditions are met:
      1) The above-specified transmittal form is included.
      2) All other requirements specified above have been met including, but not limited to, coordination by the Contractor, review and approval by the Contactor, and the Contractor's Certification.
      3) The submittal contains no pages or sheets large than 11 x 17 inches.
      4) With the exception of the transmittal sheet, the entire submittal is included in a single file.
      5) The electronic files are PDF format (with printing enabled).
      6) In addition, transmit three hard-copy (paper) originals to the Engineer.
      7) The Engineer's review time will commence upon receipt of the hard copies of the submittal.
      8) For Submittals that require certification, corporate seal, or professional embossment (i.e., P.E.s, Surveyors, etc.) transmit at least two hard-copy originals to the Engineer. In addition, provide additional photocopied or scanned copies, as specified above, showing the required certification, corporate seal, or professional seal.

B. Informational Submittals

1. Contractor's Responsibilities
   a. Number of copies: Submit three copies, unless otherwise indicated in individual Specification sections
   b. Refer to individual technical Specification Sections for specific submittal requirements.

2. Engineer’s Responsibilities
   a. The Engineer will review each informational submittal within 15 days. If the informational submittal complies with the Contract requirements, Engineer will file for the project record and transmit a copy to the Owner. Engineer may elect not to respond to Contractor regarding informational submittals meeting the Contract requirements.

   b. If an informational submittal does not comply with the Contract requirements, Engineer will respond accordingly to the Contractor within 15 days. Thereafter, the

Contractor shall perform the required corrective action, including retesting, if needed, until the submittal, in the opinion of the Engineer, is in conformance with the Contract Documents.

3. Electronic Transmission
   a. Informational submittals may be transmitted by electronic means providing all of the following conditions are met:
      1) The above-specified transmittal form is included.
      2) The submittal contains no pages or sheets large than 11 x 17 inches.
      3) With the exception of the transmittal sheet, the entire submittal is included in a single file.
      4) The electronic files are PDF format (with printing enabled).
      5) For Submittals that require certification, corporate seal, or professional embossment (i.e., P.E.s, Surveyors, etc.)) transmit two hard-copy originals to the Engineer.

END OF SECTION

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P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a professional engineer registered in the Commonwealth of Massachusetts and that he/she has been employed by

_____ to design
(Company Name)

_____
(Insert P.E. Responsibilities)

in accordance with Specification Section _____ for the

_____.
(Name of Project)

The undersigned further certifies that he/she has performed the said design in conformance with all applicable local, state and federal codes, rules and regulations; and, that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the

_____
(Insert Name of Owner)

or Owner's representative within seven days following written request therefor by the Owner.

_____	_____
P.E. Name	Company Name
_____	_____
Signature	Signature
_____	_____
P.E. Registration Number	Title
_____	
Address	
_____	
Address	

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SECTION 01322
PHOTOGRAPHIC AND VIDEO DOCUMENTATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to provide photographic and video documentation of all the Project areas as specified herein.

B. Photographic and Video Documentation is required prior to construction, during construction, and upon completion of all construction work. The intent is to document conditions existing prior to construction to establish documentation and visual evidence to confirm conditions existing before work is started and to provide final visual evidence and a final record and documentation that all final restoration is at least equal to conditions that existed prior to construction.

1. Coverage shall include, but not be limited to, all existing building and facilities, roadways, sidewalks, curbs, driveways, buildings and structures, above ground utilities, landscaping, trees, shrubs, plantings, flowers, signage and all other physical features located within areas to be impacted by construction. The coverage may be expanded if directed by Engineer.

2. All photography and video recording shall be done during daylight hours. No photography or video recording shall be performed if weather is not acceptable, such as rain, fog, etc.

C. The Contractor shall understand that the purpose of documenting pre-existing conditions is to facilitate acceptance of final restoration and resolution of disputes of alleged or apparent damage caused by the Contractor. Therefore, it is in the best interest of the Contractor to provide good quality photographs and video recordings at all locations, with sufficient level of detail to identify existing conditions and document completed work and final restoration. In the absence of exculpatory documentation, the Contractor will be deemed to have caused the damage and will be required to repair or replace to the satisfaction of the Engineer and Owner.

D. The Engineer reserves the right to reject any photography or videography because of poor quality, poor lighting, poor focusing, or any other deficiency. Video recordings shall be panned slowly, and be free from shaking, jerking, or jittery motion. Photography and/or video recordings rejected by the Engineer shall be retaken at no cost to the Owner.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.

2. Periodic construction photographs.

3. Final completion construction photographs.

4. Preconstruction video recording.

5. Periodic construction video recording.

6. Final completion construction video recording.

1.03 RELATED WORK

A. Submittal procedures for submitting photographic and video documentation are included in Section 01300.

B. Project Record Documents are included in Section 01720.

1.04 REFERENCES

A. Not Used.

1.05 SUBMITTALS

A. Key Plan: Submit key plan of Project sites with notation of vantage points marked for location and direction of each photograph and/or video recording. Include same information as corresponding photographic and video documentation.

B. Digital Photographs: Submit image files within three days of taking photographs.

1. File Format: Minimum 2560 by 1920 pixels (5 Megapixels), in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folders named by location, accompanied by key plan file.

2. Submit digital photographs in data disc format acceptable to Engineer.
   a. Full-size (12-cm / 4.7-inch diameter) CD-R, DVD-R and DVD+R single-use recordable discs are acceptable.
   b. No other disc types (including but not limited to CD-RW, DVD-RW, or any 8-cm / 3.1-inch diameter Mini CD or DVD) or storage media (including but not limited to USB drives) will be accepted.
   c. Package each disc in a hard plastic case, clearly and indelibly labeled using self-adhesive labels specifically designed for labeling of discs. Include on the label the project name, program numbers, and the time period covered by the photographs contained on the disc.

3. Identification: Provide the following information with each image description in file metadata tag:
   a. Name of Project.
   b. Name of Engineer.
   c. Name of Contractor.
   d. Locations (and addresses).
   e. Date and time photographs were taken.
   f. Description of vantage points, indicating locations, and directions (by compass point).
   g. Unique sequential identifiers keyed to accompanying key plan.

C. Video Recordings: Submit video recordings within three days of recording.

1. File Format: Provide video recordings in a common digital video format such as .MP4 or .WMV in unaltered original files. The minimum resolution of all video files shall be 720p (1280 x 720, progressive). Submit video files, date and time stamped, on a digital video

disc in format acceptable to Engineer with folders named by location, accompanied by key plan file.

2. Submit video recordings in digital video disc format acceptable to Engineer.
   a. Full-size (12-cm / 4.7-inch diameter) CD-R, DVD-R and DVD+R single-use recordable discs are acceptable.
   b. No other disc types (including but not limited to CD-RW, DVD-RW, or any 8-cm / 3.1-inch diameter Mini CD or DVD) or storage media (including but not limited to USB drives) will be accepted.
   c. Package each disc in a hard plastic case, clearly and indelibly labeled using self-adhesive labels specifically designed for labeling of discs. Include on the label the project name, program numbers, and the time period covered by the video recordings contained on the disc.

3. Identification: With each submittal, provide the following information:
   a. Name of Project.
   b. Name of Engineer.
   c. Name of Contractor.
   d. Locations (and addresses).
   e. Date and time video recordings were recorded.
   f. Description of vantage points, indicating locations, and directions (by compass point)
   g. Unique sequential identifiers keyed to accompanying key plan.

1.06 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from Contractor and/or photographer and/or videographer to Owner for unlimited reproduction and use of photographic and video documentation.

B. Work produced under this Section shall be considered “work made for hire” under the Copyright Act and the Owner shall be the copyright owner of all aspects, elements and components. The Contractor transfers, assigns and conveys exclusive copyright ownership in and to such materials to the Owner free and clear of any liens, claims and encumbrances. The agreements between the Contractor and any photographer or videographer hired by the Contractor shall contain a provision containing these requirements.

C. All photographs and video recordings resulting from work under this Contract shall become the property of the Owner and may be used in whole or in part and in such manner or for such purpose as the Owner may desire without any additional compensation to the Contractor or Contractor’s hired photographer or videographer.

D. Neither the Contractor nor Contractor’s hired photographer or videographer shall retain any rights pertaining to the photographs or video recordings; nor shall they reproduce or otherwise publish or disseminate any of the media resulting under this Contract without prior written approval of the Owner.

PART 2 PRODUCTS

2.01 MEDIA

A. Digital Photographs:

1. Provide digital photographs produced by a dedicated, fixed- or interchangeable-lens digital camera. Images made with cell phones, tablets, webcams, and wearable cameras are not acceptable unless approved by the Engineer.

2. Digital Camera: Have a minimum image resolution of 5 megapixels, and produce images in JPEG (.JPG) format with image dimensions of not less than 2560 by 1920 pixels.

B. Digital Video Recordings:

1. Provide video recordings made with a dedicated digital video camera specifically made for video recordings. Video recordings made with cell phones, tablets, webcams, and wearable cameras are not acceptable unless approved by the Engineer.

2. Digital Video Camera: Have a minimum resolution of 720p (1280 x 720, progressive).

3. Provide video recordings in a common digital video format such as .MP4 or .WMV. The minimum resolution of all video files shall be 720p (1280 x 720, progressive). Submit video files on a digital video disc in format acceptable to Engineer.

4. The video system shall have the capability to transfer individual frames of video electronically into digital photographic files.

PART 3 EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs that clearly show the Work. Exhibit correct exposure and focus, accurate color balance, maximum depth of field, minimal optical distortion, and minimal noise. Photographs that, in the Engineer's opinion, do not meet these quality criteria will not be accepted and shall be re-taken at no additional cost to the Owner.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Location: Include location in file name for each image.

2. Date and Time: Include date and time in file name for each image.

3. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Engineer.

C. Preconstruction Photographs: Before starting construction, take photographs of all sites and areas and all surrounding features and properties, including existing items to remain during construction, from different vantage points, as directed by Engineer.

1. Flag excavation areas and construction limits before taking construction photographs.

2. Take photographs to show existing conditions and features before starting the Work.

3. Take photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.

4. Take additional photographs as required to record all conditions and features existing prior to construction.

D. Periodic Construction Photographs: Take photographs coinciding with progress of the work, including periodic construction photographs at all locations. Select vantage points to show status of construction and progress since last photographs were taken.

E. Engineer-Directed Construction Photographs: From time to time, Engineer will instruct about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

F. Final Completion Construction Photographs: Take color photographs after completion of work at all project locations for submission as project record documents.

G. Additional Photographs: Engineer may request photographs in addition to periodic photographs specified.

1. Three days' notice will be given, where feasible.

2. In emergency situations, take additional photographs within 24 hours of request.

3. Circumstances that could require additional photographs include, but are not limited to, the following:
   a. Immediate follow-up when on-site events result in construction damage or losses.
   b. Photographs to be taken at fabrication locations away from Project site.
   c. Substantial Completion of a major phase or component of the Work.
   d. Extra record photographs at time of final acceptance.
   e. Owner's request for special or additional photographs.

3.02 CONSTRUCTION VIDEO RECORDINGS

A. Video Recordings:

1. Produce bright, clear, sharp pictures with accurate colors and free from distortion, excessive shake, or any other form of picture imperfection. The audio track of each video recording shall reproduce precise and concise explanatory notes by the camera operator with proper volume, clarity and freedom from distortion and interference. Video recordings that, in the Engineer’s opinion, do not meet these quality criteria will not be accepted and shall be re-recorded at no additional cost to the Owner.

2. The appropriate panning speed and level of detail needed depends on the nature and size of the project areas.

3. Mount camera on tripod before starting recording unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video recording, record weather conditions and the actual temperature reading at Project site.

B. Narration: Video recordings shall be accompanied by descriptive audio. The audio shall be a narration describing and explaining the images being recorded. Describe scenes on video recording while video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, and direction (by compass point).

1. Confirm location, date and time at beginning and end of recording.

2. Begin each video recording with name of Project, Contractor's name, videographer's name, and Project location.

3. Special commentary shall be given for unusual conditions of buildings, sidewalks and curbing, foundations, trees and shrubbery, landscaping, etc.

C. Preconstruction Video Recording: Before starting construction, record video of all sites and surrounding areas and properties from different vantage points, as directed by Engineer. Video record all work areas to indicate pre-existing conditions. Video recording shall be as continuous as reasonably possible; and capture all areas (work areas and adjacent areas/properties) that will or may be affected by the Contractor during construction. Unless otherwise approved by the Engineer, the Engineer’s representative shall be in attendance during the pre-construction video.

1. Flag excavation areas and construction limits before recording construction video recordings.

2. Show existing conditions and features of each site before starting the Work.

3. Show existing buildings either on or adjoining sites to accurately record physical conditions at the start of construction.

4. Take additional video as required to record all conditions and features existing prior to construction.

D. Periodic Construction Video Recordings: Record video coinciding with progress of the work. Select vantage points to show status of construction and progress since last video recordings were recorded. Video recording shall be as continuous as reasonably possible; and capture all areas of new work and all existing areas that have been modified by the Contractor, as well as areas of incomplete work. Periodic construction video recording shall also document protection efforts taken by Contractor to protect site features.

E. Engineer-Directed Construction Video Recordings: From time to time, Engineer will instruct about number and frequency of video recordings and general directions on vantage points. Select actual vantage points and take video recordings to show the status of construction and progress since last videos were recorded.

F. Final Completion Construction Video Recordings: Take color video recordings after completion of work at all project locations for submission as project record documents. At completion of construction and after all restoration and landscaping have been completed, video record all

work areas to indicate and document status. Video recording shall be as continuous as reasonably possible; and capture all areas of new work and all existing areas that have been modified by the Contractor.

G. Additional Video Recordings: Engineer may request video recordings in addition to periodic photographs specified.

1. Three days' notice will be given, where feasible.

2. In emergency situations, take additional video recordings within 24 hours of request.

3. Circumstances that could require additional video recordings include, but are not limited to, the following:
   a. Immediate follow-up when on-site events result in construction damage or losses.
   b. Video recordings to be taken at fabrication locations away from Project site.
   c. Substantial Completion of a major phase or component of the Work.
   d. Extra record video recordings at time of final acceptance.
   e. Owner's request for special additional video recordings.

END OF SECTION

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SECTION 01370
SCHEDULE OF VALUES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit a Schedule of Values allocated to the various portions of the work, within 21 days after the effective date of the Agreement.

B. Upon request of the Engineer, support the values with data which will substantiate their correctness.

C. The accepted Schedule of Values shall be used only as the basis for the Contractor's Applications for Payment.

1.02 RELATED REQUIREMENTS

A. Standard General Conditions of the Construction Contract are included in Section 00700.

B. Application for Payment is included in Section 01026.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Type schedule on an 8-1/2-inch by 11-inch or 8-1/2-inch by 14-inch white paper furnished by the Owner; Contractor's standard forms and automated printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:

1. Title of Project and location.

2. Engineer and Project number.

3. Name and Address of Contractor.

4. Contract designation.

5. Date of submission.

B. Schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.

C. Identify each line item with the number and title of the respective Section.

D. For each major line item list sub-values of major products or operations under the item.

E. For the various portions of the work:

1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.

2. For items on which progress payments will be requested for stored materials, break down the value into:

a. The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials upon request by the Engineer.
b. The total installed value.

F. The sum of all values listed in the schedule shall equal the total Contract Sum.

1.04 SUBSCHEDULE OF UNIT MATERIAL VALUES

A. Submit a sub-schedule of unit costs and quantities for:

1. Products on which progress payments will be requested for stored products.

B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.

C. The unit quantity for bulk materials shall include an allowance for normal waste.

D. The unit values for the materials shall be broken down into:

1. Cost of the material, delivered and unloaded at the site, with taxes paid.

2. Copies of invoices for component material shall be included with the payment request in which the material first appears.

3. Paid invoices shall be provided with the second payment request in which the material appears or no payment shall be allowed and/or may be deleted from the request.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01445
PIPELINE TESTING AND CLEANING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and test and clean all new pipelines (including fittings, valves and appurtenances) installed under this Contract as specified herein, including chlorination of all potable water lines.

1.02 RELATED WORK

A. Buried pipelines and valves are included in Division 2.

1.03 REFERENCE STANDARDS

A. American Water Works Association

1. AWWA C651 - Disinfecting Water Mains.

B. National Sanitation Foundation (NSF)

1. NSF 61 - Drinking Water System Components Health Effects.

C. City of New Bedford Construction Specifications, latest edition.

D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Disinfection of all water mains and valves shall be in accordance with AWWA C651 standards.

B. Furnish all necessary equipment and labor for cleaning, testing and chlorinating the pipelines. The procedures and methods shall be approved by the Engineer.

C. Make any taps required and furnish all necessary caps, plugs, etc, as required in conjunction with testing pipelines. Furnish test pumps, gauges and any other equipment required in conjunction with carrying out the hydrostatic tests.

3.02 CLEANING PIPELINES

A. Ends of existing pipelines cut into shall be covered and capped during the construction duration to protect them from debris entering the existing pipelines until the final connections are made.

B. Thoroughly clean all new pipelines and water mains shut down to facilitate construction by flushing with water or other means to remove all potential stagnant water and/or debris which

may have inadvertently entered during the construction period. If, after this cleaning, obstructions remain, they shall be removed.

3.03 TESTING PRESSURE PIPELINES

A. All new pressure pipelines shall be pressure and leakage tested. Pipelines shall be subjected to a hydrostatic pressure of 150 psig or 50 percent above the normal operating pressure, whichever is greater, and this pressure maintained for at least 2 hours. The leakage test shall be conducted at the maximum operating pressure as determined by the Engineer, and this pressure shall be maintained for at least two hours. The test pump and water supply shall be arranged to allow accurate measurement of the water required to maintain the test pressure. Where applicable, hydrant branch gate valves shall remain open during this test. The amount of leakage which will be permitted shall be in accordance with AWWA C600, latest edition.

B. All valves and valve boxes shall be properly located, installed and operable prior to testing. Bulkheads shall be provided with a sufficient number of outlets for filling and draining the lines and for venting air.

3.04 TESTING OF NEW BUTTERFLY VALVES

A. All new butterfly valves larger than 16-inches in size shall be hydrostatically and leak tested on-site prior to installation as specified in Section 02640.

B. For Valve Work Areas shown on the Drawings, it is understood that the new valves are being installed with small sections of new piping to connect to existing water mains. The Contractor is not responsible for pressure and leakage testing the sections of existing pipelines that were shut down to facilitate installation of new work. Once the pipelines are reactivated following successful installation and testing of all new piping, fittings and valves and following cleaning and disinfection as required by AWWA 651 standards, the Contractor shall at minimum visually observe all new couplings and connection points between new piping installed and existing piping for the presence of any leaks. If any leaks are discovered, they shall be repaired by the Contractor at his/her expense, including all dewatering, cleaning, and disinfection to reactivate the pipelines once the problems have been corrected.

C. After water mains have been returned to service, monitor all air release valves for the presence of leaks. Operate all manual air release valves. Notify Engineer of the presence of any leaks and make repairs as needed.

3.05 CHLORINATION OF PIPELINES AND VALVES

A. Before being placed in service, all new potable water pipelines, fittings, valves and appurtenances and all existing pipelines shut down to facilitate construction shall be disinfected in accordance with AWWA C651 standards. The procedures shall be approved by the Engineer in advance.

B. All new potable water pipelines shall be chlorinated before being placed into service using the continuous feed method specified in AWWA C651, latest edition.

C. The location of the chlorination and sampling points will be determined by the Engineer in the field. Taps for chlorination and sampling shall be installed by the Contractor and shall meet AWWA C651 requirements. The Contractor shall uncover and backfill taps as required.

D. The general procedure for chlorination shall be first to flush all dirty or discolored water from the lines and then introduce chlorine in approved dosages through a tap at one end, while water is being withdrawn at the other end of the line. The chlorine solution shall remain in the pipeline for 24 hours. Disinfection shall be in accordance with AWWA C651 standard, latest edition.

E. Following the chlorination period, all treated water shall be flushed from the lines at their extremities and replaced with water from the distribution system. All treated water flushed from the lines shall be disposed of by discharging by means approved by the Owner and Engineer in accordance with all Federal, State and local standards. No discharge to any storm sewer or natural watercourse will be allowed. Engineer will require bacteriological sampling and analysis of the replacement water by the Contractor in full accordance with the latest edition of the AWWA C651 standard. Contractor shall make payment for bacteriological sampling and testing required by the Engineer and in accordance with Owner's Construction Specifications. The Contractor will be required to rechlorinate, if necessary, and the line shall not be placed into service until all requirements of the Commonwealth of Massachusetts and the Owner are met. Additional testing by a qualified individual for heterotrophic plate count (HPC) and volatile organic carbon (VOCs) shall be completed and recorded on forms as required by the Commonwealth of Massachusetts. Contractor shall forward to the Engineer all sampling and analysis forms to the Commonwealth of Massachusetts as required. Disinfection and final water quality results shall be consistent with the existing water quality in the Owner's water system in accordance with the Owner's Construction Standards and Specifications.

F. Special disinfecting procedures shall be used in connections to existing mains and where the method outlined above is not practical. Special disinfection procedures shall be submitted to the Engineer in advance for approval.

G. The Owner shall be notified at least 2 days prior to chlorination, and shall witness the procedure. If no one from the Owner is available, the procedure shall be rescheduled to accommodate the Owner.

H. Discharge of chlorinated water shall comply with all Federal, State and local standards. Provide sodium bisulfite for dechlorination prior to discharge. Discharge of chloraminated/dechloraminated water shall comply with Section 02120.

END OF SECTION

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SECTION 01500
TEMPORARY FACILITIES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Contractor shall provide offices to be used for the duration of the Contract for its own personnel and its subcontractors on the job site. Such offices shall be maintained in a clean, orderly condition. An authorized representative shall be present at all times the Work is in progress. Instructions received there from the Engineer shall be considered as delivered to the Contractor.

B. Furnish all labor, equipment, materials, and incidentals necessary and provide separate temporary facilities for the Contractor's use and the Engineer's use, as specified herein and as shown on the drawings.

C. Operate and maintain temporary facilities for the duration of the project and as directed by the Engineer. All cost and use charges for temporary facilities shall be included in the Contract Price.

D. Engineer’s Office: Contractor shall provide a temporary office facility for exclusive use by the Engineer for the duration of the project. The Contractor shall provide a separate office space in a building adjacent to the project area that is at least equal area as specified for use by the Engineer.

E. All temporary offices shall be installed in accordance with the local codes including permitting, and ADA accessibility, if applicable. Contractor is responsible for paying all fees.

F. Contractor shall connect temporary office space to municipal water and wastewater service (if available). Otherwise, provide septage pumping and bottled water service.

G. Contractor shall confirm all costs associated with temporary office location, but should anticipate a cost of about $2,000 per month for rent, utilities and supplies (Contractor is responsible for determining and confirming all costs).

H. Contractor shall review and coordinate use of any land during construction for storage of materials and equipment, staging areas, etc. with both Owner and Engineer at the preconstruction meeting for this project.

1.02 RELATED WORK

A. Control of Work is included in Section 01046.

B. Special Provisions are included in Section 01170.

C. Miscellaneous Work is included in Section 02901.

1.03 SUBMITTALS

A. Submit shop drawings and product data, in accordance with Section 01300, showing materials of construction and details of installation for:

1. Site Plan: Show the proposed locations for temporary facilities including offices, temporary utilities, storage containers/buildings, vehicle access and parking areas, material laydown and staging areas, temporary fencing, and other security measures.

2. Engineer's Field Office: Dimensioned floor plan, office systems, furnishings, and equipment.

3. Temporary Fence: Layout drawings which indicate dimensions, access to fire hydrants, gate locations and opening sizes, and other site-specific requirements.

4. Project Sign: Layout, graphics, and wording.

B. Submittals shall be received by the Engineer no later than the date of the Preconstruction Meeting.

1.04 QUALITY ASSURANCE

A. Temporary facilities shall comply with all applicable state and local ordinances, codes and regulations.

B. Coordinate with authorities having jurisdiction to inspect (and test if required) temporary facilities.

C. Obtain all required permits for temporary facilities.

1.05 DEFINITIONS

A. Duration of the project: The period of time from the date of the Notice to Proceed to the date of Final Completion, inclusive.

PART 2 PRODUCTS

2.01 MATERIALS

A. Temporary Fence: Fabric shall be No. 9 gauge galvanized wire woven in 2-inch diamond mesh with top and bottom twisted selvage. Intermediate and terminal posts shall be galvanized steel H or pipe, minimum 2-3/8-inch OD line posts, 2-7/8-inch OD corner and pull posts, and 1-5/8-inch OD top rails.

B. Project Sign: Plywood shall be A-A EXT-APA grade, 1-inch thick. Posts and braces shall be pressure treated lumber.

2.02 EQUIPMENT

A. Fire Extinguishers: Provide portable, UL-rated with class and extinguishing agent required by locations and classes of fire exposure. Provide at least one for each trailer/office.

B. Temporary Heat: Provide vented, self-contained, liquid propane gas or fuel oil heaters with individual space thermostatic control. Equipment shall be listed and labeled for type of fuel consumed and marked for intended use.

2.03 ENGINEER'S FIELD OFFICE

A. Provide minimum 1,600 square foot office space for the Engineer's exclusive use for the duration of the project. Field office shall have at least one office, one conference room, two bathrooms (one men's and one women's), one closet, and two exterior doors. Provide a separate building office space divided into at least three rooms and lavatories.

B. Provide separate toilet facilities for the exclusive use of the Engineer. The lavatory doors shall be equipped with a lock. The bathrooms shall include toilet, sink and faucet, and faucet, medicine cabinet with mirror, paper towel holder, light fixture, five-gallon capacity water heater, exhaust fan and vent.

C. The conference room shall include built-in plan table.

D. The engineer's field office shall be weather-tight construction with floor, walls, and ceiling completely insulated. Each room shall have a door. Each room shall have at least one operating window. Each window shall have a venetian blind and full insect screen. Provide fully insulated skirting on all sides of the field office trailer. Provide steps, platforms, handrails, and boot scrapers for each exterior door.

E. The office shall be provided with two exterior doors provided with Medeco lock systems (or equal), keyed alike. The Engineer shall be provided with four keys for all exterior doors. At each entrance, a wooden stairway with railing and 6-foot by 6-foot platform shall be provided. Each platform shall be provided with one McMaster-Carr Model 6255T14 Shoe and Boot Scraper securely mounted to the platform.

F. Furnishings

1. Contractor shall provide the following furnishings for the Engineer's temporary field office for the duration of the project. All furnishings shall be new – or in very good condition – subject to approval of the Engineer.
    a. Four 60-inch by 30-inch desks with file drawer and 5 drawers, all lockable with upholstered swivel type chair with arms for each desk.
    b. One 30-inch by 84-inch conference table
    c. Eight armless side chairs (stacking type)
    d. Two 54-inch by 30-inch folding tables
    e. Six file cabinet, 4-drawer, legal size, Hon No. HN-315C, or equal
    f. Four wastebaskets
    g. One rolling plan storage rack, 10-stick capacity
    h. One plan table/drafting table and elevated drafting chair with light
    i. One lockable storage cabinet, 72-inch high, 36-inch wide, and 18-inch deep
    j. Two steel bookcase units, 4 shelves high, Hon No. HN-S48 ABC, or equal
    k. One digital telephone answering machine
    l. 24 painted steel coat hangers
    m. One electric bottled water dispenser with hot and cold outlets and refrigerator unit. Adequate water bottles shall be provided (and paid for by the Contractor) until Final Completion.
    n. One wall-mounted first aid kit, McMaster-Carr 9501T1 or equal
    o. Two smoke detectors, with batteries
    p. Two dry erase boards, aluminum frame, 36-inch by 60-inch, markers and eraser, Quartet Model No. TS-S 535 or equal

q. One 1000-watt minimum 1.4-cubic-foot microwave oven
r. One 6-cubic-foot refrigerator
s. Commercial duty cross-cut shredder with basket, designed for 3 to 5 users, Fellowes Powershred SB-125i, or equal
t. One first aid kit, OSHA (1910.151.b) and ANSI (Z308.1-2003) compliant, suitable for ten people.
u. One coffeemaker Keurig K-Elite Single Serve Coffee Maker brewing system with K-cups for the duration of the project (at least three types of K-cups) with an estimated usage rate of 2 boxes of each type of K-cups per week, as well as creamers, sugar, and non-sugar sweeteners.

G. Equipment – Contractor shall provide the following equipment for the duration of the project. All equipment shall be new.

1. A multifunction photocopier, printer, facsimile and scanner with 50 sheet auto-feeder, capable of copying and printing letter-sized, legal-sized and 11x17-inch documents in both color and black and white. Contractor to provide paper and ink cartridges, as required, for the duration of the project.

2. Two land line telephones with answering machine with digital recorder.

3. Digital Camera: provide two new digital cameras for the Engineer's use for the project duration. Camera shall be a major brand name (e.g., Cannon, Nikon, Sony, Minolta, Olympic, Pentax, etc. – subject to the Engineer's approval) and shall have an automatic date function, 16 Megapixel or greater, 12x optical/4x digital zoom or better, and at least one GB of memory (on board or supplemental memory card). Contractor shall also provide six 64 GB memory cards, Class 10 or greater, by SanDisk or approved equal. The cameras shall each come complete with carrying case, memory storage card, rechargeable batteries, battery charger, flash memory reader, USB cables and all necessary software for download to the site computers. After completion of project the cameras will become the property of the Owner.

4. Four 8-outlet surge protectors with six-foot cord and minimum 1800-joule energy rating or greater; as manufactured by Belkin, or equal.

5. Computer Systems with Printers
   a. Provide computer systems and equipment as specified. All computer and related items are to be new and shall be provided at the beginning of the project within two weeks following execution of the Agreement**.** All programs and peripherals to be properly and fully loaded, connected, and operational (to become property of Owner):
      1) Two IBM/PC compatible laptops by Dell or approved equal each as follows (minimum requirements):
         a) Intel Core i7-4910MQ
         b) 16 GB RAM
         c) 500 GB Solid State Drive hard drive
         d) 17.3 FHD 1920x1080 screen size for laptops
         e) NVIDIA Quadro K3100M graphics
         f) Bluetooth
         g) 16x DVD +/- RW
         h) Camera
         i) Intel6300 wireless

j) Vpro
k) All new computers shall meet all the minimum requirements to run AutoCAD (latest edition)
l) Warranty – 3 years

2) For each new laptop computer, provide a docking station, protective carrying case, wireless keyboard/Bluetooth, and wireless mouse with wheel and Bluetooth.
3) Two 22-inch VGA color display monitor, and auxiliary keyboard and mouse (one each for each for each new computer)
4) Microsoft® Windows 7 (one for each new computer) (Windows 8 is not an approved equal)
5) Five McAfee Anti-Virus latest edition (one for each new computer)
6) Five 4-Terabyte external hard drive by MyBook or equal (USB 3.0)
7) Five Microsoft® Office 2013 Professional Edition™, latest version (one for each new computer)
8) One Printer: Hewlett Packard color laser printer (Pro MFP M476dw) or equal. Include black and color ink cartridges.
9) Three 5-Plug power directors
10) 8 surge protectors.
11) All cables necessary for docking stations, monitors, keyboards, printers, telephones, network, connection of five computers to printer and any other external devices and all services to provide an interconnected office computer system.

6. Tablets (to be turned over to and become the property of the Owner) with both Wi-Fi and cellular service capabilities to match Owner's current cellular service provider:
   a. 4 iPads, 32-GB, Space Gray (see https://www.apple.com/shop/buy-ipad/ipad-9-7/32gb-space-gray-wifi-cellular for make and model of specified iPad).
   b. Color of tablets to be confirmed/selected by the Owner. Coordinate these requirements with the Owner prior to purchase.
   c. Provide each iPad with a Defender Series Case by Otterbox. Cases shall be sized to match the iPad models provided.
   d. All tablets shall be provided at the beginning of the project, within two weeks following execution of the Agreement.

7. Contractor shall include $10,000 in their bid price for Miscellaneous Work and Cleanup specifically for furnishing and providing the Owner with other miscellaneous equipment required for this project.

H. Services

1. Provide the following services for the duration of the project. Services shall include all costs for installation, use, maintenance, and removal of all products, services and equipment billed by each provider for each service specified herein.

2. Field office shall have complete and fully functional electrical, plumbing, and HVAC systems. Provide at least two smoke detectors hard-wired into the electrical system. Perform all scheduled and unscheduled maintenance for all systems and as directed by the Engineer.

3. Weather protection: Contractor shall furnish, install and maintain temporary heat and enclosures to provide adequate working areas for personnel during the cold weather months. The Contractor shall furnish temporary heating units (UL or FM listed) to maintain reasonable temperatures within temporary enclosures.

4. Electrical System: Provide connection to temporary electric service. Comply with the electrical requirements. Provide main circuit panel, sufficient GFCI outlets and lighting in each room, exterior lights at each exterior door, and proper grounding of entire electrical system. Installation shall include entrance connectors, grounding, enclosed fused service switches and branch circuit fuse boxes. Separate circuits shall be provided for lighting and other electrically operated items. Separate circuits shall be provided for the water heater, the photocopier and three separate circuits for computers. Minimum circuit size shall be two-conductor No. 12 AWG. Use heavier conductors where required. The entire electrical system and trailer shall be properly grounded.
    a. Contractor shall furnish temporary light and power, including lamps and similar equipment as required to adequately light all work areas and with sufficient power capacity to meet the project needs. Make all necessary arrangements with the local electric company for temporary electric service and pay all expenses in connection therewith.
    b. Provide connections to existing facilities sized to provide service required for power and lighting. Contractor shall pay the costs of power used.
    c. Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 Volt plugs into higher voltage outlets. For connection of power tools and equipment, provide outlets equipped with ground-fault circuit interrupters, reset button and pilot light.
    d. Provide grounded extension cords. Use heavy duty cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if more than one length is required.
    e. Provide general service incandescent lamps as required for adequate illumination. Provide guard cages or tempered glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

5. Plumbing system: Connect to existing potable water supply. Provide hot water heater and hot and cold water to each fixture. A shutoff valve shall be installed at each fixture or appliance. All fixtures shall be approved house type and shall be vented and trapped. Connect waste pipes to existing sanitary system or a waste holding tank. All wastes shall be connected into one 4-inch line which shall be run into the existing sanitary system or waste holding tank(s). Heat trace and insulate exterior piping to prevent freezing. Where potable water service is not available, Contractor shall provide bottle water service with water chiller/dispenser. All plumbing and fixtures shall be in accordance with local laws and codes.

6. Lighting and outlets: Lighting shall be provided by fluorescent ceiling fixtures furnishing 20 foot-candles at desk height, uniform throughout. Each room shall be provided with a wall switch for ceiling fixtures. Each area shall be provided with two duplex convenience outlets. These outlets are in addition to the circuits provided for the appliances specified herein.

7. HVAC System: Provide central heating and air conditioning system with programmable thermostat. System shall be capable of maintaining an interior temperature of 70°F when the exterior temperature is 0°F and an interior temperature of 68°F when the exterior

temperature is greater than or equal to 100°F. The system shall be thermostatically controlled with a thermostat located on an interior partition, the exact location of which to be approved by the Engineer.

8. Temporary Air, Steam and Water: Provide all air, steam and water, including temporary piping and appurtenances required for cleaning and testing pipelines and equipment as required. Remove temporary piping and appurtenances upon approval of equipment being tested.

9. Bottled water service: Provide bottled water service complete with dispenser with hot and cold water taps and regular bottle and cup replenishment as directed by the Engineer.

10. Janitorial service: Provide janitorial services (at least weekly) that include dusting, sweeping, vacuuming, mopping, disinfection, and trash removal.

11. Sanitary service: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed in a fiberglass or other approved non-absorbent shell. Provide regular pumping of waste holding tank, if applicable, as needed.

12. Communications
    a. Install two telephone lines in the Engineer's field office for the Engineer's exclusive use:
        1) a line for a dedicated fax line
        2) a voice grade line with caller ID and call-waiting features

13. Internet Access
    a. Provide a high-speed Cable internet access for the duration of the project.
    b. Provide high speed internet access in the Engineer’s Field Office for the Engineer’s exclusive use. High speed internet access at minimum shall be capable of 5 mbps upload and 25 mbps download speeds. High speed internet access for Engineer’s use shall be Cable.
    c. Provide wireless internet capabilities within Engineer’s field office.

14. Pay all costs for installation, maintenance, and removal of the telephone and internet service and instruments, including cellular phone service. The monthly cost of all calls made and received by the Engineer, including toll and long-distance calls, shall be paid for by the Contractor for the duration of the project.

I. Supplies: Provide the following supplies for the duration of the project: copy paper, toner, toilet paper, paper towels, soap, light bulbs, coffee, and other consumables as required by the Engineer.

PART 3 EXECUTION

3.01 ENGINEER'S OFFICE

A. Engineer's office shall be set up and ready for occupancy within 30 days of the Notice to Proceed and prior to commencement of Work at the site. All systems, furnishings, equipment, and services specified herein shall be furnished, installed, and completely operational for the field office to be considered established.

1. Provide regular office cleaning services for the duration of the project.

2. Provide supplies including, but not limited to restroom supplies (toilet tissue paper, paper towel, and soap), as well as light bulbs, air conditioner filters, water, coffee, etc.

3. Provide office supplies for printers and fax machines, etc.

4. Supply all fuel for heating and pay all utility bills.

B. Install field office plumb and level.

C. Engineer's office shall be cleaned up and restored before Final Completion of the project.

3.02 CONTRACTOR'S FIELD OFFICE

A. Provide a temporary field office(s) for the Contractor's use for the duration of the project. An authorized representative of the Contractor shall be present at all times while the Work is in progress. Instructions received at the Contractors field office from the Engineer shall be considered delivered to the Contractor.

B. Locate field office(s) in accordance with approved shop drawings and as directed by the Owner.

C. Establish and occupy field office within 30 days of the Notice to Proceed, unless otherwise approved by the Engineer or Owner.

3.03 TEMPORARY POWER AND LIGHT

A. The Contractor shall furnish temporary light and power, complete with wiring, lamps and similar equipment as required to adequately light all work areas and with sufficient power capacity to meet the project needs. Make all necessary arrangements with the local electric company for temporary electric service and pay all expenses in connection therewith.

B. Provide connections to existing facilities sized to provide service required for power and lighting. Contractor shall pay the costs of power used.

C. Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 Volt plugs into higher voltage outlets. For connection of power tools and equipment, provide outlets equipped with ground-fault circuit interrupters, reset button and pilot light.

D. Provide grounded extension cords. Use heavy duty cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if more than one length is required.

E. Provide general service incandescent lamps as required for adequate illumination. Provide guard cages or tempered glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

3.04 TEMPORARY HEAT

A. Provide heat as may be necessary for thawing out and heating the ground or materials and for proper execution, protection and drying-out of the Work.

3.05 WEATHER PROTECTION

A. Contractor shall furnish, install and maintain temporary heat and enclosures to provide adequate working areas for personnel during the cold weather months.

B. The Contractor shall furnish temporary heating units (UL or FM listed) to maintain reasonable temperatures within temporary enclosures.

C. Weather protection shall comply with M.G.L. Chapter 149 Section 44G.

3.06 TEMPORARY AIR, STEAM AND WATER

A. Provide all air, steam and water, including temporary piping and appurtenances required for cleaning and testing pipelines and equipment. Remove temporary piping and appurtenances upon approval of equipment being tested.

3.07 SANITARY FACILITIES

A. Provide self-contained, single occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed in a fiberglass or other approved non-absorbent shell.

3.08 CONSTRUCTION AIDS

A. Provide temporary elevators, hoists, cranes, scaffolding and platforms as necessary to perform the Work. Provide temporary stairs where ladders are not adequate. Protect permanent stairs from damage from construction operations.

3.09 VEHICLE ACCESS AND PARKING

A. Provide temporary access roads, parking areas, traffic control devices and staging areas as approved by the Engineer and Owner.

B. Provide minimum 12-feet by 24-feet by 6-inch deep dense graded crushed stone or paved parking area adjacent to Engineer's field office for exclusive use by the Engineer for the duration of the project.

C. Clear snow and ice from all drives, walks, and stairs to maintain safe vehicle and pedestrian access to the site and facilities as directed by the Engineer.

3.10 TEMPORARY FENCE

A. Provide temporary fence as shown on the Drawings, as specified herein, and as the Contractor requires for site security.

1. Provide 6-feet high chain link fence with at least two vehicle and two pedestrian access gates. Gates shall be equipped with locking hardware and padlocks. Furnish two sets of keys to Engineer and Owner. Coordinate with local first responders for access during non-work hours.

2. Fence installation shall comply with ASTM F567. Post spacing shall not exceed 8-feet on center. Posts shall be set plumb in concrete footings.

3. Perform daily inspections of fence and immediately repair or replace damaged or compromised sections and as directed by the Engineer.

3.11 WASTE MANAGEMENT

A. Provide covered dumpster, minimum 4-cubic yards, dedicated for field office waste. Provide separate covered dumpster of adequate size for construction debris. Empty dumpsters on a regular basis and as directed by the Engineer. Dumpsters shall not exceed their capacities at any time.

3.12 PROJECT SIGNS

A. Furnish and install the project signs indicated in the Contract Documents. Signs shall be placed as directed by the Engineer; and, shall remain maintained in good condition for the life of the construction period.

B. Remove signs at final acceptance, unless otherwise directed.

3.13 REMOVAL AND RESTORATION

A. Remove each temporary facility complete when need for its service has ended and as approved by the Engineer. Coordinate removal of temporary facilities with authorities having jurisdiction.

B. Restore all improvements damaged by the installation, operation, and removal of the temporary facilities. Obtain prior approval from Owner and Engineer for restoration work. Comply with the restoration requirements of Section 01046.

END OF SECTION

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SECTION 01562
DUST CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Perform dust control operations, in an approved manner, whenever necessary or when directed by the Engineer, even though other work on the project may be suspended. Dust control shall be generally accomplished by the use of water; however, the use of calcium chloride may be used when necessary to control dust nuisance.

B. Calcium chloride shall conform to AASHTO M144, Type I and Massachusetts Department of Transportation Standard Specifications except the requirements for "total alkali chlorides" and other impurities shall not apply.

C. Methods of controlling dust shall meet all air pollutant standards as set forth by Federal and State regulatory agencies.

END OF SECTION

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SECTION 01570
TRAFFIC REGULATION

PART 1 GENERAL

1.01 REQUIREMENTS

A. All traffic control work performed by the Contractor shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) latest edition, the latest edition of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, the Contract Drawings and these Specifications. Where reference is made to one of the aforementioned publications, the revision in effect at the time of bid opening shall apply.

B. The Contractor shall furnish, install, operate and maintain equipment, services and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow during construction.

C. The Contractor shall follow the traffic control requirements shown on the Contract Drawings detailing all temporary changes in traffic control equipment, street or road closures, detours, etc. The Contractor shall make every effort to adhere to these requirements. The Owner and Engineer reserve the right to modify traffic control requirements through the course of the Contract.

D. The Contractor shall remove temporary equipment and facilities when no longer required and restore grounds to original or to specified conditions.

E. The Contractor shall notify all property owners at least 72 hours in advance of any work that will interfere with access to their residence or place of business.

F. No road shall be closed to traffic without the prior consent of the Engineer and the Owner.

G. Traffic control, including but not restricted to signing and devices, shall be provided for all openings in roads by the Contractor in accordance with Owner and State standards.

H. Special work hour limitations are discussed in Section 01046 and on the Contract Plans.

1.02 MINIMUM REQUIREMENTS FOR TRAFFIC CONTROL

A. The Contractor shall provide for access to all buildings including business and parking areas at all times.

B. The Contractor will allow for the maintenance of a minimum of one – 11 foot lane of traffic, in one direction, at all times.

C. Police details may be required at certain times in order to maintain safe traffic control within the project area. This will be determined by the Owner or Engineer. Policing is discussed in Section 01576.

D. The Contractor shall make every reasonable effort to avoid detours. No detour shall be allowed without prior approval from the Engineer and the Owner. A detailed Traffic Control Detour Plan

shall be submitted by the Contractor to the Engineer and Owner showing schedule, signing and control for the proposed detour. Said plan(s) shall be submitted at least 5 work days prior to the proposed detour and shall be subject to the review and approval of the Engineer and Owner.

1.03 SUBMITTALS

A. The Contractor shall submit traffic control phased plans showing the setup, number and width of open lanes and schedule for approval by the Engineer and Owner prior to any work commencing within the right of way. Contractor shall submit a list of proposed work areas to the Engineer and Owner by Thursday of the week prior to performing work in any area. Owner reserves the right to modify proposed work areas.

1.04 TRAFFIC SIGNALS AND SIGNS

A. The Contractor shall provide and operate traffic control and directional signals required to direct and maintain an orderly flow of traffic in all areas under all Contractors control, or affected by all Contractor's operations.

B. Provide traffic control and directional signs, mounted on barricades or standard posts at the following locations:

1. Each change of direction of a roadway and each crossroads.

2. Detours.

3. Parking areas.

4. For businesses within detour routes.

C. Existing permanent traffic control signing and devices, including guardrails, shall not be removed unless called for on the Contract Plans or without the prior consent of the agency responsible for the road and the Engineer.

D. After completion of the project, the Contractor shall remove all construction signing and support systems and patch the disturbed area to match existing as closely as possible and to the satisfaction of the engineer.

E. Detours around construction will be subjected to the approval of the Owner and the Engineer. Where detours are permitted the Contractor shall provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured the Contractor shall expedite construction operations and periods when traffic is being detoured will be strictly controlled by the Owner. An electronic message board is required at each end of the construction site.

F. The Contractor shall take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. The Contractor shall be fully responsible for damage or injuries whether or not police protection has been provided.

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1.05 CONSTRUCTION PARKING CONTROL

A. Contractor shall control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Public Works Department operations, or construction operations.

B. Contractor shall monitor parking of construction personnel's private vehicles, maintain free vehicular access to and through parking areas and prohibit parking on or adjacent to access roads or in non-designated areas.

1.06 HAUL ROUTES

A. Contractor shall be responsible for consulting with governing authorities to establish public thoroughfares that will be used as haul routes and site access.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01576
POLICING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Use of police shall be in conformance with Policy Memorandum No. CG-15 in the Supplementary Conditions.

END OF SECTION

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SECTION 01600
DELIVERY, STORAGE AND HANDLING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This Section specifies the general requirements for the delivery handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.02 TRANSPORTATION AND DELIVERY

A. Transport and handle items in accordance with manufacturer's instructions.

B. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer.

C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.

D. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.

E. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.

F. Provide necessary equipment and personnel to unload all items delivered to the site.

G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct and items are undamaged. For items furnished by others (i.e., Owner, other Contractors), perform inspection in the presence of the Engineer. Notify Engineer verbally, and in writing, of any problems.

H. If any item has been damaged, such damage shall be repaired at no additional cost to the Owner.

1.03 STORAGE AND PROTECTION

A. Store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Engineer by him/her. Instruction shall be carefully followed and a written record of this kept by the Contractor. Arrange storage to permit access for inspection.

B. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

C. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease and in a position to prevent

accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking and spalling to a minimum.

D. All mechanical and electrical equipment and instruments subject to corrosive damage by the atmosphere if stored outdoors (even though covered by canvas) shall be stored in a weathertight building to prevent injury. The building may be a temporary structure on the site or elsewhere, but it must be satisfactory to the Engineer. Building shall be provided with adequate ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer.

1. All equipment shall be stored fully lubricated with oil, grease and other lubricants unless otherwise instructed by the manufacturer.

2. Moving parts shall be rotated a minimum of once weekly to ensure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, the Contractor shall start the equipment, at least half load, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.

3. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment at the time of acceptance.

4. Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guaranty the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

E. All paint and other coating products shall be stored in areas protected from the weather. Follow all storage requirements set forth by the paint and coating manufacturers.

END OF SECTION

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SECTION 01601
CONTROL OF MATERIALS

PART 1 GENERAL

1.01 APPROVAL OF MATERIALS

A. Unless otherwise specified, only new materials and equipment shall be incorporated in the work. All materials and equipment furnished shall be subject to the inspection and approval of the Engineer. No material shall be delivered to the work without prior approval of the Engineer.

B. Submit, in accordance with Section 01300, data relating to materials and equipment proposed to be furnished for the work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product and to form an opinion as to its conformity to the specifications.

C. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, either prior to beginning or during the progress of the work, submit additional samples or materials for such special tests as may be necessary to demonstrate that they conform to the requirements specified herein. Such samples shall be furnished, stored, packed and shipped as directed at the Contractor's expense. Except as otherwise noted, the Owner will make arrangements for and pay for the tests.

D. Any delay of approval resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of a claim against the Owner or the Engineer.

E. In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes and surfaces, provide such samples of workmanship or finish as may be required.

F. The materials and equipment used on the work shall correspond to the approved samples or other data.

1.02 HANDLING AND STORAGE OF MATERIALS

A. All materials and equipment to be incorporated in the work shall be handled and stored by the manufacturer, fabricator, supplier and Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting and any injury, theft or damage of any kind whatsoever to the material or equipment.

B. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous, reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking and spalling to a minimum.

C. All mechanical equipment subject to corrosive damage by the atmosphere if stored outdoors (even though covered by canvas) shall be stored in a building to prevent injury. The building

may be a temporary structure on the site or elsewhere, but it must be satisfactory to the Engineer.

D. All materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work and no compensation shall be given for the damaged material or its removal.

E. All pipe and other materials delivered to the job shall be unloaded and placed in a manner which will not hamper the normal operation of the existing plant or interfere with the flow of necessary traffic.

END OF SECTION

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SECTION 01700
CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This Section specifies administrative, verification and procedural requirements for project closeout, including but not limited to:

1. Project Record Documents Section 01720.

2. Record Shop Drawings 01300.

3. Warranties, guarantees, and bonds in applicable Sections in Technical Divisions 2 through 3.

1.02 CLOSEOUT PROCEDURES

A. Provide all deliverables as specified, prior to submitting the final payment application.

B. Provide submittals to Engineer that are required by governing or other authorities having applicable jurisdiction including but not limited to permit close out information, certificates of occupancy, etc.

C. Submit Application for Final Payment identifying total adjusted Contract Sum, previous payments and sum remaining due, following submittal and approval of Record Documents and Record Drawings.

D. Submit Contractor's Final Release and Release of Liens with final payment application.

1.03 FINAL CLEANING

A. Contractor to complete final cleaning prior to submittal of the final application for payment.

B. Clean the site of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth even-textured surface.

1.04 ADJUSTMENTS

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SCOPE

A. The Contractor shall keep and maintain, at the job site, a copy of contract documents, marked up to indicate all changes made during the course of a project, as specified herein.

B. The Contractor shall provide survey quality GPS points with sub-meter accuracy and GIS files of these points for the completed work for the Owner to update their GIS system with as-built conditions for this project. Additional requirements may be specified elsewhere in these Specifications. All GPS points and GIS files shall be in accordance with Owner's GIS standards and requirements, including but not limited to:

1. Projection system for all GPS points shall be NAD 1983 StatePlane Massachusetts Mainland FIPS 2001.

2. Vertical datum for all GPS points shall be New Bedford City Base.

C. Engineer will provide as-built record drawings to Owner as specified in MassDEP's Policy Memorandum No. CG-4 – Record Drawings. Contractor shall provide information as specified in this Section 01720 for Engineer's use in preparing final as-built record drawings for the Owner.

1.02 RELATED REQUIREMENTS

A. Record shop drawings are included in Section 01300.

B. Photographic and video documentation is included in Section 01322.

C. Contract close-out submittals are included in Section 01700.

1.03 REQUIREMENTS INCLUDED

A. Contractor shall maintain a record copy of the following documents, marked up to indicate all changes made during the course of a project:

1. Contract Drawings

2. Specifications

B. Contractor shall assemble copies of the following documents for turnover to the Engineer at the end of the project, as specified.

1. Field Orders, Change Orders, Design Modifications, and RFIs

2. Field Test records

3. Permits and permit close-outs (final approvals)

4. Certificate of Occupancy or Certificate of Completion, as applicable

5. Laboratory test reports (e.g., bacteriological and primary & secondary water quality)

6. Certificates of Compliance for materials and equipment

7. Record Shop Drawings

8. Samples

C. RECORD DRAWINGS

1. The Contractor shall annotate (mark-up) the Contract Drawings to indicate all project conditions, locations, configurations, and any other changes or deviations that vary from the original Contract Drawings. This requirement includes, but is not limited to, buried or concealed construction, and utility features that are revealed during the course of construction. Special attention shall be given to recording the locations (horizontal and vertical) and material of all buried utilities that are encountered during construction – whether or not they were indicated on the Contract Drawings. The record information added to the drawings may be supplemented by detailed sketches, if necessary, clearly indicating, the WORK, as constructed.

2. These annotated Contract Drawings constitute the Contractor's Record Drawings and are actual representations of as-built conditions, including all revisions made necessary by change orders, design modifications, requests for information and field orders.

3. Record drawings shall be accessible to the Owner and Engineer at all times during the construction period.

4. Record drawings is considered incidental to the project. Contractor shall ascertain as-built record information specific to the work, including surveying and/or taking GPS points of the alignment of water transmission mains, location of all valves and manholes/structures, as well as providing elevation shots on all fittings, as necessary.

   Use the color Red (indelible ink) to record information on and annotate the Drawings and Specifications to indicate all project conditions, locations, configurations, and any change or deviation that vary from the original Contract Documents. Label each document "PROJECT RECORD" in neat large printed letters. Record drawings shall also include all deviations or changes from the design plans, including but not limited to changes in materials, distances, lengths, locations, elevations, slopes, etc. All deviations from the design plans shall be clearly shown, labeled, and accurately located on as-built record drawings using the scale indicated on the original design plans.

   Compile record information contemporaneously with construction progress. Requirements for as-built record drawings and information for the work include:

   a. Laboratory test reports (e.g., bacteriological and primary & secondary water quality).
   b. Linear distance along pipelines from appurtenance, fittings, manholes or structures to appurtenance, fittings, manholes or structures, including pipe material and size.
   c. Depth of cover measurements for all pipelines and at all locations of critical changes in elevation (e.g., vertical bends).

d. Horizontal coordinates in the specified state plane coordinate system for all fittings, valves, corporations, curb stops and boxes, stubs, caps/plugs, manholes, structures, etc.
e. Rim elevation for all manholes, structures and catch basins.
f. Invert and crown elevations for all pipes in manholes, structures, or catch basins.
g. Record actual installed pipe material, class, size, joint type, etc.
h. Supplemental record information with detailed sketches with measurements or ties, if necessary, to clearly indicate the work, as constructed.
i. Legibly mark the Specifications to record the manufacturer, trade name, catalog number, and supplier of each product and item of equipment or material actually installed, as well as any changes made by Field Order, Change Order, RFI, and approved shop drawing.

5. Record documents shall be stored on-site apart from documents used for construction. Record documents shall not be used for construction purposes. The information submitted by the Contractor in the Record Drawings and Documents will be assumed to be correct, and the Contractor shall be responsible for the accuracy of such information, and shall bear the costs resulting from the correction of incorrect data.

6. Contractor shall submit to the Owner the following information in addition to the required record drawing documents:
   a. Survey data in AutoCAD format 2014 referenced to specified coordinate system meeting Owner CAD standards. Layering system shall be in accordance with Owner requirements. Coordinate with Owner and Engineer prior to delivery of data. Vertical datum shall be as noted on the drawings. All as-built physical features shall be shown and located by a registered professional land surveyor in the Commonwealth of Massachusetts. Pertinent pipe data, size, invert and other field data shall be shown.
   b. GIS data of completed infrastructure shall be submitted to Owner in Owner's geodatabase format. Coordinate with Engineer prior to development and delivery of data to Owner. Physical features shall be on specified coordinate system, and feature types on a single layer/feature class in accordance with Owner's standards. Vertical data shall be on the as referenced datum.
   c. Additional guidelines for GIS and CAD standards are also included in the Massachusetts Division of Capital Asset Management and Maintenance CAD Standards, Revision 2, February 2013.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 MAINTENANCE OF RECORD DOCUMENTS AND SAMPLES

A. Store documents and samples in Contractor's field office apart from documents used for construction.

   1. Provide files and racks for storage of the record documents.

   2. Provide locked cabinet(s) or secure storage space for storage of samples.

B. File documents and samples in accordance with Construction Specifications Institute (CSI) format.

C. Maintain documents in a clean, dry, legible, condition and in good order. Do not use record documents for construction purposes.

D. Make documents and sample available for inspection by the Engineer or Owner at all times.

E. Up-to-date Record Drawings may be a pre-requisite of processing periodic monthly pay applications, if so specified under the section for progress payments.

3.02 MARKING METHOD

A. Use the color Red (indelible ink) to record information on the Drawings and Specifications,

B. Label each document "PROJECT RECORD" in neat large printed letters.

C. Unless otherwise specified elsewhere, notations shall be affixed to hardcopies of documents.

D. Record information contemporaneously with construction progress.

E. Legibly mark drawings with as-built information:

1. Elevations and dimensions of structures and structural elements.

2. All underground utilities (piping and electrical), structures, and appurtenances
   a. Changes to existing structure, piping and appurtenance locations.
   b. Record horizontal and vertical locations of underground structures, piping, utilities and appurtenances, referenced to permanent surface improvements.
   c. Record actual installed pipe material, class, size, joint type, etc.

3.03 RECORD INFORMATION COMPILATION

A. Do not conceal any work until the required information is acquired.

B. Items to be recorded include, but are not limited to:

1. Location of internal utilities and appurtenances concealed in the construction – referenced to visible and accessible features.

2. Field changes of dimensions and/or details;
   a. Interior equipment and piping relocations.
   b. Architectural and structural changes, including relocation of doors, windows, etc.
   c. Architectural schedule changes.

C. Changes made by Field Order, Change Order, design modification, and RFI.

D. Details not indicated on the original Contract Drawings.

E. Specifications - legibly mark each Section to record:

1. Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually installed.

2. Changes made by Field Order, Change Order, RFI, and approved shop drawing.

3.04 SUBMITTAL

A. If specified under the section for progress payments, monthly applications for payment will be contingent upon up-to-date Record Drawings. If requested by the Engineer or Owner, Contractor shall provide a copy of the Record Drawings, or present them for review prior to processing monthly applications for payment.

B. Upon substantial completion of the WORK and prior to final acceptance, the Contractor shall finalize and deliver a complete set of Record Drawings to the Engineer conforming to the construction records of the Contractor. The set of drawings shall consist of corrected and annotated drawings showing the recorded location(s) of the WORK. Unless specified otherwise elsewhere, Record Drawings shall be in the form of a set of prints with annotations carefully and neatly superimposed on the drawings in red.

C. Upon substantial completion of the WORK and prior to final acceptance, the Contractor shall finalize and deliver a complete set of Record Documents to the Engineer conforming to the construction records of the Contractor. The set of documents shall consist of corrected and annotated documents showing the as-installed equipment and all other as-built conditions not indicated on the Record Drawings.

D. The information submitted by the Contractor into the Record Drawings and Record Documents will be assumed to be correct, and the Contractor shall be responsible for the accuracy of such information, and shall bear the costs resulting from the correction of incorrect data.

E. Delivery of Record Drawings and Record Documents to the Engineer will be a prerequisite to Final payment.

F. The Contractor shall maintain a copy of all books, records, and documents pertinent to the performance under this Agreement for a period of five years following completion of the contract.

END OF SECTION

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SECTION 01740
WARRANTIES AND BONDS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

1.02 RELATED WORK

A. Refer to Conditions of Contract for the general requirements relating to warranties and bonds.

B. General closeout requirements are included in Section 01700 - Project Closeout.

C. Specific requirements for warranties for the work and products and installations that are specified to be warranted are included in the individual Sections.

1.03 SUBMITTALS

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 the date of Substantial Completion for the work, or a designated portion of the work, submit written warranties upon request of the Owner.

B. When a designated portion of the work is completed and/or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within 15 days of completion of that designated portion of the Work.

C. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner for approval prior to final execution.

D. Refer to individual Sections for specific content requirements, and particular requirements for submittal of special warranties.

1.04 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.

1.05 MANUFACTURERS CERTIFICATIONS

A. Where required, the Contractor shall supply evidence, satisfactory to the Engineer, that the Contractor can obtain manufacturers' certifications as to the Contractor's installation of equipment.

1.06 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

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SECTION 02050
DEMOLITION AND MODIFICATIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and demolish, modify, remove and dispose of work shown on the Drawings and as specified herein.

B. Included, but not limited to, are demolition, modifications and removal of existing materials, equipment or work necessary to install the new work as shown on the Drawings and as specified herein and to connect with existing work in approved manner.

C. Demolition, modifications and removals which may be specified under other Sections shall conform to requirements of this Section.

D. Demolition and modifications are as shown on the Drawings.

E. Blasting and the use of explosives will not be permitted for any demolition work.

1.02 RELATED WORK

A. Summary of Work is included in Section 01010.

B. Submittals are included in Section 01300.

C. Suggested Construction Sequence and Special Work Requirements are included in Section 01014.

D. Excavation and Backfill is included in Section 02221.

E. Environmental Protection is included in Section 02270.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, six copies of proposed methods and operations of demolition of the structures and modifications prior to the start of work. Include in the schedule the coordination of shutoff, capping and continuation of utility service as required.

B. Furnish a detailed sequence of demolition and removal work to ensure the uninterrupted progress of the Owner's operations. Sequence shall be compatible with sequence of construction and shutdown coordination requirements as specified in Section 01014.

C. Before commencing demolition work, all modifications necessary to bypass the affected structure shall be completed. Actual work shall not begin until the Engineer has inspected and approved the modifications and authorized commencement of the demolition work in writing.

1.04 JOB CONDITIONS

A. Protection

1. Execute the demolition and removal work to prevent damage or injury to structures, occupants thereof and adjacent features which might result from falling debris or other causes, and so as not to interfere with the use, and free and safe passage to and from adjacent structures.

2. Closing or obstructing of roadways, sidewalks and passageways adjacent to the work by the placement or storage of materials will not be permitted and all operations shall be conducted with a minimum interference to traffic on these ways.

3. Erect and maintain barriers, lights, sidewalk sheds and other required protective devices.

B. Scheduling

1. Carry out operations to avoid interference with operations and work in the existing facilities.

C. Notification

1. At least 48 hours prior to commencement of a demolition or removal, notify the Owner and Engineer in writing of proposed schedule therefor. Owner shall inspect the existing equipment and to identify and mark those items which are to remain the property of the Owner. No removals shall be started without the permission of the Engineer.

D. Conditions of Structures

1. The Owner and the Engineer assume no responsibility for the actual condition of the structures to be demolished or modified.

2. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable. However, variations within a structure may occur prior to the start of demolition work.

E. Repairs to Damage

1. Promptly repair damage caused to adjacent facilities by demolition operation when directed by Engineer and at no additional cost to the Owner. Repairs shall be made to a condition at least equal to that which existed prior to construction.

2. Promptly repair damage caused to adjacent facilities by Contractor’s operations to construct the work at no additional cost to the Owner. Repairs shall be made to a condition at least equal to that which existed prior to construction.

F. Traffic Access

1. Conduct demolition and modification operations and the removal of equipment and debris to ensure minimum interference with roads, streets, walks both onsite and offsite and to ensure minimum interference with occupied or used facilities.

2. Special attention is directed towards maintaining safe and convenient access to the existing facilities by Owner personnel and Owner associated vehicles.

3. Do not close or obstruct streets, walks or other occupied or used facilities without permission from the Engineer. Furnish alternate routes around closed or obstructed traffic in access ways.

1.05 RULES AND REGULATIONS

A. The Building Code of the Commonwealth of Massachusetts shall control the demolition, modification or alteration of the existing buildings or structures.

B. No building or structure, or any part thereof, shall be demolished until an application has been filed with the Building Inspector and a permit issued. The fee for this permit shall be the Contractor's responsibility.

1.06 DISPOSAL OF MATERIAL

A. Salvageable material and equipment listed hereinafter shall become the property of the Owner. Dismantle all such items to a size that can be readily handled and deliver them to a designated storage area.

B. The following materials and items of equipment shall remain the property of the Owner and stored where directed on the site. Any such material damaged due to improper handling will not be accepted and the replacement value of the material deducted from the payment to the Contractor.

1. None.

C. All other material and items of equipment shall become the Contractor's property and must be removed from the site and disposed of by the Contractor.

D. The storage or sale of removed items on the site will not be allowed.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. All materials and equipment removed from existing work shall become the property of the Contractor, except for those which the Owner has identified and marked for his/her use. All materials and equipment marked by the Owner to remain shall be carefully removed, so as not to be damaged, cleaned and stored on or adjacent to the site in a protected place specified by the Engineer or loaded onto trucks provided by the Owner.

B. Dispose of all demolition materials, equipment, debris and all other items not marked by the Owner to remain, off the site and in conformance with all existing applicable laws and regulations.

C. Pollution Controls

1. Use water sprinkling, temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.
    a. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding and pollution.
    b. Clean adjacent structures, facilities, and improvements of dust, dirt and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the work.

3.02 STRUCTURAL REMOVALS

A. Remove structures to the lines and grades shown unless otherwise directed by the Engineer. Where no limits are shown, the limits shall be 4-inches outside the item to be installed. The removal of masonry beyond these limits shall be at the Contractor's expense and these excess removals shall be reconstructed to the satisfaction of the Engineer with no additional compensation to the Contractor.

B. All concrete, brick, tile, concrete block, roofing materials, reinforcement, structural or miscellaneous metals, plaster, wire mesh and other items contained in or upon the structure shall be removed and taken from the site, unless otherwise approved by the Engineer. Demolished items shall not be used in backfill adjacent to structures or in pipeline trenches.

C. After removal of parts or all of masonry walls, slabs and like work which tie into new work or existing work, the point of junction shall be neatly repaired to leave only finished edges and surface exposed.

3.03 MECHANICAL REMOVALS

A. Mechanical removals shall consist of dismantling and removing of existing equipment and other appurtenances as specified, shown on the Drawings, or required for the completion of the work. It shall include cutting, capping, and plugging as required.

B. Existing process, water, chemical, gas, fuel oil and other piping not required for the new work shall be removed where shown or where it will interfere with new work. Piping not indicated to be removed or which does not interfere with new work shall be removed to the nearest solid support, capped and left in place. Chemical and fuel lines and tanks shall be purged and made safe prior to removal or capping. Where piping that is to be removed passes through existing walls, it shall be cut off and properly capped on each side of the wall.

C. When underground piping is to be altered or removed, the remaining piping shall be properly capped. Abandoned underground piping may be left in place unless it interferes with new work or is shown or specified to be removed.

D. Waste and vent piping shall be removed to points shown. Pipe shall be plugged with cleanouts and plugs. Where vent stacks pass through an existing roof that is to remain, they shall be removed and the hole in the roof properly patched and made watertight.

E. Any changes to potable water piping and other plumbing and heating system work shall be made in conformance with all applicable codes and under the same requirements as other underground piping. All portions of the potable water system that have been altered or opened

shall be pressure tested and disinfected in accordance with Section 01445 and local codes. Other plumbing piping and heating piping shall be pressure tested only.

3.04 ELECTRICAL REMOVALS

A. Electrical removals shall consist of the removal of existing transformers, distribution switchboards, control panels, motors, conduits and wires, poles and overhead wiring, panelboards, lighting fixtures and miscellaneous electrical equipment all as shown on the Drawings, specified herein, or required to perform the work for removal of existing mechanical equipment.

B. All existing electrical equipment and fixtures to be removed shall be removed with such care as may be required to prevent unnecessary damage, to keep existing systems in operation and to maintain the integrity of the grounding systems.

C. Conduits and wires shall be abandoned or removed where shown and as required. All wires in abandoned conduits shall be removed, salvaged and stored. Abandoned conduits concealed in floor or ceiling slabs or in walls, shall be cut flush with the slab or wall at the point of entrance. The conduits shall be suitable plugged and the area repaired in a flush, smooth and approved manner. Exposed conduits and their supports shall be disassembled and removed from the site. Repair all areas of work to prevent rust spots on exposed surfaces.

D. Where shown or otherwise required, wiring in the underground duct system shall be removed. All such wiring shall be salvaged and stored as specified. Verify the function of all wiring before disconnection and removing it. Ducts which are not to be reused shall be plugged where they enter buildings and made watertight.

E. Where shown, direct-burial cable shall be abandoned. Such cable shall be disconnected at both ends of the run. Where it enters a building or structure the cable shall be cut back to the point of entrance. All opening in buildings for entrance of abandoned direct-burial cable shall be patched and made watertight.

F. Poles and overhead wiring shall be abandoned as shown and specified. Existing substation and poles owned by the power company will be removed by the power company. Poles not owned by the power company shall be completely removed from the site. The overhead wires shall be salvaged and stored. Perform this work after the proposed service has been completed and energized, and in accordance with the approved schedule.

G. Lighting fixtures shall be removed or relocated as shown. Fixtures not relocated shall be removed from the site. Relocated fixtures shall be carefully removed from their present location and rehung where shown.

H. Wall switches, receptacles, starters and other miscellaneous electrical equipment, shall be removed and disposed of off the site as required. Care shall be taken in removing all equipment so as to minimize damage to architectural and structural members. Any damage incurred shall be repaired.

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3.05 CLEAN-UP

A. Remove from the site all debris resulting from the demolition operations as it accumulates. Upon completion of the work, all materials, equipment, waste and debris of every sort shall be removed and premises shall be left, clean, neat and orderly.

END OF SECTION

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SECTION 02100
SITE PREPARATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials and equipment required and perform all site preparation, complete as shown on the Drawings and as specified herein.

B. Obtain all permits required for site preparation work prior to proceeding with the work, including clearing, and tree removal.

C. The areas to be cleared, grubbed and stripped within public rights-of-way and utility easements shall be minimized to the extent possible for the scope of pipeline work and in consideration of the actual means and methods of construction used. No unnecessary site preparation within these areas shall be performed.

1.02 RELATED WORK

A. Environmental Protection is included in Section 01110.

B. Trenching, Backfilling and Compaction is included in Section 02221.

C. Miscellaneous Work and Cleanup is included in Section 02901.

D. Loaming and Seeding is included in Section 02930.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, copies of all permits required prior to clearing, grubbing, and stripping work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 CLEARING

A. Cut and remove all timber, trees, stumps, brush, shrubs, roots, grass, weeds, rubbish and any other objectionable material resting on or protruding through the surface of the ground.

B. Preserve and protect trees and other vegetation designated on the Drawings or directed by the Engineer to remain as specified below.

3.02 GRUBBING

A. Grub and remove all stumps, roots in excess of 1-1/2-inch in diameter, matted roots, brush, timber, logs, concrete rubble and other debris encountered to a depth of 18-inches below original grade or 18-inches beneath the bottom of foundations and roadway subbase whichever is deeper.

B. Refill all grubbing holes and depressions excavated below the original ground surface with suitable materials and compact to a density conforming to the surrounding ground surface in accordance with Section 02221.

3.03 STRIPPING

A. Strip topsoil from all areas to be occupied by buildings, structures, and roadways and all areas to be excavated or filled.

B. Topsoil shall be free from brush, trash, large stones and other extraneous material. Avoid mixing topsoil with subsoil.

C. Stockpile and protect topsoil until it is used in landscaping, loaming and seeding operations. Dispose of surplus topsoil after all work is completed.

3.04 DISPOSAL

A. Cut tree trunks and limbs exceeding 4-inches in diameter shall be cut into 4-foot lengths and stockpiled on site in areas designated by the Engineer.

B. Dispose of material and debris from site preparation operations by hauling such materials and debris to an approved offsite disposal area. No rubbish or debris of any kind shall be buried on the site.

C. Burning of cleared and grubbed materials or other fires for any reason will not be permitted.

3.05 PROTECTION

A. Trees and other vegetation designated on the Drawings or directed by the Engineer to remain shall be protected from damage by all construction operations by erecting suitable barriers, guards and enclosures, or by other approved means. Conduct clearing operations in a manner to prevent falling trees from damaging trees and vegetation designated to remain and to the work being constructed and so as to provide for the safety of employees and others.

B. Maintain protection until all work in the vicinity of the work being protected has been completed.

C. Do not operate heavy equipment or stockpile materials within the branch spread of existing trees.

D. Immediately repair any damage to existing tree crowns, trunks, or root systems. Roots exposed and/or damaged during the work shall immediately be cut off cleanly inside the exposed or damaged area. Treat cut surfaces with an acceptable tree wound paint and topsoil spread over the exposed root area.

E. When work is completed, remove all dead and downed trees. Live trees shall be trimmed of all dead and diseased limbs and branches. All cuts shall be cleanly made at their juncture with the trunk or preceding branch without injury to the trunk or remaining branches. Treat cut surfaces with an acceptable tree wound paint.

F. Restrict construction activities to those areas within the limits of construction designated on the Drawings, within public rights-of-way, and within easements provided by the Owner. Adjacent properties and improvements thereon, public or private, which become damaged by construction operations shall be promptly restored to their original condition, to the full satisfaction of the property owner.

END OF SECTION

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SECTION 02120
POTABLE WATER PIPELINE AND FACILITY PREPARATION AND DECHLORINATION/DECHLORAMINATION

PART 1 GENERAL

1.01 SUMMARY

A. This Section Includes:

1. Potable water pipeline and facility dewatering and dechlorination/dechloramination.

2. Handling of leakage during construction.

3. Refilling for testing.

1.02 RELATED WORK

A. Submittals are included in Section 01300.

B. Dewatering and Drainage is included in Section 02140.

C. Ductile iron pipe and fittings are included in Section 02616.

D. Valves, hydrants and appurtenances are included in Section 02640.

E. Pipeline disinfection is included in Section 02616 and Section 02640.

F. Water storage tank disinfection is included in Section 01014.

1.03 REFERENCES

A. Massachusetts Water Resources Authority (MWRA) Standard Operating Procedures for performing construction work on pipelines.

1.04 SYSTEM DESCRIPTION

A. The Owner utilizes chloramines for disinfection of their treated potable water.

B. The opening and closing of existing valves and hydrants shall be performed by the Owner.

C. The Contractor shall be responsible for the dewatering of all pipelines and facilities as required to successfully complete the Work.

D. Water discharged into storm drains shall be in accordance with the requirements of all Federal, State and local laws and regulations. Discharge into a sanitary sewer shall only occur with the permission of the Owner.

E. Dewatering shall be accomplished through means and methods proposed by the Contractor and accepted by the Engineer and Owner. The Owner will operate all valves and hydrants.

Dewatering will require the Contractor to provide pumping and treatment (i.e., dechlorination/dechloramination) labor and equipment for dewatering. The Contractor is required to handle leakage of 100 gpm at each valve that is closed or line stop installed to accomplish the work.

F. For pipeline work, the Contractor will be required to dewater longer lengths of water mains to perform the work because operable isolation valves may be located beyond the limits of the work areas. The Contractor will be responsible to coordinate with the Owner the location of all valves required to isolate the work areas. The Contractor will be required to handle leakage of 100 gpm at each isolation valve that is closed or line stop that is installed to accomplish the work.

G. The Contractor shall not release any water from existing potable water facilities or pipelines or into the surroundings, drainage and sewer systems prior to dechlorination/dechloramination and prior to permission of the Engineer and Owner. Dechlorination/dechloramination shall be performed in accordance with the procedures outlined below.

H. The pH of all dechlorinated and dechloraminated water discharged shall be reduced to between 6.5 and 8.

1.05 SUBMITTALS

A. Submit in accordance with Section 01300 Dewatering Plans and Schedule for Engineer and Owner review. The Plan shall describe how pipelines and facilities will be dewatered and the means and methods for disposal of the water drained from the pipelines and facilities.

1.06 QUALITY ASSURANCE

A. Prepare a Dewatering Plan and Schedule for draining water mains and facilities prior to start of actual construction on the work. The Plan shall describe how the pipe and facilities will be dewatered and the means and methods for disposal of the water drained from the pipeline.

PART 2 PRODUCTS

2.01 MATERIALS

A. Water for testing and flushing may be obtained from the Owner.

B. The Owner utilizes chloramines in its water treatment scheme. Dechlorination/dechloramination of water from existing water system facilities prior to discharge shall be performed. The following types of dechlorinating agents may be used in place of the recommended Sodium Thiosulfate (anhydrous or pentahydrate form) with prior permission of the Engineer.

Sodium bisulfate
Sodium sulfite

Contractor shall notify Engineer of change in chemical used prior to performing any dechlorination.

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PART 3 EXECUTION

3.01 APPROACHES TO DECHLORINATION/DECHLORAMINATION

A. Types of Responses – the methods and equipment used to dechlorinate/dechloraminate water released will be dependent on the type of water release. Two types of releases may occur during construction:

1. Planned – Where the location and volume of water to be released are known and can be controlled. Planned release events include water main flushing, hydrant flushing, blow-off valve exercising, or pipeline/facility dewatering.

2. Emergency – Occurs during water main breaks or leaks, the location and volume of the water release are not known. Contractor shall have equipment, chemicals, and supplies needed for dechlorination/dechloramination in the event of an emergency.

3.02 PLANNED RELEASES

A. Dechlorination/Dechloramination Procedures

1. Contractor shall submit in accordance with Section 01300, an operations plan that will list the specific steps for the particular discharge and dechlorination/dechloramination. The Contractor will list the receiving water body. Contractor shall estimate the flow rate and chlorine residual, which shall be included in submittal.

2. A solution of sodium thiosulfate will be used for dechlorination/dechloramination.

3. Dosing rate of the solution will depend upon the flow rate and the chlorine residual of the water being discharged.

4. Dosing rates shall be as shown in the Tables in the Massachusetts Water Resources Authority (MWRA) Standard Operating Procedures for performing construction work on pipelines in the appendices of these Specifications.

5. All dechlorination/dechloramination shall be performed by the Contractor in accordance with all AWWA, Federal, State and Local standards and requirements.

3.03 EMERGENCY RESPONSE

A. Reporting – All Contractor personnel shall notify Engineer and Owner when a leak or break has been discovered. It is the responsibility of the Contractor to record all relevant information about the break or leak.

B. Evaluation – If the report is during normal working hours, Contractor shall have Owner crews on route to isolate the break or leak. During off peak hours, the Contractor will contact the Engineer as to the location of the leak or break and he/she will coordinate the shut down of the main.

C. Isolation – The Contractor, after contacting the Engineer and Owner, at the direction of the Engineer and the Owner, shall begin to isolate the pipeline or facility by closing control valves.

The Contractor while on-site, shall be instructed to divert flow of chlorinated or chloraminated water from storm drains or natural water bodies. Contractor shall use sand bags to pool or divert water. Dechlorination/dechloramination shall be started on the pooled or diverted water as soon as possible.

D. Dechlorination/Dechloramination – In order to dechlorinate/dechloramination the water, a dechlorinating/dechloramination agent needs to be introduced into the discharge flow. Fiber mesh bags with 20 lbs. to 25 lbs. of Anhydrous Sodium Thiosulfate shall be used to dechlorinate/dechloraminate the discharge water. Sand bags shall be used to divert and pool the water. Anhydrous Sodium Thiosulfate can be placed into the pool to achieve the contact time needed. If the Engineer determines that a nearby natural water body may have been impacted by discharge flows, sodium thiosulfate can be spread into the water by hand. Contractor shall monitor the levels of chlorine.

E. Monitoring and Documentation – During dechlorination/dechloramination the Contractor shall monitor the levels of chlorine. After setting the dechlorination/dechloramination area the crews should obtain a chlorine reading from the discharge upstream from the dechlorinating/dechloraminating agent. A second reading should be taken downstream from the dechlorinating/dechloraminating agent; both readings shall be recorded by the Contractor and submitted to the Engineer.

END OF SECTION

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SECTION 02125
TRANSPORTATION AND DISPOSAL OF MATERIAL

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, material, tools and equipment necessary for the transportation and disposal of materials generated from activities specified in Sections 02125. Materials include, but are not limited to: accumulated sediment in water storage tanks/reservoirs, cleaning fluids and residue.

B. The Contractor shall be responsible for determining the appropriate disposal location based on stockpile sampling and analysis results performed by Contractor and disposal facility testing results from this Section. Pre-characterization of the accumulated sediment was performed and is include for reference in the appendices of these Specifications. Disposal determination will be subject to the Engineer's review.

C. The Owner will be the generator and will sign all waste profiles, bills of lading and waste manifests.

D. Where more than one disposal option exists, the Contractor shall select the least costly disposal option.

1.02 RELATED WORK

A. Health and Safety Plan Requirements are included in Section 01102.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, all pertinent information relating to the transport and disposal of materials specified herein. The information submitted shall include the following:

1. Transporter Information:
   a. Name and address of common carrier transporters to be used on project.
   b. Name and address of licensed waste transporters to be used on project. Provide current licenses and permits to operate in all states affected by transport. Provide current EPA transporter license.

2. Facility Information
   a. General Information
   b. Facility Name
   c. Facility Address
   d. Name of Contact Person
   e. Title of Contact Person
   f. Telephone Number of Contact Person
   g. Permit Number
   h. The facility shall provide written confirmation that they are permitted to accept and will accept material of the general quality and quantity described by these Specifications.

i. The facility shall provide a listing of all current and valid permits, licenses, letters of approval, and other authorizations to operate that they hold, pertaining to the receipt and management of materials specified in this Contract.
j. Submit a complete list of the disposal facility's permitted allowable contaminant levels and physical characteristic requirements for contaminated material and list any required regulatory approvals for individual waste streams.

B. Provide the Engineer with originals of all hazardous waste manifests, non-hazardous waste manifests and bills of lading, and material shipping records, no less than 7 days in advance of shipping Oil & Hazardous Materials (OHM) off site.

C. Submit to the Engineer, copies of all analytical data. Analytical data shall be kept confidential, and distributed to the Engineer only.

D. Submit to the Engineer, by email, within 48 hours of receipt of wastes at accepting disposal, recycling and reuse facilities, copies of facility-signed hazardous waste manifests, non-hazardous waste manifests, bills of lading and material shipping records.

1.04 DEFINITIONS

A. In-State Landfill - This type of landfill shall be approved by the Commonwealth of Massachusetts to accept soil for reuse with concentration levels below the Department of Environmental Protection Policy # COMM-97-001 criteria listed below:

FACILITY MAXIMUM CONTAMINANT LEVELS		
Contaminant	Lined Landfill Reuse Levels (mg/kg)	Unlined Landfill Reuse Levels (mg/kg)
Total Arsenic	40	40
Total Cadmium	80	30
Total Chromium	1,000	1,000
Total Lead	2,000	1,000
Total Mercury	10	10
Total Petroleum Hydrocarbons	5,000	2,500
Total PCBs	<2	<2
Total SVOCs	100	100
Total VOCs	10	4
Listed or Characteristic Hazardous Waste (TCLP)	None	None

B. In-State Recycling Facility - This type of facility shall be approved by the Commonwealth of Massachusetts to accept soil for reuse with concentration levels below the Department of Environmental Protection Policy # WSC-400-001 listed below:

FACILITY MAXIMUM CONTAMINANT LEVELS			
Contaminant	Hot Mix Asphalt Plant	Thermal Processing Plant	Cold Mix Emulsion Plant
	mg/kg	mg/kg	mg/kg
Total Arsenic	30	30	30
Total Cadmium	30	11	30
Total Chromium	500	500	500
Total Lead	1,000	1,000	1,000
Total Mercury	10	3	10
Total VOCs	1800	1800	1800
Total Petroleum Hydrocarbons	60,000	60,000	60,000
Total PCBs	<2	<2	<2
Total Halogenated VOCs	5	5	5
Listed or Characteristic Hazardous Waste (TCLP)	None	None	None

C. Out-of-State Landfill - This type of landfill shall be state approved or permitted to accept soil that is not classified as either a RCRA characteristic waste or RCRA listed waste as defined in 40 CFR Part 261or PCB waste as defined in 40 CFR 761. This type of landfill shall accept soil for disposal and reuse purposes.

D. Out-of-State Recycling Facility - This type of facility shall be state approved or permitted to accept soil that is not classified as either a RCRA characteristic waste or RCRA listed waste as defined in 40 CFR Part 261or PCB waste as defined in 40 CFR 761.

E. RCRA Landfill – This type of landfill shall be state and federally approved to accept soil that is classified as either a RCRA characteristic waste or RCRA listed waste as defined in 40 CFR261.

F. RCRA TSD Facility – This type of facility shall be state and federally approved to accept soil that is classified as either a RCRA characteristic waste or RCRA listed waste as defined in 40 CFR 261.

G. TCLP Material – Soil, through TCLP analysis, that exceeds the regulatory limit established for any one or more RCRA metals set forth in Table 1 of 40 CFR 261.24.

H. Listed Waste Material – Soil, through VOC analysis, that indicates the presence of any of F-code wastes set forth in 40 CFR 261.31 or U-code wastes set forth in 40 CFR 261.33.

I. Disposal Facility – In-state Landfill, In-State Recycling Facility, Out-of-State Landfill, Out-of-State Recycling Facility, RCRA Landfill or RCRA TSD Facility.

J. TSD – Treatment, storage and disposal.

K. Underlying Hazardous Constituent (UHC) – As defined in 40 CFR 268.2, "Any constituent listed in 40 CFR 268.48, Table UTS – Universal Treatment Standards, except fluoride,

selenium, sulfides, vanadium and zinc which can be reasonably expected to be present at the point of generations of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard."

L. Universal Treatment Standard (UTS) – Numerical standards set forth in 40 CFR 268.48, Table UTS – Universal Treatment Standards. Non-wastewater and wastewater treatment standard levels that are used to regulate most prohibited hazardous wastes. Applicable UTS for soils are defined in 40 CFR 268.49(c).

1.05 REGULATORY REQUIREMENTS

A. Massachusetts Department of Environmental Protection

1. Massachusetts Contingency Plan, 310 CMR 40.0000

2. Massachusetts Hazardous Waste Regulations, 310 CMR 30.000

3. Interim Remediation Waste Management Policy for Contaminated Soils, Policy # WSC-94-001.

4. Reuse and Disposal of Contaminated Soils at Massachusetts Landfills, Policy # COMM-97-001.

B. United States Department of Environmental Protection (EPA)

1. Federal Hazardous Waste Regulations, 40 CFR 261-268.

C. Disposal of TCLP material at RCRA Landfills is subject to all applicable provisions of the Phase IV Land Disposal Restrictions (LDR) of 40 CFR 268. The Work of this Section shall include all necessary supplemental treatment required to reduce concentrations of all Underlying Hazardous Constituents (UHCs) to levels below applicable Universal Treatment Standards (UTS) prior to landfill disposal.

PART 2 PRODUCTS

2.01 GENERAL

A. All Contractor personnel shall wear personal protective equipment and protective clothing consistent with the levels of protection for this Work as indicated in the Health and Safety Plan described in Section 01102.

PART 3 EXECUTION

3.01 GENERAL

A. The Owner will be the generator and will sign waste profiles, waste manifests, bills of lading and material shipping records.

B. The Contractor shall identify appropriate disposal facilities and make all necessary arrangements for disposal of materials.

3.02 DISPOSAL FACILITY TESTING

A. The Contractor shall be responsible for characterizing the materials for the purpose of obtaining approvals for final disposal of contaminated, surplus and unsuitable materials. The Contractor shall collect samples to perform testing required by the disposal facility.

1. Submit a copy of all analytical results to the Engineer within 2 days of receipt of the laboratory report. Analytical data shall be kept confidential and distributed to the Owner and Engineer only. Engineer's review of data will be 2 days.

B. Sampling of contaminated soil or materials shall be done at sufficient and adequately distributed locations so that the concentrations of the chemical constituents are adequately characterized.

C. Coordinate schedule so that Engineer may observe sample collection.

3.03 WASTE PROFILES AND SHIPPING DOCUMENTS

A. Prepare and submit to the Engineer for review all waste profiles, LSP opinion letters, and coordinate with disposal facilities.

B. Prepare all manifests and if necessary, land ban certifications. Submit these to the Engineer for review at least 7 days before transport. Engineer will be responsible for obtaining Owner's signature prior to said use.

C. Prepare bill of lading forms and material shipping records. Submit these to the Engineer for review at least 7 days before transport. Engineer will sign as LSP on bill of lading and LSP opinion letter and will be responsible for obtaining Owner's signature prior to said use.

D. Submit to Owner and the Engineer, prior to receiving progress payment, documentation certifying that all materials were transported to, accepted, and disposed of, at the selected receiving facility.

1. Facility signed manifests and original bills of lading (forms BWSC-12A, -12B and -12C) and material shipping records.

2. Certified tare and gross weights for each load.

3.04 TRANSPORT AND DISPOSAL

A. The Contractor shall not be permitted to transport materials off-site until all disposal facility documentation has been received, reviewed, and accepted by Owner and the Engineer.

B. Transport and dispose in accordance with all United States Department of Transportation (DOT), USEPA, MDEP regulations and other regulations of all affected states.

C. The Contractor shall be responsible for ensuring that free-liquid does not develop during transport. "Wet soils" shall not be loaded for transport. The Contractor shall be responsible to properly dispose of any free liquids that may result during transportation.

D. For TCLP Material, stabilize and reduce UHCs to below applicable UTS to comply with Phase IV of the Land Disposal Restrictions (LDR).

E. Dispose of hazardous waste within 90 days of generation.

END OF SECTION

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SECTION 02140
DEWATERING AND DRAINAGE

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Design, furnish, install, operate, monitor, maintain and remove a temporary dewatering system as required to lower and control water levels at least 2-feet below subgrades of excavations and to permit construction to proceed in-the-dry.

B. Furnish, maintain and remove temporary surface water control measures adequate to drain and remove surface water entering excavations.

C. Retain the services of a professional engineer registered in the State in which the work will occur to prepare dewatering and drainage system designs and submittals described herein.

D. Work shall include the design, equipment, materials, installation, protection, and monitoring of geotechnical instrumentation required to monitor the performance of the dewatering and drainage system as required herein.

E. Collect and properly dispose of all discharge water from the dewatering and drainage systems in accordance with the provisions of Section 01170. Under no circumstances shall water from dewatering systems be discharged into the existing or new sanitary sewer systems.

F. Abide by all Federal, State and local requirements when performing any dewatering and drainage work.

G. Protect all wetlands and sensitive areas from siltation and erosion during any dewatering and drainage operations.

H. Obtain and pay for all permits required for dewatering and drainage systems.

I. Repair damage caused by dewatering and drainage system operations.

1.02 RELATED WORK

A. Submittals are included in Section 01300.

B. Site Preparation is included in Section 02100.

C. Rock and Boulder Excavation are included in Section 02213.

D. Trenching, Backfilling and Compaction is included in Section 02221.

E. Fill and Backfill Materials are included in Section 02230.

F. Support of Excavation and Protection is included in Section 02311.

G. Sedimentation and Erosion Control are included in Section 02270.

H. Paving is included in Section 02576.

I. Loaming and Seeding are included in Section 02930.

1.03 SUBMITTALS

A. Dewatering and drainage system designs shall be prepared by a licensed professional engineer retained by the Contractor. The professional engineer shall be licensed in the State in which the work is to be performed. The Contractor shall submit an original and three copies of the licensed professional engineer's certification on the PE form specified in Section 01300, stating that the dewatering and drainage system designs have been prepared by the professional engineer and that the professional engineer will be responsible for their execution. The Contractor shall also submit qualifications as required herein.

B. The Contractor shall submit a dewatering and drainage system design plan. The plan shall include a description of the proposed dewatering system and include the proposed installation methods to be used for dewatering and drainage system elements and for observation wells. The plan shall include equipment, drilling methods, holes sizes, filter sand placement techniques, sealing materials, development techniques, the number and location of dewatering points and observations wells, etc. Include the dewatering system design calculations in the plan.

C. The plan shall identify the anticipated area influenced by the dewatering system and address impacts to adjacent existing and proposed structures. The report shall also include detailed plans for pre-construction surveys of existing structures in the vicinity of the dewatering system, settlement monitoring of existing structures during construction, and provisions to address settlement of existing structures resulting from dewatering activities.

D. Coordinate dewatering and drainage submittals with the excavation and support of excavation submittals. The submittal shall show the areas and depths of excavation to be dewatered.

E. Do not proceed with any excavation or dewatering activities until the dewatering submittals has been reviewed, approved, and accepted by the Engineer.

1.04 QUALITY ASSURANCE

A. Regulations: Perform all work in accordance with current applicable regulations and codes of all Federal, State and local agencies.

B. The Contractor shall have at least 5 years of experience with work compatible to the Work shown and specified, employing labor and supervisory personnel who are similarly experienced in this type of Work.

C. The Contractor's design engineer shall be registered in the State in which the work is located and have a minimum of 5 years of professional experience in the design and construction of dewatering and drainage systems and shall have completed not less than 5 successful dewatering and drainage projects of equal type, size, and complexity to that require for the work.

1.05 DESIGN REQUIREMENTS

A. The Contractor is responsible for the proper design and implementation of methods for controlling surface water and groundwater.

B. The primary purpose of the groundwater control system is to preserve the natural undisturbed condition of the subgrade soils in the areas of the proposed excavations. Prior to excavation, the Contractor shall lower the groundwater to at least 2-feet below the lowest excavation subgrade elevation. Additional groundwater lowering may be necessary beyond the 2-feet requirement, depending on construction methods and equipment used and the prevailing groundwater and soil conditions. The Contractor is responsible for lowering the groundwater as necessary to complete construction in accordance with the plans and specifications at no additional cost to the Owner.

C. Design all groundwater control system components to prevent loss of fines from surrounding soils. Sand filters shall be used with all dewatering installations unless screens are properly sized by the Contractor's design engineer to prevent passage of fines from surrounding soils.

D. The Contractor shall be responsible for damage to properties, buildings or structures, sewers and other utility installations, pavements and work that may result from dewatering or surface water control operations.

E. Design review and field monitoring activities by the Owner or by the Engineer shall not relieve the Contractor of his/her responsibilities for the work.

1.06 DEFINITIONS

A. Where the phrase "in-the-dry" is used in this Section, it shall be defined as an excavation subgrade where the groundwater level has been lowered to at least 2-feet below the lowest level of the excavation, is stable with no ponded water, mud, or muck, is able to support construction equipment without rutting or disturbance and is suitable for the placement and compaction of fill material, pipe or concrete foundations.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pipe for observation wells shall consist of minimum 1-inch I.D., Schedule 40 or 80 PVC pipe and machine slotted PVC wellpoints, maximum slot size 0.020-inches.

B. Piping, pumping equipment and all other materials required to provide control of surface water and groundwater in excavations shall be suitable for the intended purpose.

C. Standby pumping systems and a source of standby power shall be maintained at all sites.

PART 3 EXECUTION

3.01 GENERAL

A. Control surface water and groundwater such that excavation to final grade is made in-the-dry, the natural undisturbed condition of the subgrade soils are maintained, and softening and/or instability or disturbance due to the presence or seepage of water does not occur. All construction and backfilling shall proceed in-the-dry and flotation of completed portions of work shall be prohibited.

B. Where groundwater levels are above the proposed bottom of excavation level, a pumped dewatering system will be required for pre-drainage of the soils prior to excavation, and for maintaining the lowered groundwater level until construction has been completed to such an extent that the structure, pipeline or fill will not be floated or otherwise damaged.

C. It is expected that the type of system, spacing of dewatering units and other details of the work will have to be varied depending on soil/water conditions at a particular location.

D. All work included in this Section shall be done in a manner which will protect adjacent structures and utilities and shall not cause loss of ground or disturbance to the pipe bearing soils or to soils which support overlying or adjacent structures.

E. Install, monitor and report data from observation wells. Evaluate the collected data relative to groundwater control system performance and modify systems as necessary to dewater the site in accordance with the Contract requirements.

F. Locate groundwater control system components where they will not interfere with construction activities adjacent to the work area or interfere with the installation and monitoring of geotechnical instrumentation including observation wells. Excavations for sumps or drainage ditches shall not be made within or below 1H:1V slopes extending downward and out from the edges of existing or proposed foundation elements or from the downward vertical footprint of the pipe.

3.02 SURFACE WATER CONTROL

A. Construct surface water control measures, including dikes, ditches, sumps and other methods to prevent, as necessary, flow of surface water into excavations and to allow construction to proceed without delay.

3.03 EXCAVATION DEWATERING

A. At all times during construction, provide and maintain proper equipment and facilities to promptly remove and properly dispose of all water entering excavations. Excavations shall be maintained in-the-dry. Groundwater levels shall be kept at least 2-feet below the lowest excavation level.

B. Excavation dewatering shall maintain the subgrade in a natural undisturbed condition and until the fill, structure or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural elevations.

C. Pipe, masonry, and concrete shall not be placed in water or be submerged within 24 hours after being installed. Water shall not flow over new masonry or concrete within four days after placement.

D. In no event shall water rise to cause unbalanced pressure on structures until the concrete or mortar has set at least 24 hours. Prevent flotation of the pipe by promptly placing backfill.

E. Dewatering shall at all times be conducted in such a manner as to preserve the natural undisturbed condition of the subgrade soils at the proposed bottom of excavation.

F. If the subgrade of the trench or excavation bottom becomes disturbed due to inadequate dewatering or drainage, excavate below normal grade as directed by the Engineer and refill with structural fill, screened gravel or other material as approved by the Engineer at the Contractor's expense.

G. It is expected that the initial dewatering plan may have to be modified to suit the variable soil/water conditions to be encountered during construction. Dewater and excavate, at all times, in a manner which does not cause loss of ground or disturbance to the pipe bearing soil or soil which supports overlying or adjacent structures.

H. If the method of dewatering does not properly dewater the excavation as specified, install additional groundwater observation wells as directed by the Engineer and do not place any pipe or structure until the readings obtained from the observation wells indicate that the groundwater has been lowered a minimum of 2-feet below the bottom of the final excavation within the excavation limits.

I. Dewatering units used in the work shall be surrounded by suitable filter sand and no fines shall be removed by pumping. Pumping from dewatering systems shall be continuous until pipe or structure is adequately backfilled. Stand-by pumps shall be provided.

J. Water entering the excavation from precipitation or surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to a sump and pumped from the excavation to maintain a bottom free from standing water.

K. Drainage shall be disposed of in an approved area as specified in Section 01110. Existing or new sanitary sewers shall not be used to dispose of drainage.

3.04 OBSERVATION WELLS

A. Install observation wells as required under this Section or in accordance with the approved submittal to monitor groundwater levels beneath and around the excavated area until adjacent structures and pipelines are completed and backfilled.

B. Observation Well Locations and Depths:

1. They shall be located in critical areas with respect to groundwater control to monitor performance of dewatering systems designed by the Contractor's Engineer.

2. Observation wells required shall be installed to a depth of at least 10-feet below the deepest level of excavation, unless otherwise approved by the Engineer, and to whatever depth is necessary to indicate that the groundwater control system designed by the Contractor's Engineer is performing as intended. Additional observation wells may be required by the Engineer if deemed necessary to monitor the performance of the Contractor's groundwater control system.

3. Locations and depths of observation wells are subject to approval by the Engineer.

C. Protect the observation wells at ground surface by providing a lockable box or outer protective casing with lockable top and padlock. Design the surface protection to prevent damage by vandalism or construction operations and to prevent surface water from infiltrating.

1. Provide two copies of keys for each padlock to the Engineer for access to each well.

2. Observation wells shall be developed so as to provide a reliable indication of groundwater levels. Wells shall be re-developed if well clogging is observed, in the event of apparent erroneous readings, or as directed by the Engineer.

3. Submittal observation well installation logs, top of casing elevation, and well locations to the Engineer within 24 hours of completion of well installation.

D. Observation Well Maintenance

1. The Contractor shall maintain each observation well until adjacent structures and pipelines are completed and backfilled. Clean out or replace any observation well which ceases to be operable before adjacent work is completed.

2. It is the Contractor's obligation to maintain observation wells and repair or replace them at no additional cost to the Owner, whether or not the observation wells are damaged by the Contractor's operations or by third parties.

E. Monitoring and Reporting of Observation Well Data

1. The Contractor shall begin daily monitoring of groundwater levels in work areas prior to initial operation of drainage and dewatering system. Daily monitoring in areas where groundwater control is in operation shall continue until the time that adjacent structures and pipelines are completed and backfilled and until the time that groundwater control systems are turned off.

2. The Contractor is responsible for processing and reporting observation well data to the Engineer on a daily basis. Data is to be provided to the Engineer on a form, which shall include the following information: observation well number, depth to groundwater, total depth of well, top of casing elevation, groundwater level elevation and date and time of reading.

F. The groundwater level shall be kept at a minimum of 2-feet below the lowest subgrade level for a given excavation.

3.05 REMOVAL OF SYSTEMS

A. At the completion of the excavation and backfilling work, and when approved by the Engineer, all materials, equipment and accessories used for the groundwater and surface water control systems shall be removed from the site. All materials and equipment shall become the property of the Contractor. All areas disturbed by the installation and removal of groundwater control systems and observation wells shall be restored to their original condition.

B. Leave in place any casings for observation wells located within the plan limits of structures or pipelines or within the zone below 1H:1V planes extending downward and out from the edges of foundation elements or from the downward vertical footprint of the pipe, or where removal would otherwise result in ground movements causing adverse settlement to adjacent ground surface, utilities or existing structures.

C. Where casings are pulled, holes shall be filled with sand. Where left in place, casings should be filled with cement grout and cut off a minimum of 3-feet below finished ground level or 1-foot below foundation level so as not to interfere with finished structures or pipelines.

D. When directed by the Engineer, observation wells should be left in place for continued monitoring. When so directed, cut casings flush with final ground level and provide protective lockable boxes with locking devices. The protective boxes shall be suitable for the traffic and for any other conditions to which the observation wells will be exposed.

END OF SECTION

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SECTION 02213
ROCK AND BOULDER EXCAVATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and excavate and dispose of rock and boulders and as specified herein.

B. Blasting will not be permitted on this project.

1.02 RELATED WORK

A. Earth excavation and backfilling are included in Section 02221.

B. Environmental Protection is included in Section 01110.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, the proposed methods of excavation for the various portions of the work. Submittals shall be for information only. Remain responsible for means, methods and techniques, as well as all safety considerations.

1.04 DEFINITIONS

A. Rock: Any large mass of stone, bedrock, or ledgerock.

B. Boulder: Rock fragments exceeding 1 cubic yard in volume.

C. Rock Excavation: The removal of solid rock or rock fragments greater than 1 cubic yard in volume which cannot be removed by conventional mechanical excavation equipment or which requires continuous, systematic drilling and blasting, chemical expanders or other special procedures.

D. Boulder Excavation: The removal of boulders exceeding 1 cubic yard in volume which can be excavated without resorting to blasting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 ROCK EXCAVATION

A. Rock excavation may be performed by jack hammering, expansive chemical splitting, or other similar process.

3.02 BOULDER EXCAVATION

A. Boulders and rock fragments up to 1 cubic yard in volume may be reduced in size by rock excavation methods to simplify its removal.

3.03 DISPOSAL OF ROCK AND BOULDERS

A. Fragmented rock with dimensions not exceeding 6-inches in any direction may be mixed with common fill and used as common fill in accordance with Section 02221.

B. Fragmented rock up to 12-inches in length in any direction may be used as riprap or slope stabilization, provided that such materials meet the requirements for riprap and slope stabilization specified in Section 02221.

C. Rock and boulders may be crushed and screened for reuse in the work, provided that the resultant materials meet the requirements for gravel, crushed stone, or structural fill as specified in Section 02221.

D. Unused rock and boulders shall be removed and disposed of off-site.

END OF SECTION

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SECTION 02221
TRENCHING, BACKFILLING AND COMPACTION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and perform all trenching for pipelines and appurtenances, including drainage, filling, backfilling, disposal of surplus material and restoration of trench surfaces and easements.

B. Excavation shall extend to the width and depth shown on the Drawings or as specified herein and shall provide suitable room for installing pipe, structures and appurtenances.

C. Furnish and place all sheeting, bracing and supports and remove from the excavation all materials which the Engineer may deem unsuitable for backfilling. The bottom of the excavation shall be firm, dry and in all respects, acceptable. If conditions warrant, deposit gravel for pipe bedding, or gravel refill for excavation below grade, directly on the bottom of the trench immediately after excavation has reached the proper depth and before the bottom of the trench has become softened or disturbed by any cause whatever. The length of open trench shall be related closely to the rate of pipe laying. All excavation shall be made in open trenches.

D. All excavation, trenching and related sheeting, bracing, etc., shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P) 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.) and State requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.

E. Wherever the requirement for 95 percent compaction is referred to herein it shall mean at least 95 percent of maximum density as determined by ASTM D1557, Method D.

F. Prior to the start of work submit the proposed method of backfilling and compaction to the Engineer for review.

1.02 RELATED WORK

A. Dewatering is included in Section 02140.

B. Rock and boulder excavation is included in Section 02213.

C. Granular fill material is included in Section 02230.

D. Pavement repair and resurfacing is included in Section 02576.

E. Topsoil and seeding is included in Section 02930.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 TRENCH EXCAVATION

A. Trench excavation shall include material of every description and of whatever substance encountered, except rock and boulders. Pavement, including concrete subbase, if encountered, shall be cut with a saw, wheel or pneumatic chisel along straight lines before excavating.

B. Strip and stockpile topsoil from grassed areas crossed by trenches. At the Contractor's option, topsoil may be otherwise disposed of and replaced, when required, with approved topsoil of equal quality.

C. While excavating and backfilling is in progress, traffic shall be maintained, and all utilities and other property protected as provided in the General Conditions and General Requirements.

D. Trenches shall be excavated to the depth indicated on the Drawings and in widths sufficient for laying the pipe, bracing and for pumping and drainage facilities. The bottom of the excavations shall be firm and dry and in all respects acceptable to the Engineer. Trench width shall be practical minimum.

E. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of subgrade soils. The trench may be excavated by machinery to, or just below the designated subgrade, provided that material remaining in the bottom of the trench is no more than slightly disturbed. Subgrade soils which become soft, loose, "quick", or otherwise unsatisfactory as a result of inadequate excavation, dewatering or other construction methods shall be removed and replaced by screened gravel fill as required by the Engineer at the Contractor's expense.

F. Clay and organic silt soils are particularly susceptible to disturbance due to construction operations. When excavation is to end in such soils, use a smooth-edge bucket to excavate the last 1-foot of depth.

G. Where pipe is to be laid in screened gravel bedding, the trench may be excavated by machinery to the normal depth of the pipe provided that the material remaining in the bottom of the trench is no more than slightly disturbed.

H. Where pipe is to be laid directly on the trench bottom, final excavation at the bottom of the trench shall be performed manually, providing a flat-bottom true to grade upon undisturbed material. Bell holes shall be made as required.

3.02 DISPOSAL OF MATERIALS

A. Excavated material shall be stacked without excessive surcharge on the trench bank or obstructing free access to hydrants and gate valves. Inconvenience to traffic and abutters shall be avoided as much as possible. Excavated material shall be segregated for use in backfilling as specified below.

B. It is expressly understood that no excavated material shall be removed from the site of the work or disposed of, except as directed by the Engineer. When removal of surplus materials has been approved by the Engineer, dispose of such surplus material in approved designated areas.

C. Should conditions make it impracticable or unsafe to stack material adjacent to the trench, the material shall be hauled and stored at a location provided. When required, it shall be re-handled and used in backfilling the trench.

3.03 SHEETING AND BRACING

A. Furnish, put in place and maintain sheeting and bracing required by Federal, State or local safety requirements to support the sides of the excavation and prevent loss of ground which could endanger personnel, damage or delay the work or endanger adjacent structures. If the Engineer is of the opinion that at any point sufficient or proper supports have not been provided, he/she may order additional supports placed at the expense of the Contractor. Compliance with such order shall not relieve the Contractor from his/her responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and rammed.

B. Where sheeting and bracing is required to support the sides of trenches, engage a professional engineer, registered in the Commonwealth of Massachusetts, to design the sheeting and bracing. The sheeting and bracing installed shall be in conformity with the design and certification of this shall be provided by the professional engineer. Submit P.E. Certification Form contained in Section 01300 to show compliance with this requirement.

C. When moveable trench bracing such as trench boxes, moveable sheeting, shoring or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding and the screened gravel backfill.

1. When installing rigid pipe (R.C., V.C., A.C., etc.), any portion of the box extending below mid diameter shall be raised above this point prior to moving the box ahead to install the next pipe. This is to prevent the separation of installed pipe joints due to movement of the box.

2. When installing flexible pipe (DI, PVC, etc.), trench boxes, moveable sheeting, shoring or plates shall not be allowed to extend below mid-diameter of the pipe. As trench boxes, moveable sheeting, shoring or plates are moved, screened gravel shall be placed to fill any voids created and the screened gravel and backfill shall be recompacted to provide uniform side support for the pipe.

D. Permission will be given to use steel sheeting in lieu of wood sheeting for the entire job wherever the use of sheeting is necessary. The cost for use of sheeting will be included in the bid items for pipe and shall include full compensation for driving, bracing and later removal of sheeting.

E. All sheeting and bracing shall be carefully removed in such manner as not to endanger the construction of other structures, utilities, or property, whether public or private. All voids left after withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted to that purpose, by watering or otherwise as directed.

F. No payment will be given for sheeting, bracing, etc., during the progress of the work. No payment will be given for sheeting which has actually been left in the trench for the convenience of the Contractor.

G. Sheeting driven below mid-diameter of any pipe shall remain in place from the driven elevation to at least 1-foot above the top of the pipe.

3.04 TEST PITS

A. Excavation of test pits may be required for the purpose of locating underground utilities or structures as an aid in establishing the precise location of new work.

B. Test pits shall be backfilled as soon as the desired information has been obtained. The backfilled surface shall be maintained in a satisfactory condition for travel until resurfaced as specified.

3.05 EXCAVATION BELOW GRADE AND REFILL

A. Whatever the nature of unstable material encountered or the groundwater conditions, trench drainage shall be complete and effective.

B. If the Contractor excavates below grade through error or for the Contractor's own convenience, or through failure to properly dewater the trench, or disturbs the subgrade before dewatering is sufficiently complete, he may be directed by the Engineer to excavate below grade as set forth in the following paragraph, in which case the work of excavating below grade and furnishing and placing the refill shall be performed at his own expense.

C. If the material at the level of trench bottom consists of fine sand, sand and silt or soft earth which may work into the screened gravel notwithstanding effective drainage, the subgrade material shall be removed to the extent directed and the excavation refilled with a 6-inch layer of coarse sand, or a mixture graded from coarse sand to the fine peastone, as approved by the Engineer, to form a filter layer preserving the voids in the gravel bed of the pipe. The composition and gradation of gravel shall be approved by the Engineer prior to placement. Screened gravel shall then be placed in 6-inch layers thoroughly compacted up to the normal grade of the pipe. If directed by the Engineer, bank-run gravel shall be used for refill of excavation below grade.

D. Geotextile filter fabric may be substituted for filter layer if approved by the Engineer. Filter fabric shall be Mirafi 140N; Supac equivalent, or equal.

3.06 BACKFILLING

A. As soon as practicable after the pipe has been laid and jointed, backfilling shall begin and thereafter be prosecuted expeditiously. Bedding gravel, as specified for the type of pipe installed, shall be placed over the pipe as shown on the Drawings.

B. An impervious dam or bulkhead cutoff of clay or other impervious material shall be constructed in the trench as directed, to interrupt the unnatural flow of groundwater after construction is completed. The dam shall be effectively keyed into the trench bottom and sidewalls. Provide at least one clay or other impervious material dam in the pipe bedding minimum every 300-feet.

C. Where the pipes are laid cross-country, the remainder of the trench shall be filled with common fill material in layers not to exceed 3-feet and mounded 6-inches above the existing grade or as directed. Where a loam or gravel surface exists prior to cross-country excavations, it shall be removed, conserved and replaced to the full original depth as part of the work under the pipe items. In some areas it may be necessary to remove excess material during the clean-up process, so that the ground may be restored to its original level and condition.

D. Where the pipes are laid in streets or paved areas, the remainder of the trench up to a depth of 12-inches below the bottom of the specified permanent paving shall be backfilled with common fill material in layers not to exceed 1-foot and thoroughly compacted. The subbase layer for paving shall be as shown on the Drawing details and thoroughly compacted in 6-inch layers.

E. To prevent longitudinal movement of the pipe, dumping backfill material into the trench and then spreading will not be permitted until selected material or screened gravel has been placed and compacted to a level 1-foot over the pipe.

F. Backfill shall be brought up evenly on all sides. Each layer of backfill material shall be thoroughly compacted by rolling, tamping, or vibrating with mechanical compacting equipment or hand tamping, to 95 percent compaction. If rolling is employed, it shall be by use of a suitable roller or tractor, being careful to compact the fill throughout the full width of the trench.

G. Water jetting or puddling may be used unless the refill contains too great a proportion of clay or loam to permit satisfactory drying. Water jetting shall consist of using a suitable length of pipe at least 1-1/4-inch in diameter fitted with quick acting valve and sufficient hose to connect to hydrant or pump having adequate pressure and capacity. The full depth of backfill shall be thoroughly inundated by thrusting the pipe into the fill at frequent intervals with the valve open until all slumping ceases. Where backfill is compacted by puddling, it shall be done by depositing in water. Water for jetting or puddling may be obtained from Owner hydrants wherever possible. Water may be furnished by the Owner from these hydrants if reasonable care is exercised in its use and when approved by the Owner.

H. If water restrictions are in force, obtain water elsewhere, or compact the backfill by other approved methods at no additional cost to this Contract.

I. Where other methods are not practicable, compaction shall be by use of hand or pneumatic ramming with tools weighing at least 20 lbs. The material being spread and compacted in layers not over 6-inches thick. If necessary, sprinkling shall be employed in conjunction with rolling or ramming.

J. Backfill around structures shall be selected common fill material, may be compacted by puddling where approved by the Engineer. All backfill shall be compacted, especially under and over pipes connected to the structures.

K. Subject to the approval of the Engineer, fragments of ledge and boulders smaller than 6-inches may be used in trench backfill providing that the quantity in the opinion of the Engineer is not excessive. Rock fragments shall not be placed until the pipe has at least 2-feet of earth cover. Small stones and rocks shall be placed in thin layers alternating with earth to ensure that all voids are completely filled. Fill shall not be dropped into the trench in a manner to endanger the pipe.

L. Bituminous paving shall not be placed in backfilling unless specifically permitted, in which case it shall be broken up as directed. Frozen material shall not be used under any circumstances.

M. All road and paved surfaces shall be broomed and hose-cleaned immediately after backfilling. Dust control measures shall be employed at all times.

3.07 RESTORING TRENCH SURFACE

A. Where the trench occurs adjacent to paved streets, in shoulders, sidewalks, or in cross-country areas, thoroughly consolidate the backfill and shall maintain the surface as the work progresses. If settlement takes place, immediately deposit additional fill to restore the level of the ground.

B. In and adjacent to streets, the 12-inch layer of trench backfill below the specified initial pavement shall consist of compacted bank-run gravel. Should the Contractor wish to use material excavated from the trench as gravel subbase for pavement replacement, the Contractor, at his/her own expense, have samples of the material tested by an independent testing laboratory at intervals not to exceed 500-feet, in order to establish its compliance with the specifications. Only material which has been tested and approved by the Engineer shall be allowed to be incorporated into the work.

C. The surface of any driveway or any other area which is disturbed by the trench excavation and which is not a part of the paved road shall be restored to a condition at least equal to that existing before work began.

D. In sections where the pipeline passes through grassed areas, and at the Contractor's own expense, remove and replace the sod, or loam and seed the surface to the satisfaction of the Engineer.

END OF SECTION

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SECTION 02230
GRANULAR MATERIALS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and obtain materials for filling and backfilling, grading and miscellaneous site work, for the uses shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Site Preparation is included in Section 02100.

B. Dewatering and Drainage is included in Section 02140.

C. Rock and Boulder Excavation is included in Section 02213.

D. Trenching, Backfilling and Compaction is included in Section 02221.

E. Sedimentation and Erosion Control is included in Section 02270.

F. Pavement Repair and Resurfacing is included in Section 02576.

G. Loaming and Seeding is included in Section 02930.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, complete product data for materials specified in this Section.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C33/C33 M - Standard Specification for Concrete Aggregates.

2. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft) (2700kN-m/m^3).

3. ASTM D2487 - Classification of Soils for Engineering Purposes (Unified Soil Classification System).

4. ASTM D2974 - Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.

5. ASTM D4632/ D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

6. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile

7. ASTM D5084 - Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

8. ASTM E11 - Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves.

B. Massachusetts Department of Transportation (MassDOT) Standard Specifications for Highways and Bridges, and all addenda and supplements thereto, 1988 or latest edition.

C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 DEFINITIONS

A. Percent Compaction is the required in-place dry density of the material, expressed as a percentage of the maximum dry density of the same material, as determined in the laboratory by ASTM D1557 (Modified Proctor).

B. Optimum Moisture Content is the moisture content (percent by dry weight) corresponding to the maximum dry density of the same material as determined by ASTM D1557.

1.06 QUALITY ASSURANCE

A. The Quality Control and Quality Assurance consists of laboratory conformance testing of samples supplied from each granular fill and coarse aggregate source and quality control during installation.

B. The purpose of quality assurance testing is to assure that the supplied granular fill materials from each source conform to the Specifications.

C. Conformance testing requirements:

1. Materials to be used in the work shall be tested by a certified independent laboratory, engaged by the Contractor and acceptable to the Engineer, to demonstrate conformance with the requirements of these Specifications. Such testing will be paid for by the Contractor. At least fifteen (15) days prior to the placement of any backfill or fill materials, deliver a representative sample of the proposed materials weighing at least fifty pounds to the soils testing laboratory in accordance with Section 01300. For each source of fill material, the Contractor shall provide written documentation of the source of the fill and certification that the fill material is clean and in compliance with applicable standards and regulations.

2. Testing methods shall comply with the latest applicable ASTM or equivalent AASHTO Standards specified.

3. All materials used in construction, whether brought to the site or developed from on-site sources, shall be tested for:
   a. Optimum moisture-maximum density curve.
   b. Grain size analyses of the samples to determine their suitability for use as backfill or fill material in conformance to the materials requirements specified herein.
   c. The appropriate Proctor analyses to determine the maximum dry densities required for compaction testing as specified elsewhere in the Contract Documents.

d. Reports of the test results for each source shall be submitted before placing materials.
e. In addition, the soils testing laboratory shall perform the following test at a minimum frequency of 1 per every 200 cubic yards of material or when there is a change in material properties or source:

4. Test results and determinations of suitability shall be delivered to the resident project representative no later than 3 days prior to the placement of backfill or fill materials.

1.07 QUALIFICATIONS

A. Perform the work by a qualified earthwork crew that has experience in processing and installation of granular fill materials. Demonstrate the earthwork crew's proven experience by providing a minimum of five (5) similar completed projects with the following information:

1. Type and thickness of installed material and permeability;

2. Name and purpose of facility, its location and date of installation; and

3. Name of Owner and design Engineer. Name and telephone number of contact at the facility who can discuss the project.

B. The supplier shall show evidence of an adequate supply of material which is relatively homogenous within a designated mine area which is properly permitted by the appropriate Federal, State and local agencies.

1.08 DELIVERY, STORAGE AND HANDLING

A. If granular fill materials are delivered to the site prior to placement approval, stockpile materials on site in areas as directed by the Engineer. Provision shall be implemented to minimize surface water impact on the stockpile. Removal and placement of granular fill material shall be done in a manner to minimize intrusion of soils adjacent to and beneath the stockpile.

PART 2 PRODUCTS

2.01 MATERIALS

A. Backfill and Fill materials shall be suitable excavated materials, natural or processed mineral soils obtained from off-site sources, or graded crushed stone or gravel. Backfill and Fill materials shall be free of all organic material, trash, snow, ice, frozen soil, or other objectionable materials which may be compressible or which cannot be properly compacted. Soft, wet, plastic soils which may be expansive, clay soils having a natural, in-place water content in excess of 30 percent, soils containing more than 5 percent (by weight) fibrous organic materials, and soils having a plasticity index greater than 30 shall be considered unsuitable for use as backfill and fill. Backfill and fill materials shall have a maximum of 1 percent expansion when testing is performed on a sample remolded to 95 percent of maximum dry density (per ASTM D698) at 2 percent below optimum moisture content under a 100 lbs./square foot surcharge.

B. Common Fill shall not contain granite blocks, broken concrete, masonry rubble, asphalt pavement, or any material larger than 6-inches in any dimension. Common Fill shall have a plasticity index of less than 15 and shall conform to the following gradation limits:

Sieve Size	Percent Finer By Weight
No. 40	75
No. 200	20

C. Select Fill shall conform to the requirements of common fill except that the material shall not contain any materials larger than 2-inches in largest dimension.

D. Pea Gravel shall be screened, uniformly rounded stone, free from sand, loam, clay, excess fines and other deleterious materials. Pea Gravel shall conform to the following gradation limits:

Sieve Size	Percent Finer By Weight
1/2-inch	100
3/8-inch	90
No. 4	30
No. 8	10
No. 16	5

E. Screened Gravel shall be hard, durable, rounded, or sub-angular particles of proper size and gradation, and shall be free from sand, loam, clay, excess fines, and other deleterious materials. Screened gravel shall be graded within the following limits:

Sieve Size	Percent Finer By Weight
5/8-inch	100
1/2-inch	40 to 100
3/8-inch	15 to 45
No. 10	0 to 5

F. Crushed Stone, processed gravel, bank-run gravel and any other granular materials shown on the Drawings and not explicitly specified herein shall conform to the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, current edition, and all addenda and supplements thereto.

G. Sand for concrete, grout, and masonry shall conform to ASTM C33 for fine aggregate. General purpose sand shall be Select Common Fill.

H. Lean Concrete shall be ready-mix, cast-in-place concrete conforming to the requirements of Section 03300. Minimum compressive strength shall be 2,000 psi after 7 days and 2,500 psi after 28 days.

I. Filter fabric shall be Mirafi, Type 140N; Dupont, Type PAR, Style 3401, or equal product by Amoco and shall conform to the following requirements:

1. Minimum grab strength of 120 lbs. per ASTM D1682.

2. Equivalent open size (EOS) to be equal to or greater than the U.S. Standard Sieve No. 100 (0.210 mm) per ASTM D442.

3. Percent open area not to exceed about 25 percent. The percent open area is defined as the ratio of the sum of 20 or more individual open areas (times 100) to the sum of the corresponding 20 or more individual total areas.

4. Coefficient of permeability shall not be less than 10-2 cm/sec.

J. Staples for installing Erosion Control Blanket shall be made of wire, 0.091-inch in diameter or greater, "U" shaped, with legs 6-inch in length and a 1-inch crown.

K. Controlled Low-Strength Material (CLSM)/Controlled Density Fill (CDF) used as backfill and fill shall be comprised of a mixture of Portland cement, coarse aggregate, fine aggregate and water. Materials, methods of preparation, and placement techniques shall comply with the requirements of Section 03300 as for concrete. CLSM/CDF shall be in accordance with MassDOT Supplemental Specifications to the 1988 English Standard Specifications for Highways and Bridges, June 15, 2012. CLSM/CDF shall contain no fly ash. CLSM/CDF used as backfill or for utility crossings shall be Type 2E – Flowable (Excavatable) and shall be hand tool excavatable.

PART 3 EXECUTION

3.01 MATERIALS

A. Place materials in accordance with Sections 02221.

END OF SECTION

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SECTION 02270
EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and perform all installation, maintenance, removal and area cleanup related to erosion and sedimentation control work as shown on the Drawings and as specified herein. The work shall include, but not necessarily be limited to; installation of temporary access ways and staging areas, silt fences, stone filter boxes, stone filter berms, sediment removal and disposal, device maintenance, removal of temporary devices, temporary mulching, excelsior matting installation and final cleanup.

B. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the Massachusetts Department of Environmental Protection and Local Conservation Commission. Contractor shall prepare sedimentation and erosion control drawings meeting the requirements for approval by all appropriate regulatory agencies. Upon arrival, furnish two copies of the approved Drawing to the Engineer.

1.02 RELATED WORK

A. Environmental Protection Procedures are included in Section 01110.

B. Dust control is included in Section 01562.

C. Trenching, Backfilling and Compaction is included in Section 02221.

D. Granular fill materials are included in Section 02230.

E. Loaming and seeding is included in Section 02930.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, within 10 days after award of Contract, technical product literature for all commercial products, including straw mulch tackifier, to be used for erosion and sedimentation control.

1.04 QUALITY ASSURANCE

A. Be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site to off-site areas or into the stream system via surface runoff or underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of the Contractor. No additional charges to the Owner will be considered.

PART 2 PRODUCTS

2.01 MATERIALS

A. Crushed stone for sediment filtration devices, access ways and staging areas shall conform to MassDOT "Standards and Specifications for Highway and Bridges" Section M2.01.3.

B. Berm structural stone shall be rip-rap as follows:

1. Rip-rap shall be sound, durable rock which is roughly rectangular shape and of suitable quality to insure permanence in the condition in which it is to be used. Rounded stones, boulders, sandstone or similar soft stone will not be acceptable. Material shall be free from overburden, spoil, shale and organic material, meet the Engineer's approval and be well graded within the following limits:

Weight of Stone	Percent Finer by Weight
40 lb.	100
12 lb.	50
3 lb.	0

C. Sediment Fence

1. Sediment fence shall be a prefabricated commercial product made of a woven, polypropylene, ultraviolet resistant material such as "Envirofence" by Mirafi Inc., Charlotte, NC or equal.

D. 1/4-inch woven wire mesh for filter boxes shall be galvanized steel or hardware cloth.

E. Straw mulch shall be utilized on all newly graded areas to protect areas against washouts and erosion. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, or rye that is free from noxious weeds, mold or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10-inches or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment.

F. Latex acrylic copolymer or organic tackifier shall be a commercial product specifically manufactured for use as straw mulch tackifier.

G. An asphalt tackifier shall only be used when temperatures are too low to allow the use of a latex acrylic copolymer and only with prior written approval from the Engineer.

H. Erosion control blanket shall be installed in all seeded drainage swales and ditches as shown on the Drawings or as directed by the Engineer. Erosion control blanket shall be 100 percent agricultural straw matrix stitch bonded with degradable thread between two photodegradable polypropylene nettings, such as Model S150 Double Net Short-Term Blanket (10 months) by North American Green, Evansville, IN or equal.

I. Hay bales shall be placed around catch basins that discharge into wetlands, water supply or surface water bodies. Hay bales shall be utilized, along with other sediment filtration devices, in wetland buffer zones. Hay Bales shall meet the following requirements:

1. Wire bound or string tied.

2. Securely anchored by at least 2 stakes driven through the bale into the ground.

3. Chinked (filled by wedging) with hay to prevent water from escaping between bales.

PART 3 EXECUTION

3.01 INSTALLATION

A. Sediment Fence Installation

1. Sediment fences shall be positioned as indicated on the Drawings and as necessary to prevent off-site movement of sediment produced by construction activities as directed by the Engineer.

2. Dig trench approximately 6-inches wide and 6-inches deep along proposed fence lines.

3. Drive stakes, 8-feet on center (maximum) at back edge of trenches. Stakes shall be driven 2-feet (minimum) into ground.

4. Hang filter fabric on posts carrying to bottom of trench with about 4-inches of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and maintain secure both ways.

5. Backfill trench with excavated material and tamp.

6. Install pre-fabricated silt fence according to manufacturer's instructions.

B. Construct filter boxes as detailed on the Drawings, from 1/4-inch woven wire mesh or hardware cloth and wood. Fill with crushed stone and place over all drop inlets and manholes to storm drain system as each inlet is completed. This should be done prior to setting casting, if there is a delay between installation of inlet structures or drain manholes and setting of castings. An alternate method is to ring each inlet with a sediment fence.

C. Stone Filter Berm Installation

1. Place berm structural stone across channel just below lower sandbag wall at work area. Face upstream side of structural berm with crushed stone.

D. Staging areas and access ways shall be surfaced with a minimum depth of 4-inches of crushed stone.

3.02 MAINTENANCE AND INSPECTIONS

A. Inspections

1. Make a visual inspection of all erosion and sedimentation control devices once per week and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to offsite areas, promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.

B. Device Maintenance

1. Sediment Fences
   a. Remove accumulated sediment once it builds up to 1/2 of the height of the fabric.
   b. Replace damaged fabric, or patch with a 2-feet minimum overlap.
   c. Make other repairs as necessary to ensure that the fence is filtering all runoff directed to the fence.

2. Filter Boxes
   a. Replace crushed stone when it becomes saturated with silt.

3. Stone Filter Berm
   a. Muck out trapped silt from dewatering operations when it has built up to within 6-inches of the top of the berm.
   b. Replace crushed stone filter when saturated with silt.

4. Add crushed stone to access ways and staging area as necessary to maintain a firm surface free of ruts and mudholes.

3.03 TEMPORARY MULCHING

A. Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 30 days of the completion of rough grading.

B. Straw mulch shall be applied at rate of 100 lbs./1000 square feet and tackified with latex acrylic copolymer at a rate and diluted in a ratio per manufacturer's instructions.

C. Straw mulch shall be installed onto all exposed slopes loamed and seeded that are 4 (Horizontal) to 1 (Vertical) or flatter.

3.04 EROSION CONTROL BLANKETS

A. Erosion control blankets shall be installed in all seeded drainage swales and ditches as shown on the Drawings and as directed by the Engineer in accordance with manufacturer's instructions. The area to be covered shall be properly prepared, fertilized and seeded with permanent vegetation before the blanket is applied. When the blanket is unrolled, the netting shall be on top and the fibers in contact with the soil over the entire area. The blankets shall be applied in the direction of water flow and stapled. Blankets shall be placed a minimum of three rows (of 4-feet) wide (total approx. 12-feet width) within the drainage swale/ditch and stapled together in accordance with manufacturer's instructions. Side overlaps shall be 4-inch minimum. The staples shall be made of wire, .091-inch in diameter or greater, "U" shaped with legs 10-inch in length and a 1-1/2-inch crown. Commercial biodegradable stakes may also be used with prior approval by the Engineer. The staples shall be driven vertically into the ground, spaced approximately two linear feet apart, on each side, and one row in the center alternately spaced between each size. Upper and lower ends of the matting shall be buried to a depth of 4-inches in a trench. Erosion stops shall be created every 25-feet by making a fold in the fabric and carrying the fold into a silt trench across the full width of the blanket. The bottom of the fold shall be 4-inches below the ground surface. Staple on both sides of fold. Where the matting must be cut or more than one roll length is required in the swale, turn down upper end of downstream roll into a slit trench to a depth of 4-inches. Overlap lower end of upstream roll 4-inches past edge of downstream roll and staple.

1. To ensure full contact with soil surface, roll matting with a roller weighing 100 lbs./foot of width perpendicular to flow direction after seeding, placing matting and stapling. Thoroughly inspect channel after completion. Correct any areas where matting does not present a smooth surface in full contact with the soil below.

3.05 REMOVAL AND FINAL CLEANUP

A. Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner. Regrade all areas disturbed during this process and stabilize against erosion with surfacing materials as indicated on the Drawings.

END OF SECTION

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SECTION 02311
EXCAVATION SUPPORT AND PROTECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The work specified in this Section includes requirements for excavation and support of temporary excavations, and trenches. The Contractor shall design, furnish, install, and maintain a system of supports, including all bracing and associated items, to retain excavations in a safe manner and to control ground movements. Upon completion of the required construction the system of supports shall be completely removed and the excavation and staging area sites restored as discussed herein.

B. The work shall include site grading; fencing and signing; construction staging areas; design and construction of excavation support systems; disposal of excavated material, surface water, and ground water; backfilling; and site restoration. Work shall include all labor, materials, and equipment required to complete excavation support.

C. Retain the services of a professional engineer registered in the State in which the work will occur to prepare excavation support and protection system designs and submittals described herein.

D. Work shall include the design, equipment, materials, installation, protection, and monitoring of geotechnical instrumentation required to monitor the performance of the excavation support system as required herein.

E. All excavations and support systems shall conform to applicable OSHA excavation, trenching, and shoring standards which are contained in the U.S. Code of Federal Regulations 29 (C.F.R.) 1926.650-1926.653, other federal, state or local requirements. In the event of a conflict, comply with the more restrictive applicable requirements.

1.02 RELATED WORK

A. Submittals are included in Section 01300.

B. Site Preparation is included in Section 02100.

C. Dewatering and Drainage are included in Section 02140.

D. Rock and Boulder Excavation are included in Section 02213.

E. Trenching, Backfilling and Compaction is included in Section 02221.

F. Fill and Backfill Materials are included in Section 02230.

1.03 SUBMITTALS

A. Submit to the Engineer in accordance with Section 01300, Shop Drawings and design calculations for the Contractor-designed excavation support system stamped by a Professional

Engineer in the Commonwealth of Massachusetts. Submittals shall indicate the following, as a minimum:

B. Shop Drawings shall include:

1. Provide overall plan layout of the system, indicating clearances, dimensions, material properties, member sizes, locations, spacing and penetrations depth of all members, locations of various types of lateral supports. Indicate existing and proposed utilities, structures or other obstruction, location and type of instrumentation and monitoring points within the area of influence of the excavation.

2. Provide wall elevations and locations of all bracing.

3. Show the overall sequence of installation and removal of bracing, indicating levels to which the work will be carried out before bracing is installed or removed.

4. Method of preloading bracing (if required) and the preload for each member, and the method of locking-off the preload. Include detailed drawings of the connections, jacking supports and method of shimming.

5. Details, layout, arrangement, equipment requirements, and method of construction of the proposed excavation support system.

6. Procedures for resolving difficulties arising from misalignment of members exposed during excavation, and criteria for implementing those procedures.

C. Design calculations shall include:

1. Loads on the excavation support system for all stages of excavation, bracing removal, and concrete placement, including material and equipment loads on adjacent ground during construction.

2. Design of wall and all bracing members including all details for all stages of construction. Design shall account for water pressures associated with flood conditions.

3. Theoretical deflections of excavation support system and deformation of structures, pipelines, and other improvements located within the area of influence of the excavation.

4. Submit to the Engineer for review and acceptance, a plan of action to be implemented in the event any threshold value for deformation is reached. The plan of actions shall be positive measures by the Contractor to limit further movement of the wall including but not limited to trenching for struts and wales, placement of granular earth berms against the wall, installation of additional struts, or combinations thereof. The details of the mitigating measures shall include a schedule of implementation, location and/or availability of materials, structural details for all connections to the wall and support elements, and a detailed description of the method of implementation. The Contractor shall be prepared to work 24 hours per day to implement such measures. The remedial work/mitigating measures shall be at no additional cost to the Owner.

D. Submit quality control measures as required to ensure that the performance of the excavation support system is consistent with the approved shop drawings and the requirements herein.

E. Submit welder qualifications and weld procedures in accordance with AWS D1.1.

F. Submit Contractor's and Design Engineer's qualifications as described in herein

G. At least one copy of the design shall be maintained at the job site during excavation that includes a plan indicating the sizes, types, and configurations of the materials to be used in the protective system, and the identity of the registered engineer who approved the design.

H. Do not proceed with any support of excavation or protection activities until the submittal has been reviewed, approved, and accepted by the Engineer.

I. Design Engineer's documentation shall include:

1. On-site inspections of excavation support system as the systems are constructed.

2. Review of quality control measures and performance data.

3. Certification that the excavation support system is constructed per the applicable design following completion of each support system and following any modifications by Contractor during construction.

1.04 QUALITY ASSURANCE

A. Regulations: Perform all work in accordance with current applicable regulations and codes of all Federal, State and local agencies.

B. The Contractor shall have at least 5 years of experience with work compatible to the Work shown and specified, employing labor and supervisory personnel who are similarly experienced in this type of Work.

C. The Contractor's Design Engineer shall be a Registered Professional Engineer in the State in which the work is located with at least 5 years professional experience in the design and construction of support of excavation systems and shall have completed not less than 5 successful excavation support projects of equal type, size, and complexity to that require for the work.

1.05 DESIGN REQUIREMENTS

A. The design of temporary excavation support systems is the responsibility of the Contractor. The design calculations and drawings shall be prepared, stamped and signed by a Professional Engineer registered in the Commonwealth of Massachusetts, who is experienced in designing similar excavation support systems.

B. Design temporary excavation support systems in accordance with requirements of this Section. These criteria are the minimum acceptable standards.

C. All underground utility lines shall be identified, located, and protected from damage or displacement. Utility companies and other responsible authorities shall be contacted to locate and mark the locations and, if they so desire, direct or assist with protecting the underground installation. When required, the Contractor shall obtain an excavation permit from the local authority having jurisdiction prior to the initiation of any excavation work.

D. Design excavation support systems in accordance with all OSHA requirements and other local and agency requirements.

E. Design the support system to minimize horizontal and vertical movements and to protect adjacent structures and utilities from damage.

F. Excavations below the level of the base of any adjacent foundation or retaining wall shall not be permitted unless the design of the excavation and bracing includes an analysis of the stability of the structure supported by the foundation and as necessary, incorporates required bracing/underpinning of the foundation.

G. For support systems in which bracing is installed between opposite sides of the excavation, design the excavation support of both sides to be nearly the same as feasible.

H. Where necessary to resist point loads, pipe piles used as soldier piles shall be filled with concrete with a compressive strength not less than 3,000 psi. The strength of the concrete shall not be considered in design of the pipe pile for bending stress.

I. Design, install, operate, and maintain ground water control system to control ground water inflows, prevent piping or loss of ground, and maintain stability of the excavation. Refer to the requirements of Section 02140.

J. Design review and field monitoring activities by the Owner or by the Engineer shall not relieve the Contractor of his/her responsibilities for the work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Soldier piles and structural steel members shall conform to ASTM A572 or ASTM A242 unless approved otherwise. No members with permanent deformations are to be provided. Members shall not be spliced unless approved by the Engineer.

B. Pipe piles used as soldier piles shall conform to ASTM A252.

C. Steel sheet piling shall conform to ASTM A328 or ASTM A572 or ASTM A690, unless approved otherwise.

D. Liner plates shall be fabricated from structural quality hot-rolled carbon steel sheets or plates conforming to ASTM A1101 with the following minimum properties before cold forming:

E. Plates shall be of either the two- or four-flange type, punched for bolting on all sides. Bolt spacing shall be in accordance with the manufacturer's standard spacing and shall be multiples of the plate length so that the plates having the same curvature shall be interchangeable. Bolt numbers and pattern shall be determined by the liner supplier.

F. Tensile Strength: 42,000 psi

1. Yield strength: 28,000 psi

G. Concrete shall conform to Section 03300 or ASTM C33 and ASTM C150 unless otherwise approved.

H. All timber shall be structural grade with a minimum allowable flexural strength of 1100 psi. Timber lagging shall be at least 3 inches thick and free of large or loose knots.

PART 3 EXECUTION

3.01 GENERAL

A. Commence installation of support system and excavations only after shop drawings have been reviewed and accepted by the Engineer.

B. All instrumentation required shall be installed and initialized prior to the start of work.

C. Methods of construction for excavations shall be such as to ensure the safety of the Work, Contractor's employees, Engineer, and Owner's employees and inspectors, the public and adjacent property and improvements, whether public or private.

D. Before beginning construction at any location of this project, adequately protect existing structures, utilities, trees, shrubs, and other existing facilities. The repair of or compensation for damage to existing facilities shall be at no additional cost to the Owner.

E. As a minimum, place fencing, gates, lights, and signs as necessary around the excavations and staging areas to provide for public safety.

F. Install excavation support systems in accordance with the approved shop drawings and applicable permits.

G. All voids between excavation support system and earth shall be filled with materials acceptable to the Engineer.

H. If unstable material is encountered during excavation, all necessary measures shall be taken immediately to contain it in place and prevent ground displacement.

I. If settlement or deflections of supports indicate that support system requires modification to prevent excessive movements, redesign and resubmit revised shop drawings and calculations to the Engineer at no additional cost to the Owner.

J. Sufficient quantity of material shall be maintained on site for protection of work and for use in case of accident or emergency.

K. All welding shall conform to the applicable provisions of ANSI/AWS D1.1.

3.02 PORTABLE TRENCH BOXES

A. Portable trench boxes or sliding trench shields may be used for the protection of workers only.

B. Trench boxes shall not be used as tunnel launch and exit shafts.

C. Additional excavation, backfilling, and surface restoration required as the result of trench box use shall be at no additional cost to the Owner.

D. Trench boxes or shields shall be designed, constructed, and maintained to meet acceptable engineering and industry standards.

E. Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.

F. A copy of the trench box manufacturer's specifications, recommendations, and limitations shall be in written form and maintained at the job site during all excavation work.

3.03 SOLDIER PILES

A. Install soldier piles with the minimum embedment depths as shown on approved shop drawings.

B. Driven piles shall be installed with driving shoes where hard driving is anticipated.

C. For soldier piles installed in predrilled holes, provide casing or other methods of support as necessary to prevent caving of holes and loss of ground.

D. Predrilled holes for soldier piles shall be backfilled with concrete from the pile tip elevation to the elevation of the bottom of the excavation. The remainder of the predrilled hole shall be backfilled with lean concrete or sand. Concrete strength shall be in accordance with the approved shop drawings.

E. The predrilled hole diameter shall be sufficient to allow for proper alignment and concrete backfilling of the pile.

F. Driven soldier piles shall be advanced without the aid of a water jet.

G. Provide timber lagging of sufficient thickness to withstand earth pressures and in accordance with the approved shop drawings.

H. Install lagging such that ground loss does not occur between adjacent or below the lowest board. As excavation proceeds, the maximum height of unlagged face of excavation shall not exceed 4 feet. The unlagged face shall not exceed 2-feet if water seeps or flows from the face of the excavation or if the face of the excavation becomes unstable.

I. As installation progresses, backfill the voids between the excavation face and the lagging. Pack with materials such as hay, burlap, or geotextile filter fabric where necessary to allow drainage of ground water without loss of ground.

3.04 STEEL SHEET PILING

A. Install steel sheet piling with the minimum embedment depths as shown on the approved shop drawings.

B. Drive sheeting in plumb position with each sheet pile interlocked with adjoining piles for its entire length so as to form a continuous diaphragm throughout the length of each run of wall, bearing tightly against original ground. Exercise care in driving so that interlocking members

can be extracted without damaging adjacent structures or utilities. The methods of driving, cutting, and splicing shall conform to the approved shop drawings.

C. Use templates or other temporary alignment facilities to maintain piling line.

D. Prior to installation, the sheet piles shall be thoroughly cleaned and inspected for defects and for proper interlock dimensions. The Contractor shall provide a tool for checking the interlock dimensions.

E. Each sheet pile shall have sufficient clearance in the interlocks to slide, under its own weight, into the interlock of the sheet pile previously placed.

F. Excavation shall not be carried in advance of steel sheet piling installation.

G. Where obstructions are anticipated, pre-excavation or pre-drilling along the sheet pile wall alignment shall be conducted at no additional cost to the Owner. Pre-excavation and pre-drilling shall not extend below the lowest excavation level or into bearing soils for existing or future structures.

H. Obstructions encountered before the specified embedment for piles shall be removed. Where obstructions cannot be removed, the sheet pile system shall be re-evaluated by the Contractor's Design Engineer for the resulted reduced embedment and additional toe stability measure implemented, as required or for realignment of the sheet pile wall. A submittal of the proposed measures shall be provided.

I. Damaged piling or piling with faulty alignment shall be withdrawn and new piling driven properly in its place. The cost of such additional work shall be considered as part of the pile driving and shall be borne by the Contractor.

3.05 LINER PLATES

A. Liner plates shall be installed as soon as excavation has progressed sufficiently for the next ring of plates to be installed. A complete circumferential ring of liner plates shall be installed prior to continuing the excavation. Installing more than one incomplete ring of liner plates at any time is not acceptable. Plates shall be staggered in the vertical direction to facilitate shaft strength and leakage resistance.

B. Liner plates shall be grouted in accordance with the approved shop drawings.

3.06 INTERNAL BRACING

A. Provide internal bracing to carry maximum design load without distortion or buckling.

B. Include web stiffeners, plates, or angles as needed to prevent rotation, crippling, or buckling of connections and points of bearing between structural steel members. Allow for eccentricities caused by field fabrication and assembly.

C. Install and maintain all bracing support members in tight contact with each other and with the surface being supported. Wood shims shall not be used.

D. Coordinate excavation work with installation of bracing. Excavation shall extend no more than 2 feet below any brace level prior to installation of the bracing.

E. Use procedures that produce uniform loading of bracing member without eccentricities or overstressing and distortion of members of system.

3.07 REMOVAL OF EXCAVATION SUPPORT

A. Do not remove internal bracing and transfer loads to the permanent structure without prior acceptance of the Engineer.

B. Removal shall begin at and progress from the bottom of the excavation. Members shall be released slowly as to note any indication of possible failure of the remaining members or possible cave-in of the sides of the excavation.

C. Backfilling shall progress together with the removal of support systems from excavations.

D. Unless otherwise indicated, remove all portions of excavation support.

E. Do not remove vertical support members that were installed within the zone of influence of new or existing structures. The zone of influence is defined as a zone extending down and away from the outer edge of the structure at 1 horizontal to 1 vertical. Support members installed within this zone shall be cut off at 5 feet below finished grade and abandoned in place.

F. No untreated wood shall remain as part of the abandoned portion of the work.

G. When removing the excavation support system, do not disturb or damage adjacent buildings, structures, waterproofing material, or utilities. Fill voids immediately with lean concrete or well-graded cohesionless sand, as indicated or as directed by the Engineer.

H. Remove material of the excavation support system from the site immediately.

END OF SECTION

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SECTION 02576
PAVEMENT REPAIR AND RESURFACING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, material, equipment and incidentals required and replace all pavement removed over trenches or otherwise disturbed by the Contractor's operations.

B. New pavement shall consist of initial pavement over trenches and final bituminous concrete pavement placed either over trenches.

C. Streets, driveways, parking areas or sidewalk pavements damaged or disturbed by the Contractor's operations shall be repaired, replaced or restored in accordance with the requirements specified herein and as directed for the respective type of pavement replacement and in a manner satisfactory to the Owner.

D. Contractors shall contact the Owner to arrange for an inspection at least one full day in advance of placing the final paving.

E. Contractors may elect to have their pavement repairs completed by a second or sub paving contractor (who must also be bonded as per Owner requirements), but the Contractor initially cutting the pavement shall nevertheless remain responsible for the completion of the pavement repairs within the time periods specified herein.

F. Final permanent paving is not allowed during the winter months from December 1st to March 31st.

1.02 RELATED WORK

A. Saw cut of existing pavement is included in Section 02221.

1.03 REFERENCE STANDARDS

A. Except as otherwise specified herein, the current Standard Specifications for Highways and Bridges, including all addenda, issued by the Massachusetts Department of Transportation, shall apply to materials and workmanship required for the work of this Section.

B. American Association of State Highways and Transportation Officials (AASHTO)

1. AASHTO M144 - Standard Specification for Calcium Chloride.

C. City of New Bedford Construction Specifications, latest edition.

D. New Bedford City Code (latest version).

E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 MAINTENANCE

A. All pavement placed shall be maintained for a period of 3 years in accordance with New Bedford Construction Specifications and the requirements of Chapter 22, Article II of the New Bedford City Code (latest version). During this period all areas which have settled or are unsatisfactory for traffic shall be refilled and replaced.

1.05 QUALITY ASSURANCE & GUARANTEE

A. The Contractor shall be capable of providing multiple crews as needed to complete the work without delay, and shall begin work within 7 days from authorized notice to proceed.

PART 2 PRODUCTS

2.01 MATERIALS

A. Calcium chloride shall conform to AASHTO M144, Type I or Type II.

B. Initial pavement shall be Binder Course, conforming to the referenced standard, Section M3.11, Class I, Type I-1 bituminous concrete. Thickness shall be as shown on the Drawings.

C. Final trench pavement shall consist of Binder Course and Top Course, conforming to the referenced standard, Section M3.11, Class I, Type I-1, bituminous concrete. Thickness of each course shall be as shown on the Drawings.

PART 3 EXECUTION

3.01 GENERAL

A. Materials for pavement shall be mixed, delivered, placed and compacted in accordance with the referenced standard, Sections M3.11 and 460 and as specified herein.

B. Whenever the subbase becomes dry enough to cause dust problems, spread calcium chloride uniformly over the gravel surface in sufficient quantity to eliminate the dust.

C. When the air temperature falls below 50 degrees F, extra precautions shall be taken in drying the aggregates, controlling the temperatures of the materials and placing and compacting the mixtures.

D. No mixtures shall be placed when the air temperature is below 40 degrees F, nor when the material on which the mixtures are to be placed contains frost or has a surface temperature not suitable to the Engineer.

E. No vehicular traffic or loads shall be permitted on the newly completed pavement until adequate stability has been attained and the material has cooled sufficiently to prevent distortion or loss of fines. If the climatic or other conditions warrant it, the period of time before opening to traffic may be extended at the discretion of the Engineer.

F. Paving of streets and sidewalks shall be between the continuous limits of damage to the existing pavement. New pavement shall match existing limits of pavement at straight seams cut perpendicular to the curb line.

3.02 EXISTING PAVEMENT REMOVAL

A. Saw Joints as follows:

1. Saw joints true to the lines shown on the Plans or as directed by the Engineer.

2. Saw joints the full depth of the existing concrete unless otherwise shown on the Plans or directed by the Engineer.

3. Leave a neat, vertical face for the full depth of the retained portion.

B. Remove Pavement

1. After sawing the joints, begin removing the isolated pavement.

2. Use removal methods that will not damage the pavement edges that will remain in place or impede the proposed construction.

C. Protect Remaining Edges

1. After removing the pavement, protect the pavement edges that will remain in place.

2. Do not allow traffic or equipment to cross the remaining edges.

3. Repair or restore the damaged edges to the Engineer's satisfaction at no additional cost to Owner.

3.03 INSTALLATION

A. Initial pavement shall be placed wherever existing pavement has been removed or disturbed as soon as practical, but in no case more than 1 week after backfilling is completed.

1. The gravel subbase shall be excavated to a depth of 3-inches below the existing pavement, shaped and compacted.

2. The 3-inch initial pavement shall be placed and compacted by steel-wheeled rollers of sufficient weight to thoroughly compact the bituminous concrete without damaging the existing pavement. The new pavement shall be rolled smooth and even with the existing pavement.

3. Hose clean all road surfaces adjacent to the trench area to be paved. No paving is to be placed until subsurface is dry.

4. Initial pavement shall be maintained in a condition suitable for traffic until replaced or overlaid by final pavement. Defects shall be repaired within 3 days of notification of such defects.

B. Final pavement shall not be placed over trenches in less than 90 days after completion of the backfilling unless otherwise directed in writing by the Engineer.

C. Final pavement over trenches shall be constructed as follows:

1. Remove and dispose of initial pavement and subbase to 12-inches below existing pavement. 12-inches of processed gravel as shown on the Drawings for roadway subbase shall be spread and compacted to 95 percent of maximum dry density as determined by ASTM D1557, Method D.

2. Trim loose edges of existing pavement. Broom and tack coat all edges with emulsified or cutback asphalt.

3. Place Binder Course and compact to 1-1/2-inch thickness by steel-wheeled roller.

4. Broom and tack coat edges of existing pavement and Binder Course with emulsified or cutback asphalt.

5. Place Top Course and compact to 1-1/2-inch thickness, finish smooth, dense and flush with surface of existing pavement.

3.04 PAVEMENT MARKINGS AND TRAFFIC SIGNAL EQUIPMENT

A. Reline all streets with pavement markings equal in type and location where existing prior to paving.

B. Replace traffic loops and signals, if disturbed during the performance of the work, at no additional cost to the Owner. Payment for this work shall be included in the Contractor's price for Miscellaneous Work and Cleanup.

END OF SECTION

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SECTION 02605
PRECAST CONCRETE MANHOLES AND STRUCTURES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install precast concrete manholes, structures, frames and covers, manhole rungs, and appurtenances all as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Excavation and backfill is included is Section 02221.

B. Screened gravel bedding is included in Section 02230.

C. Cast-in-place concrete is included in Division 3.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings showing details of construction, reinforcing, joints, pipe connection to manhole, manhole rungs, manhole platforms (if applicable), manhole frames and covers, access hatches and ladders.

B. Submit for review, structural calculations and drawings for all precast structures.

C. Concrete design mix data and concrete test cylinder reports from an approved concrete testing laboratory certifying that the concrete used in the precast structures conforms with the strength requirements specified herein.

D. REFERENCE STANDARDS

E. ASTM International

1. ASTM A48 - Standard Specification for Gray Iron Castings

2. ASTM A615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

3. ASTM C32 - Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale).

4. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale).

5. ASTM C150 - Standard Specification for Portland Cement.

6. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.

7. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

8. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.

9. ASTM D4101 - Standard Specification for Propylene Plastic Injection and Extrusion Materials.

F. American Concrete Institute (ACI)

1. ACI 318 - Building Code Requirement for Structural Concrete.

G. American Association of State Highway and Transportation Officials (AASHTO)

H. Occupational Safety and Health Administration (OSHA)

I. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 QUALITY ASSURANCE

A. The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Engineer, or other representative of the Owner. Such inspection may be made at the place of manufacture, or on the work after delivery, or at both places and the materials shall be subject to rejection at any time on account of failure to meet any of the requirements specified herein; even though samples may have been accepted as satisfactory at the place of manufacture. Material rejected after delivery to the job shall be marked for identification and shall be removed from the job at once. All materials which have been damaged after delivery will be rejected, and if already installed, shall be acceptably repaired, if permitted, or removed and replaced, entirely at the Contractor's expense.

B. At the time of inspection, the materials will be carefully examined for compliance with the ASTM standard specified below and this Section and with the approved manufacturer's drawings. All manhole sections shall be inspected for general appearance, dimension, "scratch-strength", blisters, cracks, roughness, soundness, etc. The surface shall be dense and close-textured.

C. Imperfections in manhole sections may be repaired, subject to the approval of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi at 7 days and 5,000 psi at 28 days, when tested in 3-inch by 6-inch cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs subject to the approval of the Engineer.

PART 2 PRODUCTS

2.01 PRECAST CONCRETE MANHOLE SECTIONS

A. Precast concrete barrel sections and transition top sections, shall conform to ASTM C478 and meet the following requirements:

1. The wall thickness shall not be less than 5-inch for 48-in diameter reinforced barrel sections, 6-inch for 60-in diameter reinforced barrel sections and 7-inch for 72-inch diameter reinforced barrel sections.

2. Top sections shall be eccentric except that barrel sections shall be used where shallow pipe cover requires a top section less than 4-feet as shown on the Drawings.

3. Barrel sections shall have tongue and groove joints.

4. All sections shall be cured by an approved method and shall not be shipped nor subjected to loading until the concrete compressive strength has attained 3,000 psi and not before 5 days after fabrication and/or repair, whichever is longer.

5. Precast concrete barrel sections with precast top slabs and precast concrete transition sections shall be designed for a minimum of H-20 loading plus the weight of the soil above at 120 pcf.

6. The date of manufacture and the name and trademark of the manufacturer shall be clearly marked on the inside of each precast section.

7. Precast concrete bases shall be constructed and installed as shown on the Drawings. The thickness of the bottom slab of the precast bases shall not be less than the manhole barrel sections or top slab whichever is greater.

8. Knock out panels shall be provided in precast manhole sections at the locations shown on the Drawings. They shall be integrally cast with the section, 2-1/2-inch thick and shall be sized as shown on the Drawings. There shall be no steel reinforcing in knock out panels.

2.02 PRECAST CONCRETE STRUCTURES

A. The precast reinforced concrete structures shall be manufactured by Rotundo & Sons, Inc.; American Precast or equal. The inside dimensions, headroom requirements and minimum thickness of concrete shall be as indicated on the Drawings. The manufacturer shall notify the Engineer at least 5 working days prior to placing concrete during the manufacturing process. The Engineer may inspect the reinforcing steel placement and/or require the manufacturer to provide photographs of each section showing the location of all reinforcing steel prior to the placing of concrete. Should it be found that the placement of steel is not as detailed in the shop drawing submittals, the section in question shall be rejected and a replacement section shall be manufactured at the Contractor's expense. Failure to properly notify the Engineer prior to placing concrete shall require the precast sections to be rejected and replacement sections to be manufactured at the Contractor's expense.

B. Structural design calculations and Drawings shall be prepared and stamped by a professional engineer registered in the Commonwealth of Massachusetts.

C. All precast concrete shall have a minimum compressive strength of 5,000 psi at 28 days. Water shall be kept to a minimum to obtain concrete which is as dense and watertight as possible. The maximum water-to-cement ratio shall be 0.40 by weight and the minimum cement content shall be 600 lbs. of cement per cubic yard of concrete. The above ratios shall be revised for sacks of cement weighing different from 94 pounds per sack.

D. Design Criteria

1. All precast concrete members shall conform to ACI 318.

2. When the design yield strength "fy" for tension reinforcement exceeds 40,000 psi, the "z" values referred to in ACI 318 shall not exceed 95 kips/in. The flexural stress in reinforcement under service loads "fs" shall be calculated and shall not be greater than 50 percent of the specified yield strength fy.

3. The precast concrete structure's elements shall be designed to support their own weight, the weight of soil above at 120 pcf and shall be capable of withstanding a live load equal to an AASHTO HS-20 highway loading applied to the top slab.

4. The base slab and walls shall be cast together to form a monolithic base section.

5. All exterior walls shall be designed for an equivalent fluid pressure of 90 lbs./square feet. The top of the pressure diagram shall be assumed to originate at finished ground level. Additional lateral pressure from approaching truck wheels shall be considered in accordance with AASHTO.

6. The structural design shall take into account discontinuities in the structure produced by openings and joints in the structure.

7. The structures shall be designed to prevent flotation without the benefit of skin friction when the ground water level is at finished ground surface. Flotation forces shall be resisted by the dead load of the structure and soil directly above the structure. Weight of equipment and piping within the structure and soil frictional forces shall not be considered as being effective in resisting flotation forces.

8. If the design of the box structure requires a concrete pad to prevent flotation, the cost of designing, furnishing and installing a reinforced concrete pad shall be included in the price for the structure. Details of the design of the concrete pad (if required) shall be submitted to the Engineer for review.

9. All walls and slabs shall be analyzed by accepted engineering principles. Openings shall be completely framed as required to carry the full design loads to support walls. All slabs and walls shall be fully reinforced on both faces and the minimum reinforcing shall be No. 5 at 12-in E.F.E.W. Additional reinforcing shall be provided around all openings.

10. The horizontal wall joints shall not be located within 18-inches of the horizontal centerline of wall penetrations.

E. The structure shall be built by the manufacturer in no more than four major sections including the top slab if required.

F. Where top slabs are used or required, lifting hooks shall be provided.

G. As required, access openings and pipe penetrations shall be formed openings and located as shown on the Drawings.

H. Wall sleeves as shown on the Drawings, shall be provided to the precast concrete manufacturer for inclusion in the manufacture of the structure.

2.03 BRICK MASONRY

A. The bricks shall be good, sound, hard and uniformly burned, regular and uniform in shape and size, of compact texture and satisfactory to the Engineer. Underburned or salmon brick will not be acceptable and only whole brick shall be used unless otherwise permitted. In case bricks are rejected by the Engineer, they shall be immediately removed from the site of the work and satisfactory bricks substituted therefor.

1. Bricks for the channels and shelves shall comply with ASTM C32 for Sewer Brick, Grade SS (from clay or shale) except that the mean of five tests for absorption shall not exceed 8 percent and no individual brick exceed 11 percent.

2. Bricks for building up and leveling manhole frames shall conform to ASTM C62.

B. Mortar used in the brickwork shall be composed of 1 part Type II Portland cement conforming to ASTM C150 to 2 parts sand to which a small amount of hydrated lime not to exceed 10 lbs. to each bag of cement shall be added.

C. The sand used shall be washed, cleaned, screened, sharp and well graded as to different sizes and with no grain larger than will pass a No. 4 sieve. It shall be free from vegetable matter, loam, organic or other materials of such nature or of such quantity as to render it unsatisfactory.

D. The hydrated lime shall also conform to ASTM C207.

2.04 MANHOLE FRAME AND COVER

A. Manhole frames and covers shall be of good quality, strong, tough, even grained cast iron smooth, free from scale, lumps, blisters, sand holes and defects of any kind which render them unfit for the service for which they are intended. Manhole covers and frame seats shall be machined to a true surface. Castings shall be thoroughly cleaned and subject to hammer inspection. Cast iron shall conform to ASTM A48, Class 30.

B. Manhole covers shall have a diamond pattern, pickholes and the appropriate word (WATER, DRAIN, SEWER, ELECTRIC, ETC.) cast in 3-inch letters. Manhole frame and covers shall be Neenah Foundry or equal.

2.05 JOINTING PRECAST MANHOLE SECTIONS AND STRUCTURES

A. Tongue and groove joints of precast manhole and structure sections shall be sealed with either a round rubber O-ring gasket or a preformed flexible joint sealant. The O-ring shall conform to ASTM C443. The preformed flexible joint sealant shall be Kent Seal No. 2 by Hamilton-Kent; Ram-Nek by K.T. Snyder Company or equal.

B. Joints shall be designed and manufactured so that the completed joint will withstand an internal water pressure of 15 psi without leakage or displacement of the gasket or sealant.

2.06 MANHOLE RUNGS

A. Manhole rungs shall be either of the following types:

1. Manhole rungs shall be of cast aluminum alloy 6061-T6, drop front design, 12-inch wide with an abrasive step surface. The manhole rungs shall conform to the requirements of OSHA.

2. Manhole rungs shall be steel reinforced copolymer polypropylene plastic. Rungs shall be 14-inch wide, M.A. Industries Type PS2-PF-SL or equal. Copolymer polypropylene shall conform to ASTM D4101, PP0344 B33534 Z02. Steel reinforcing shall be 1/2-inch diameter, grade 60 conforming to ASTM A615 and shall be continuous throughout the rung. The portion of the legs to be embedded in the precast section shall have fins and be tapered to insure a secure bond.

2.07 PIPE CONNECTIONS TO MANHOLE

A. Manhole pipe connections may be accomplished in the following ways:

1. A tapered hole filled with non-shrink waterproof grout, Hallemite; Waterplug; Embeco or equal, after the pipe is inserted is acceptable, providing the grout is placed carefully to completely fill around the pipe. If this method is used, place concrete encasement to assure a total 12-inches of concrete including manhole thickness around the pipe stub. For PVC pipe, a waterstop gasket and stainless steel clamp shall be attached to the pipe prior to grouting.

2. The "Lock Joint Flexible Manhole Sleeve" shall be cast in the precast manhole base. The stainless steel strap shall be protected from corrosion with a bituminous coat.

3. "A-Lok" shall be a rubber like gasket cast in the precast manhole base. The rubber gasket shall be cast into a formed opening in the manhole.

4. "KOR-N-SEAL" joint shall be installed as recommended by the manufacturer. The stainless steel clamp shall be protected from corrosion with a bituminous coat.

2.08 DAMPPROOFING

A. Brushed dampproofing shall be an asphalt emulsion reinforced with fibers conforming to ASTM D1227, Type II, Class 1. The dampproofing shall be Hydrocide 700B by Sonneborn Building Products, Division of ChemRex Inc., Minneapolis, MN; Karnak 220 Asphalt Emulsion by Karnak Corporation, Clark, NJ or equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. Manhole and Structure Installation

1. Manhole and structure shall be constructed to the dimensions shown on the Drawings and as specified herein. All work shall be protected against flooding and flotation.

2. The bases of manholes shall be placed on a bed of 12-inches screened gravel as shown on the Drawings. The bases shall be set at a grade to assure that a maximum of 8-inch thickness of brickwork will bring the manhole frame and cover to final grade. Cast-in-place

bases shall be constructed in accordance with the requirements of Division 3 and the details shown on the Drawings.

3. Precast concrete barrel sections and structures shall be set plumb and with sections in true alignment with a 1/4-inch maximum tolerance to be allowed. The joints of precast barrel sections shall be sealed with either a rubber O-ring set in a recess or the preformed flexible joint sealant used in sufficient quantity to fill 75 percent of the joint cavity. The outside and inside joint shall be filled with non-shrink mortar and finished flush with the adjoining surfaces. Allow joints to set for 24-hours before backfilling. Backfilling shall be done in a careful manner, bringing the fill up evenly on all sides. If any leaks appear in the manholes, the inside joints shall be caulked with lead wool to the satisfaction of the Engineer. Install the precast sections in a manner that will result in a watertight joint.

4. Holes in the concrete barrel sections required for handling or other purposes shall be plugged with a non-shrinking grout or non-shrinking grout in combination with concrete plugs and finished flush on the inside.

5. Where holes must be cut in the precast sections to accommodate pipes, cutting shall be done prior to setting manhole sections in place to prevent any subsequent jarring which may loosen the mortar joints.

B. Manhole Pipe Connections

1. Manhole pipe connections shall be accomplished in the ways specified herein. Pipe stubs for future extensions shall also be connected and the stub end closed by a suitable watertight plug.

C. Manhole Rung Installation

1. Aluminum manhole rungs shall be grouted into precast sections, on 12-inch centers, by the manufacturer. Holes in riser and cone sections for rungs shall be pre-formed during casting. Holes for rungs shall be 1-1/8-inch in diameter and shall be a minimum of 3-1/2-inches deep. Rungs shall be grouted into the sections immediately after they are cast and placed in the curing area, or immediately after holes are cored into base sections. Holes shall be filled with grout consisting of Portland Type II cement and mortar sand in a 1-1/2 ratio mixed to a putty consistency. Those parts of the rungs which are embedded shall receive a heavy coating of zinc chromate or other approved paint.

2. Steel reinforced polypropylene plastic manhole rungs shall be driven into tapered holes in the precast riser and cone sections during the manufacture of the sections. Holes for rungs shall be preformed during the casting of the sections and shall not be drilled out after casting. The preformed holes shall be a minimum of 3-1/2-inches deep and shall taper from 1-1/8-inches to 1-3/8-inches diameter.

D. Brickwork

1. Mortar shall be mixed only in such quantity as may be required for immediate use and shall be used before the initial set has taken place. Mortar shall not be retained for more than 1-1/2 hours and shall be constantly worked over with hoe or shovel until used. Anti-freeze mixtures will not be allowed in the mortar. No masonry shall be laid when the outside temperature is below 40 degrees F unless provisions are made to protect the mortar,

bricks and finished work from frost by heating and enclosing the work with tarpaulins or other suitable material. The Engineer's decision as to the adequacy of protection against freezing shall be final.

2. Channels and shelves shall be constructed of brick and concrete as shown on the Drawings. The brick lined channels shall correspond in shape with the lower half of the pipe. The top of the shelf shall be set at the elevation of the crown of the highest pipe and shall be sloped 1-inch per foot to drain toward the flow through channel. Brick surfaces exposed to sewage flow shall be constructed with the nominal 2-inch by 8-inch face exposed (i.e., bricks on edge).

3. Manhole covers and frames shall be set in a full mortar bed and bricks, a maximum of 8-inches thick, shall be utilized to assure frame and cover are set to the existing grade. If full width paving is the permanent paving, the manhole frame and cover shall be reset to final grade prior to placement of permanent paving.

E. Dampproofing

1. Outer surfaces of precast and cast-in-place manholes and structures shall dampproofed at the rate of 30 to 35 square feet per gallon as directed by the Engineer and in accordance with manufacturer's instructions.

3.02 LEAKAGE TESTS

A. Leakage tests shall be made and observed by the Engineer on each manhole. The test shall be the exfiltration test made as described below:

B. After the manhole has been assembled in place, all lifting holes and those exterior joints within 6-feet of the ground surface shall be filled and pointed with an approved non-shrinking mortar. The test shall be made prior to placing the shelf and invert and before filling and pointing the horizontal joints below the 6-feet depth line. If the groundwater table has been allowed to rise above the bottom of the manhole, it shall be lowered for the duration of the test. All pipes and other openings into the manhole shall be suitably plugged and the plugs braced to prevent blow out.

C. The manhole shall then be filled with water to the top of the cone section. If the excavation has not been backfilled and observation indicates no visible leakage, that is, no water visibly moving down the surface of the manhole, the manhole may be considered to be satisfactorily water-tight. If the test, as described above is unsatisfactory as determined by the Engineer, or if the manhole excavation has been backfilled, the test shall be continued. A period of time may be permitted if the Contractor so wishes, to allow for absorption. At the end of this period, the manhole shall be refilled to the top of the cone, if necessary and the measuring time of at least 8 hours begun. At the end of the test period, the manhole shall be refilled to the top of the cone, measuring the volume of water added. This amount shall be extrapolated to a 24-hour rate and the leakage determined on the basis of depth. The leakage for each manhole shall not exceed 1 gallon per vertical foot for a 24-hour period. If the manhole fails this requirement, but the leakage does not exceed 3 gallons per vertical foot per day, repairs by approved methods may be made as directed by the Engineer to bring the leakage within the allowable rate of 1 gallon per foot per day. Leakage due to a defective section or joint or exceeding the 3 gallon per vertical foot per day shall be the cause for the rejection of the manhole. It shall be the Contractor's responsibility to uncover the manhole as necessary and to disassemble, reconstruct

or replace it as directed by the Engineer. The manhole shall then be retested and, if satisfactory, interior joints shall be filled and pointed.

D. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorptions, etc., i.e., it will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete. Furthermore, take any steps necessary to assure the Engineer that the water table is below the bottom of the manhole throughout the test.

E. If the groundwater table is above the highest joint in the manhole, and if there is no leakage into the manhole as determined by the Engineer, such a test can be used to evaluate the water-tightness of the manhole. However, if the Engineer is not satisfied, lower the water table and carry out the test as described hereinbefore.

F. Leakage Tests for Structures

1. The Engineer will visually inspect structure(s) for possible leaks before backfilling of structures is allowed. All joints shall be sealed to the satisfaction of the Engineer.

2. The Engineer may require an exfiltration test as described for manholes on any structure for which he/she deems the test appropriate.

3.03 CLEANING

A. All new manholes shall be thoroughly cleaned of all silt, debris and foreign matter of any kind, prior to final inspection.

END OF SECTION

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SECTION 02616
DUCTILE IRON PIPE AND FITTINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required, install, disinfect and test ductile iron pipe and fittings for piping as shown on the Drawings and as specified herein.

B. Piping shall be located substantially as shown on the Drawings. The Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference between pipes or for other reasons. Pipe fitting notation is for the Contractor's convenience and does not relieve him/her from installing and jointing different or additional items where required to achieve a complete piping system.

C. Where the word "pipe" is used it shall refer to pipe, fittings, or appurtenances unless otherwise noted.

1.02 RELATED WORK

A. Delivery, Storage and Handling is included in Section 01600.

B. Pipe Preparation is included in Section 02120.

C. Dewatering and Drainage is included in Section 02140.

D. Trenching, Backfilling and Compaction is included in Section 02221.

E. Granular Fill Material is included in Section 02230.

F. Excavation Support and Protection is included in Section 02311.

G. Sedimentation and Erosion Control is included in Section 02270.

H. Pavement Repair and Resurfacing is included in Section 02576.

I. Valves, Hydrants and Appurtenances are included in Section 02640.

J. Water Service Connections are included in Section 02663.

K. Temporary Water Services are included in Section 02666.

1.03 SUBMITTALS

A. Submit shop drawings and product data, including piping layouts, design calculations, warranty information, test reports, in accordance with Section 01300 and the referenced standards.

B. Submit the name of the pipe and fitting suppliers and a list of materials to be furnished.

C. Prior to shipment of pipe, certified copies of mill tests confirming the type of materials used in the pipe, and shop testing of pipe to show compliance with the requirements of the applicable

standards, along with a sworn affidavit of compliance that the pipe complies with the referenced standards, shall be submitted.

D. Submit copies of all shop tests, including hydrostatic tests.

E. Submit information on all warranties per Section 01740.

F. Submit anticipated production and delivery schedule.

G. Prior to shipment of pipe, submit a certified affidavit of compliance from the manufacturer stating that the pipe, fittings, gaskets, linings and exterior coatings for this project have been manufactured and tested in accordance with AWWA and ASTM standards and requirements specified herein.

H. Submit handling procedures for all phases from finished fabrication through delivery including storage, transportation, loading, and unloading. This will include storage at the project site and required protection following installation prior to startup.

I. Submit certified compliance statements from manufacturers verifying compliance with the American Iron and Steel (AIS) requirements of this project.

1.04 REFERENCE STANDARDS

A. ASTM International

1. ASTM A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.

2. ASTM A194 - Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service.

3. ASTM A242 - Standard Specification for High-Strength Low-Allow Structural Steel

4. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

5. ASTM A674 - Standard Practice for Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids.

6. ASTM C150 - Standard Specification for Portland Cement.

B. American Water Works Association (AWWA)

1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.

2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.

3. AWWA C110 - Ductile-Iron and Gray-Iron Fittings, 3-inch through 48-inch (75mm Through 1219mm) for Water.

4. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

5. AWWA C150 - Thickness Design of Ductile-Iron Pipe.

6. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast, for Water.

7. AWWA C115 – Flanged Ductile Iron Pipe With Ductile Iron or Grey Iron Threaded Flanges.

8. AWWA C116 – Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior surfaces of Ductile Iron and Grey Iron Fittings for Water Supply Service.

9. AWWA C153 - Ductile- Iron Compact Fittings, 3-inch through 24-inch and 54-inch through 64-inch, for Water.

10. AWWA C550 - Protective Interior Coatings for Valves and Hydrants

11. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.

12. AWWA C606 - Grooved and Shouldered Joints.

13. AWWA C651 - Disinfecting Water Mains.

14. AWWA M41 - Ductile Iron Pipe and Fittings Manual of Water Supply Practices

C. National Sanitation Foundation (NSF)

1. NSF 61 - Drinking Water System Components Health Effects.

D. City of New Bedford Construction Specifications, latest edition.

E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. The Contractor or Subcontractor performing the installation of new 20-inch and larger ductile-iron water mains, fittings, valves and appurtenances shall meet or exceed the following qualification requirements:

1. Experience on a minimum of 3 projects where pressurized ductile-iron pipe, 16-inch diameter or larger was installed, including at least one project with 24-inch or larger pipe, fittings and valves.

For each of the above projects, the Contractor/Subcontractor shall provide reference information to Engineer including dates for the project, description of the project, dollar value of project, name of owner with address, contact person and phone number, and name of the engineer with address, contact person and phone number.

B. It is a requirement of these Contract Documents to have all the ductile iron pipe under this section designed and supplied by a single manufacturer rather than have selection and supply of these items by a number of different manufacturers. Similarly, it is a requirement of these Contract Documents to have all the ductile iron fittings under this section designed and supplied

by a single manufacturer rather than have selection and supply of these items by a number of different manufacturers. All connections between the pipe and fittings shall be compatible, as detailed in Paragraph 1.06. Coordination of design and submittal requirements will be the Contractor's sole responsibility.

C. Each length of ductile iron pipe supplied for the project shall be hydrostatically tested at the point of manufacture to 500 psi for a duration of 10 seconds per AWWA C151. Testing may be performed prior to machining bell and spigot. Failure of ductile iron pipe shall be defined as any leak or rupture of the pipe wall. Certified test results shall be furnished in duplicate to the Engineer prior to time of shipment.

D. All ductile-iron pipe and fittings to be installed under this project shall be inspected and tested at the foundry as required by the standard specifications to which the material is manufactured. Furnish in duplicate to the Engineer sworn certificates of such tests and their results at least 5 days prior to the shipment of the goods.

E. Inspection of the pipe and fittings will also be made by the Engineer or representative of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the Specification requirements even though pipe may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery (including defects from manufacturing or delivery/transport) shall be marked for identification and shall immediately be removed from the job at the Contractor’s expense.

F. All pipe and fittings to be installed under this Contract may be inspected at the plant for compliance with this Section by an independent testing laboratory selected by the Owner at the Owner's expense.

G. A manufacturer's representative shall be made available to the Owner and Owner's representative during the manufacturing furnishing, transporting, and unloading of the pipe during installation and testing of the pipe to assist in insuring that the pipe is properly fabricated, transported, unloaded, stored in the field, joined and tested. Manufacturer's responsibilities relate only to the proper care and treatment of the pipe during these procedures and not the techniques or procedures used during installation and testing.

1. The designated factory representative shall be made available at any time the owner may request. The field or site representative shall be made available a minimum of 10 working days (time on site) during the project when requested by the owner.

2. The cost for the services of the factory representative, including expenses, shall be considered incidental to the project and will not be paid separately.

H. The pipe and fittings manufacturer shall meet the following criteria and furnish the necessary project information, which demonstrates the required experience:

1. Experience that includes successful fabrication (followed by installation, acceptance and service) to AWWA C151 standards of at least 50,000 lineal feet of the largest specified diameter or larger ductile iron pipe with similar linings/coatings within the past 5 years.

2. Experience shall include the successful fabrication of at least 50 fittings in compliance with AWWA C110 or C153 of the largest specified diameter or larger with similar lining/coatings within the past 5 years.

3. Experience that includes the successful fabrication (followed by installation, acceptance and service) of at least 10,000 lineal feet of the largest specified diameter or larger push-on style, boltless restrained joint for ductile iron pipe within the last 5 years.

I. All pipe and fittings shall be marked in accordance with all applicable AWWA standards. Legibly and permanently mark all pipe, fittings, specials and appurtenances to be consistent with the laying schedule and marking drawings (if required) with the following information:

1. Manufacturer, date.

2. Size, type, class, or wall thickness.

3. AWWA Standard(s) produced to.

4. Special fittings, bends, and appurtenances requiring specific orientation will be appropriately marked with the words "TOP" in the correct position and in a consistent location.

1.06 DESCRIPTION OF SYSTEMS

A. Pipe and fittings shall be made in the United States and shall be supplied by one of the named pipe manufacturers or engineer approved equal. Pipe and fittings shall be as supplied by the American Cast Iron Pipe Co., U.S. Pipe and Foundry, all pipe divisions of the McWane Company or an approved equal who is a member of the Ductile Iron Pipe Research Association (DIPRA). All ductile iron pipe shall be supplied by a single manufacturer and all ductile iron fittings shall be supplied by a single manufacturer. The fittings supplier shall certify in writing that their fittings are compatible with the supplied brand of pipe.

B. Pipe is to be installed in those locations shown on the Drawings, and only where specifically indicated.

C. Contractor is responsible for compatibility between joints of all items they supply.

1.07 DELIVERY, STORAGE AND HANDLING

A. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe, pipe linings and pipe coatings. See AWWA C600 and the referenced AWWA Standards for shipping, handling and storage procedures. All pipe and fittings shall be examined as noted in Division 1. Any damage to linings or coatings discovered during the examination shall be repaired to the satisfaction of the Engineer at the cost of the Contractor, before proceeding with the work.

B. Pipe shall be transported to the job site on padded bunks or oak timbers and secured with steel banding or nylon tie down straps to adequately protect the pipe and coating. Slings, hooks, or pipe tongs or other devices acceptable to the Engineer shall be used in pipe handling. No uncushioned ropes, chairs, wedges, cables or levers shall be used in handling finished pipe, fittings or couplings. Under no circumstances shall the pipe or fittings be dropped or skidded against each other. Care shall be taken to preventing marring the pipe coating. Padded wooden pipe cradles, or chocks suitable for the protection of coatings shall be used between finished pipes and beneath them when pipes are placed upon rough surfaces. Pipe shall not be stored on

bare ground unless soft sand berms are used to support the pipe and is approved by the Engineer.

C. Materials, if stored, shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt, excessive corrosion or foreign matter at all times.

D. Pipe shall not be stacked higher than the limits recommended by its manufacturer. The bottom tier shall be kept off the ground on timbers, rails, or concrete. Stacking shall conform to manufacturer's recommendations and/or AWWA C600.

E. Gaskets for mechanical and push-on joints to be stored shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

F. Lined and/or coated pipe shall be suitably protected from exposure and heating of the sun at all times following procedures recommended by the coating/lining system manufacturer. Exposure will not be allowed (except for short periods such as installation, assembly and repairs).

G. No metal tools or heavy objects shall be permitted to come in contact unnecessarily with the finished coating. Workers will be permitted to walk upon the coated pipe only when necessary, in which case they shall wear footwear with rubber or composition soles and heels that are sufficiently free of dirt and mud that coating remains undamaged.

H. It shall be the responsibility of the Contractor to prevent damage to the linings and coatings that might be caused by handling and/or onsite storage of the finished pipe at low temperatures (due to embrittlement), high temperatures or direct sunlight.

1.08 WARRANTIES

A. Provide warranties as required in Section 01740 and as specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. Ductile iron pipe shall conform to AWWA C151. Pipe shall be supplied in standard lengths as much as possible.

B. Thickness design shall be per AWWA C150. Provide minimum thickness Class 52 piping unless otherwise indicated on the Drawings. All ductile iron pipe supplied shall meet the minimum wall thickness and pressure class specified.

2.02 END TREATMENTS/JOINTS

A. Ductile iron pipe/fitting joints shall be push-on rubber gasket type or rubber-gasket mechanical joint per AWWA C111 in unrestrained areas, except where flanged joints are required as shown on the Drawings. In restrained areas, both pipe and fitting joints shall be push on rubber gasket, locking ring type restrained joints per the manufacturer' standard described in Paragraph C, except where flange joints are shown on the Drawings. An alternative restraint of fittings with mechanical joints using mechanical joint retainer glands is acceptable. All gasket materials shall

comply with Table 5-1 of AWWA M-41. Rubber-gasket joints shall conform to AWWA C111. Gasket shall be Nitrile (NBR).

B. Unless otherwise noted, all ductile iron pipe/fitting joints shall be push-on rubber gasket type per AWWA C111 in unrestrained areas. Minimum thrust restraint requirements for restrained areas are shown on the Drawings. All ductile-iron pipe and fitting joints within the restrained lengths shown on the Drawings shall be restrained as specified.

C. Restraint for push on joint pipe shall be positive locking "Locked-type" joints manufactured by the pipe and fitting manufacturer that utilize restraint independent of the joint gasket. All restrained joints shall be suitable for the specified test pressure as outlined in this Section. Joints shall be fabricated of heavy section ductile iron casting. Bolts and nuts shall be low carbon steel conforming to ASTM A307, Grade B7. Restraint for mechanical joint pipe and fittings shall use retainer glands for restraining joint. Restrained push on joints shall be by one of the following or an approved equal:

1. "TR Flex" by US Pipe and Foundry Company

2. "Lok-Ring, "Flex Ring (positive locking style)" by the American Cast Iron Pipe Company

3. "Superlok" by Clow Water Systems Company

4. The minimum number of restrained joints required for resisting forces at fittings and changes in direction of the pipe shall be determined from the length of restrained pipe on each side of the fittings and changes in direction necessary to develop adequate resisting friction with the soil. The required lengths of restrained joints shall be as shown on the Drawings.

5. Restrained pipe joints that achieve restraint by incorporating cut out sections in the wall of the pipe shall have a minimum wall thickness at the point of the cut out that corresponds with the minimum specified wall thickness for the rest of the pipe.

6. For up through 48-inch diameter ductile iron pipe only, the following may be used as an alternative restraint system
   a. The optional mechanical joint restraint shall be incorporated in the design of a follower grand. The gland shall be manufactured of ductile iron conforming to ASTM A536. Dimensions of the gland shall be such that it can be used with the standard mechanical joint bell and tee-headed bolts, as specified with the pipe.
   b. The restraint mechanism shall consist of numerous individually activated gripping surfaces to maximize restraint capability. The gripping surfaces shall be wedges designed to spread the bearing surfaces on the pipe. Actuation of the gripping wedges shall be by torque limiting twist-off nuts sized same as T bolts for mechanical joints. When the nut is sheared off, standard hex nut shall remain.
   c. The restraint device for ductile iron pipe shall have a working pressure of at least 150 psi and a safety factor of 2:1.
   d. Pipe manufacturer proprietary mechanical joint restraint systems that utilize a wedge-style gripping systems or a gland/ring positive restraint system will be considered acceptable on a case by case basis as determined by the Engineer.
   e. The restraint device shall be EBAA Iron Megalug Series 1100, or approved equal.

D. Threaded ductile iron flanges for ductile iron pipe shall be fabricated per AWWA C115 and sealed during installation with a special high pressure, full face gasket per AWWA C111. At the pipe manufacturer's option, the use of 250 lb. pattern flanges, which are faced and drilled in accordance with ANSI B16.1 may be substituted in order to match valves or other equipment and/or to meet the required working pressure requirements. All flanges shall be rated for the same pressure as the adjacent pipe in all cases. Compatibility of the flanges with the 250 lb. class and higher special class AWWA valves will the responsibility of the Contractor.

1. Flanges shall be pre-drilled and then faced after being screwed onto the pipe, with flanges true to 90 degrees of the pipe axis and shall be flush with the end of the pipe.

2. Gaskets shall be full face rubber, 1/8-inch thick Nitrile (NBR) material, such as American Torseal Gasket, or approved equal. Special material ring gaskets such as those by Garlock or equal may be required for pressures exceeding 250 for ANSI rated and custom flanges.

3. Flanged joints shall be supplied with bolts and nuts on one end, bolt studs with a nut at each end, or studs with nuts on one end where the flange is tapped. The number and size of bolts shall comply with the same standard as the flange. Bolts and nuts shall, except as otherwise specified or noted in the Specifications or on the Drawings, comply with ASTM A193, grade B7.

4. Blind flanges shall mate with regular flanges.

5. Filler flanges and beveled flange fillers shall be furnished faced and drilled complete with extra length bolts.

E. Couplings and Adapters

1. Sleeve type couplings shall be Dresser Style 38, 138 or equal.
   a. The Contractor shall excavate test pits to measure the dimensions and pipe outside diameters for the required couplings at the connection points between new and existing piping prior to ordering new couplings.
   b. Buried sleeve-type couplings shall have a protective wrapping of "Denso" material by DENSO Inc. of Texas or equal. Where "Denso" material is used, the joint shall be packed up with "Densyl mastic" to give an even contour for wrapping with "Densopol" tape. A 1.5 mm thick coating of "Denso" paste shall be applied following by 100 mm or more wide "Densopol" tape wound spirally round the joint with at least 50 percent overlap.

F. Brass Wedges for Couplings

1. Wedges shall be used for new butterfly valves where couplings are required as shown on the Drawings, specifically for installation of new 24-, 30- and 36-inch butterfly valves on water transmission mains.

2. Brass shall conform to ASTM B505 and be of drinking water standards and contain no lead.

3. Wedges shall be similar to those used for cathodic protection of grounding systems of ductile-iron pipe. Wedges shall be as manufactured by Griffin Pipe Products Co. or approved equal.

2.03 FITTINGS

A. Pipe fittings shall be ductile iron with pressure rating of 350 psi for 24-inch and smaller piping and 250 psi for 30-inch and larger piping. Fittings shall meet the requirements of AWWA C110 or AWWA C153 as applicable. Fittings shall have the same pressure rating, as a minimum, of the connecting pipe.

B. Closures shall be made with mechanical joint ductile iron solid sleeves unless alternate approved coupling systems as described in paragraph 2.02.E are used and shall be located in straight runs of pipe at minimum cover outside the limits of restrained joint sections. Location of closures shall be subject to approval of the Engineer.

2.04 INTERIOR LINING

A. Ductile iron pipe and fittings shall have the same type of lining as specified herein.

B. Ductile iron pipe and fittings shall have a cement mortar lining in accordance with AWWA C104 double thickness. The cement shall meet the requirements of ASTM C150.

C. At the option of the supplier, fittings may be lined in accordance with AWWA C550. Lining shall be NSF 61 certified.

2.05 EXTERIOR COATING

A. Buried pipe shall be installed with a bituminous coating in accordance with AWWA C151 and C110 respectively.

PART 3 EXECUTION

3.01 GENERAL

A. Care shall be taken in loading, transporting and unloading to prevent injury to the pipe, lining or coatings. Pipe and fittings shall not be dropped or skidded against each other. Slings, hooks or pipe tongs shall be used for pipe handling. All pipe and fittings shall be examined before laying and no piece shall be installed which is found to be defective. Any damage to the pipe, lining or coatings shall be repaired per manufacturer's recommendations. Handling and laying of pipe and fittings shall be in accordance with manufacturer's instruction and as specified herein.

B. If any defective pipe is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner. All pipe and fittings shall be thoroughly cleaned before laying, shall be kept clean until they are used in the work and when installed or laid, shall conform to the lines and grades required.

C. Materials, if stored, shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt, excessive corrosion or foreign matter at all times.

D. Pipe shall not be stacked higher than the limits recommended by its manufacturer. The bottom tier shall be kept off the ground on timbers, rails, or concrete. Stacking shall conform to manufacturer's recommendations and/or AWWA C600.

E. Gaskets for mechanical and push-on joints to be stored shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

F. As pipe laying progresses and at the conclusion of the work, thoroughly clean all new pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood or other material which may have entered during the construction period. If, after this cleaning, obstructions remain, they shall be removed.

G. Contractor shall excavate test pits to measure the dimensions and pipe outside diameters for the required couplings at the connection points between new and existing pipelines prior to ordering and installing new couplings.

H. Water mains shall be laid at least 10 feet horizontally from any existing or proposed sanitary sewer, drain, sewer or drain manhole, septic tank, or subsoil treatment system. Water mains crossing sewers shall be laid to provide a minimum vertical distance of at least 18-inches between the outside of the water main and outside of the sewer or drain and this shall be the case where the water main is either above or below the sewer with preference to the water main located above the sewer. At crossings, one full length of water pipe shall be located so that both joints are as far away from the sewer or drain as possible. Water mains that cross under existing sewers or drains shall be concrete encased for a minimum of 10 feet on each side of the drain or sewer pipe centerline at the crossing. Deviations from this requirement must be approved by the Engineer and Owner.

3.02 INSTALLING DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe and fittings shall be installed in accordance with requirements of AWWA C600, except as otherwise specified herein. A firm, even bearing throughout the length of the pipe shall be provided by digging bell holes at each joint and by tamping backfill materials at the side of the pipe to the springline per details shown on the Drawings. Blocking will not be permitted. If any defective pipe or fitting is discovered after it has been laid, it shall be removed and replaced with a sound pipe or fitting in a satisfactory manner by the Contractor, at his/her own expense.

1. All pipe and fittings shall be kept clean until they are used in the work and shall be sound and thoroughly cleaned before laying. When laid, the pipe and fittings shall perform to the lines and grades required. When laying is not in progress, including lunch breaks, open ends of the pipe shall be closed by a watertight plug or other approved means. Sufficient backfill shall be placed to prevent flotation. The deflection at joints shall not exceed that recommended by the manufacturer.

2. All ductile iron pipe laid underground shall have a minimum of 4 of feet of cover unless otherwise shown on the Drawings or as specified herein, unless otherwise approved by the Engineer. Pipe shall be laid such that the invert elevations shown on the Drawings are not exceeded.

3. Fittings, in addition to those shown on the Drawings shall be provided, where required, in crossing utilities which may be encountered upon opening the trench. Solid sleeve closures shall be installed at locations approved by the Engineer.

4. The pipe interior shall be maintained dry and broom clean throughout the construction period.

5. When field cutting the pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. The end of the cut pipe shall be beveled to conform to the manufacture's recommendations for the spigot end. Any coating removed from the cut end shall be repaired according to manufacturer's recommendation. Cement lining shall be undamaged. Cutting of restrained joint pipe will not be allowed, unless approved at specific joints in conjunction with the use of restrainer glands by EBAA Iron or field adaptable restrained joints. Where field cuts are permitted, the pipe to be cut shall be supplied by the factory as "gauged full length". Should full length gauged pipe be unavailable, the pipe to be cut shall be field gauged at the location of the new spigot using a measuring tape, or other means approved by the manufacturer, to verify that the diameter is within the tolerances permitted in Table 1 of AWWA C151.

B. Jointing Ductile-Iron Pipe

1. Push-on joints shall be made in strict accordance with manufacturer's instructions, AWWA C600 and Appendix B of AWWA C111. If there is conflict, the manufacturer's instructions shall take precedence. Pipe shall be laid with bell ends looking ahead. A rubber gasket shall be inserted in the groove of the bell end of the pipe. The joint surfaces shall be cleaned and lubricated and the plain end of the pipe shall be aligned with the bell of the pipe to which it is to be joined and pushed home. After joining the pipe, a metal feeler shall be used to make certain that the rubber gasket is properly seated.

2. Mechanical joints shall be assembled in strict accordance with the manufacturer's instructions, AWWA C600 and Appendix A of AWWA C111. If there is conflict, the manufacturer's instructions shall take precedence. Pipe shall be laid with bell ends looking ahead. To assemble the joints in the field, thoroughly clean and lubricate the joint surfaces and rubber gasket. Bolts shall be tightened to the specified torques. Under no condition shall extension wrenches or pipe over handle of ordinary ratchet wrench be used to secure greater leverage. After installation, apply a bitumastic coating to bolts and nuts and install polyethylene encasement (if polyethylene encasement is required and specified).

3. Bolts in mechanical or restrained joints shall be tightened alternately and evenly. Restraint for mechanical joint pipe shall use retainer glands for restraining joint. All restrained mechanical joints shall be suitable for the specified test pressure.

4. Restrained joints shall be installed according to pipe manufacturer's instructions.

5. Flanged joints shall be assembled in strict accordance with the manufacturer's instructions and Appendix C of AWWA C111. If there is conflict, the manufacturer's instructions shall take precedence. Extreme care shall be taken to ensure that there is no restraint on opposite ends of pipe or fitting, which would prevent uniform gasket compression, cause unnecessary stress, bending or torsional strains, or distortion of flanges or flanged fittings. Adjoining push on joints shall not be assembled until flanged joints have been tightened. Flange bolts shall be tightened uniformly to compress the gasket uniformly and obtain a seal. Flange bolts shall be left with approximately 1/2-inch projection beyond the face of the nut after tightening. After installation apply a bitumastic coating to the bolts and nuts as specified.

6. Sleeve couplings shall only be installed for closure or as shown on the Drawings. Couplings shall not be assembled until adjoining joints have been assembled. After installation. Apply a heavy bitumastic coating to the bolts and nuts and install protective wrap recommended by the manufacturer or as required herein. Care shall be exercised so that the insulating properties of insulating and dielectric couplings are maintained.

C. For new sleeve-type couplings where shown on the Drawings for new water transmission main butterfly valves, brass wedges shall be installed at the couplings to prevent lateral movement of piping during operation of the adjacent butterfly valves.

1. Three wedges shall be set at each coupling location as required. Wedges shall be set at 12:00, 4:00 and 8:00 to hold in position and prevent movement of the pipe, valve and couplings when valve closures occur. Wedges shall be ground flush with pipe surface after being set.

2. Submit for approval a sample for inspection by Engineer and Owner prior to installation.

D. All blowoffs, outlets, valves, fittings and other appurtenances required shall be set and jointed as indicated on the Drawings in accordance with manufacturer's instructions.

3.03 CONNECTIONS TO STRUCTURES

A. Wherever a pipe 3-inches in diameter or larger passes from concrete to earth horizontally, two flexible joints spaced from 2- to 4-feet apart depending on pipe size shall be installed, within 2-feet of the exterior face of the wall, whether or not shown on the Drawings.

B. Unless otherwise specified, all pipes passing through a wall will utilize a wall sleeve designed to pass the thrust through the wall via restrained piping.

C. Piping underneath structures shall be concrete encased.

3.04 FILLING AND TESTING

A. After installation, the pipe shall be tested for compliance as specified herein. Furnish all necessary equipment and labor for the hydrostatic pressure test on the pipelines.

B. Submit detailed test procedures and method for Engineer's review. In general, testing shall be conducted in accordance with AWWA C600. The method and procedures for performing the hydrostatic pressure test shall be approved by the Engineer. Submit the plan for testing to the Engineer at least 10 days before starting a test.

C. Pressure pipelines shall be subjected to a hydrostatic pressure of 150 psig or 1.5 times the working pressure at the highest point along the test segment, whichever is higher. This test pressure shall be maintained for a minimum of 2 hours. The hydrostatic testing allowances shall not exceed those indicated in AWWA C600. Provide suitable restrained bulkheads as required to complete the hydrostatic testing specified.

D. Contractor shall make any taps and furnish all necessary caps, plugs etc., as may be required in conjunction with performing the testing.

E. All valves and valve boxes shall be properly located and installed and operable prior to testing. Bulkheads shall be provided with a sufficient number of outlets for filling and draining the line and for venting air.

F. Hydrostatic pressure tests shall conform to Section 5.2 of AWWA C600. Furnish gauges, meters, pressure pumps and other equipment needed to fill the line slowly and perform the required hydrostatic pressure tests.

G. The Owner will provide a source of supply from the existing treated water distribution system for Contractor's use in filling the lines. An air break shall be maintained at all times between the Owner's distribution system and the Contractor's equipment to prevent cross-connection. The line shall be slowly filled with water and the specified test pressure shall be maintained in the pipe for the entire test period by means of a pump furnished by the Contractor. Provide accurate means for measuring the quantity of makeup water required to maintain this pressure.

H. Duration of pressure test shall not be less than 2 hours. All leaks evident at the surface shall be repaired and leakage eliminated regardless of the total leakage as shown by test. Lines which fail to meet tests shall be repaired and retested as necessary until test requirements are complied with. Defective materials, pipes, valves and accessories shall be removed and replaced.

3.05 CLEANING

A. At the conclusion of the work, thoroughly clean all of the pipe by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered during the construction period. All debris shall be removed from the pipeline. The lowest segment outlet shall be flushed last to assure debris removal.

B. After the pipe has been cleaned and if the groundwater level is above the pipe or water in the pipe trench is above the pipe following a heavy rain, the Engineer will examine the pipe for leaks. If defective pipes, fittings or joints are discovered at this time, they shall be repaired or replaced by the Contractor.

C. Any water used from the existing distribution system for this purpose that is discharged from any blowoff, hydrant or other connection shall be dechlorinated/dechloraminated in accordance with Section 02120.

3.06 DISINFECTION

A. Ductile iron pipe used for potable water service shall be disinfected after cleaning. Provide all necessary equipment and labor for the disinfection.

B. Disinfection shall be in accordance with AWWA C651 standard and the Owner’s Construction Specifications. The procedure shall be approved by the Engineer in advance. All adjoining pipe (cut ends) shall be kept clean and shall be swabbed with chlorine solution just prior to installing the pipe, valve components, fittings and appurtenances.

C. The location of the chlorination and sampling points will be determined by the Engineer in the field. Taps for chlorination and sampling shall be installed by the Contractor. The Contractor shall uncover and backfill taps as required.

D. The general procedure for chlorination shall be first to flush all dirty or discolored water from the lines and then introduce chlorine in approved dosages through a tap at one end, while water is being withdrawn at the other end of the line. The chlorine solution shall remain in the pipeline for 24 hours. Disinfection shall be in accordance with AWWA C651 standard, latest edition.

E. Following the chlorination period, all treated water shall be flushed from the lines at their extremities and replaced with water from the distribution system. All treated water flushed from the lines shall be disposed of by discharging by means approved by the Owner and Engineer in accordance with all Federal, State and local standards. No discharge to any storm sewer or natural watercourse will be allowed. Engineer will require bacteriological sampling and analysis of the replacement water by the Contractor in full accordance with the latest edition of the AWWA C651 standard. Contractor shall make payment for bacteriological sampling and testing required by the Engineer and in accordance with Owner's Construction Specifications. The Contractor will be required to rechlorinate, if necessary, and the line shall not be placed into service until all requirements of the Commonwealth of Massachusetts and the Owner are met. Additional testing by a qualified individual for heterotrophic plate count (HPC) and volatile organic carbon (VOCs) shall be completed and recorded on forms as required by the Commonwealth of Massachusetts. Contractor shall forward to the Engineer all sampling and analysis forms to the Commonwealth of Massachusetts as required. Disinfection and final water quality results shall be consistent with the existing water quality in the Owner's water system in accordance with the Owner's Construction Standards and Specifications.

F. Special disinfecting procedures shall be used in connections to existing mains and where the method outlined above is not practical. Special disinfection procedures shall be submitted to the Engineer in advance for approval.

G. The Owner shall be notified at least 2 days prior to chlorination, and shall witness the procedure. If no one from the Owner is available, the procedure shall be rescheduled to accommodate the Owner.

H. Discharge of chlorinated water shall comply with all Federal, State and local standards. Provide sodium bisulfite for dechlorination prior to discharge. Discharge of chloraminated/dechloraminated water shall comply with Section 02120.

END OF SECTION

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SECTION 02640
VALVES, HYDRANTS AND APPURTENANCES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and provide all buried valves, valves in manholes, gate valves within the inlet and outlet structure, and underground vaults, hydrants and appurtenances complete with actuators and all accessories as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Pipe Preparation is included in Section 02120.

B. Dewatering and Drainage is included in Section 02140.

C. Trenching, Backfilling and Compaction is included in Section 02221.

D. Granular Fill Material is included in Section 02230.

E. Excavation Support and Protection is included in Section 02311.

F. Ductile-Iron Pipe and Fittings are included in Section 02616.

G. Concrete is included in Division 3.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, a list of materials to be furnished, the names of the suppliers and the date of delivery of materials on the job site required to establish compliance with this Section for shop drawings. Submittals shall include the following:

1. Manufacturer's literature, illustrations, specifications and engineering data including:
   a. Dimensions.
   b. Size.
   c. Materials of construction.
   d. Weight.
   e. Protection coating.
   f. Actuator weight.
   g. Calculations for actuator torque where applicable.

B. Test Reports

1. Four copies of all certified shop test results specified herein.

C. Operation and Maintenance Manuals

1. Submit complete operation and maintenance manuals including copies of all approved Shop Drawings.

D. Certificates

1. Certificates of compliance where required by referenced standards: For each valve specified to be manufactured and/or installed in accordance with AWWA and other standards, submit an affidavit of compliance with the appropriate standards, including certified results of required tests and certification of proper installation.

2. Submit certified compliance statements from manufacturers verifying compliance with the American Iron and Steel (AIS) requirements of this project.

1.04 REFERENCE STANDARDS

A. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

B. American Water Works Association (AWWA)

1. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron and Pressure Pipe and Fittings.

2. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service.

3. AWWA C502 - Dry-Barrel Fire Hydrants.

4. AWWA C504 - Rubber-Seated Butterfly Valves.

5. AWWA C508 - Swing-Check Valves for Waterworks Service, 2-inch (50mm) through 24-inch (600mm) NPS.

6. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.

7. AWWA C512 - Air Release, Air/Vacuum, and Combination Air Valves for Waterworks Service.

8. AWWA C651 - Disinfecting Water Mains.

9. AWWA C800 - Underground Service Lines and Fittings

C. American National Standards Institute (ANSI)

1. ANSI B16.1 - Cast Iron Pipe Flanges and Flanged Fittings.

D. ASTM International

1. ASTM A48 - Standard Specification for Gray Iron Castings.

2. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings

3. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

4. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.

5. ASTM A536 - Standard Specification for Ductile Iron Castings.

E. The Society for Protective Coatings (SSPC)

1. SSPC SP-6 - Joint Surface Standard Commercial Blast Cleaning

F. Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS):

1. MSS-SP-71 - Cast Iron Swing Check Valves, Flanges and Threaded Ends.

2. MSS-SP-80 - Bronze Gate, Globe, Angle and Check Valves.

G. City of New Bedford Construction Specifications, latest edition.

H. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. Manufacturer's Qualifications

1. Valves and appurtenances provided under this Section shall be the standard product in regular production by manufacturers whose products have proven reliable in similar service for at least 10 years. If required, the manufacturer shall furnish evidence of installation in satisfactory operation.

2. All units of the same type shall be the product of one manufacturer.

B. Design Criteria

1. All valves and appurtenances shall be new and in perfect working condition. Valves shall be designed for continuous use with a minimum of maintenance and service required and shall perform the required function without exceeding the safe limits for stress, strain or vibration. In no case will used or damaged valves be acceptable. The selection of equipment to meet the specified design conditions is the responsibility of the Contractor. Both workmanship and material shall be of the very best quality and shall be entirely suitable for the service conditions specified.

C. Source Quality Control

1. Valves shall be shop tested in accordance with the following:
   a. Metal-seated gate valves: AWWA C500.
   b. Rubber-seated butterfly valves: AWWA C504.
   c. Resilient-seated gate valves: AWWA C509.
   d. Air release valves: AWWA C512
   e. Check valves: AWWA C508

2. Obtain each type of valve from no more than one manufacturer.

1.06 SYSTEM DESCRIPTION

A. General

1. Valves and appurtenances specified under this section pertain to new products for the Owner's water transmission and distribution system at locations shown on the Drawings.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the site to ensure uninterrupted progress of the work.

B. Protect threads and seats from corrosion and damage. Rising stems and exposed stem valves shall be coated with a protective oil film which shall be maintained until time of use.

C. Furnish covers for all openings.

1. All valves 3-inches and larger shall be shipped and stored on site until time of use with wood or plywood covers on each valve end.

2. All valves smaller than 3-inches shall be shipped and stored as above except that heavy card board covers may be furnished instead of wood.

3. Butterfly valves shall be delivered with blind flanges as specified for valve to be pressure-tested on site, before installation and burial.

D. Store equipment to permit easy access for inspection and identification. Any corrosion in evidence at the time of Owner acceptance shall be removed, or the valve shall be removed from the job.

E. Store all equipment in covered storage off the ground.

1.08 COORDINATION

A. Review installation procedures under other Sections and coordinate with the work which is related to this Section including buried piping installation, site utilities, and piping insulation.

B. Coordinate the location and placement of concrete thrust blocks when required.

PART 2 PRODUCTS

2.01 GENERAL

A. All buried valves shall open right or clockwise in accordance with Owner's standards.

B. The use of a manufacturer's name and/or model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

C. Valves shall be of the size shown on the Drawings or as noted and as far as possible equipment of the same type shall be identical and from one manufacturer.

D. Valves shall have the name of the maker, nominal size, flow directional arrows, working pressure for which they are designed and standard to which they are manufactured cast in raised letters on some appropriate part of the body.

E. Unless otherwise noted, valves shall have a minimum working pressure of 250 psi or be of the same working pressure as the pipe they connect to, whichever is higher, and suitable for the pressures noted where they are installed.

F. Valves shall be of the same nominal diameter as the pipe or fittings they are connected to. Except as otherwise noted, joints shall be mechanical joints, with joint restraint where the adjacent piping is required to be restrained. New butterfly valves shown on the Drawings shall have flanged joints to accommodate the required on-site pressure testing specified herein.

G. Valves shall be especially constructed for buried service.

H. As shown on the Drawings, valves 12-inches and smaller shall be gate valves and valves larger than 12-inches shall be butterfly valves.

2.02 VALVE BOXES

A. All buried service gate and butterfly valves shall be provided with extension stems, operating nuts and valve boxes as follows:

1. Extension stem shall be Type 304 stainless steel and the operating nut shall be 2-inch square. Shafts shall be designed to provide a factor of safety of not less than four. Operating nuts shall be pinned to the shafts.

2. Top of the operating nut shall be located 18-inches below the rim of the valve box.

3. Valve boxes shall be a heavy-pattern cast iron, three-piece, telescoping type box with dome base suitable for installation on the buried valves. Inside diameter shall be at least 5-1/4-inches. Barrel length shall be adapted to the depth of cover, with a lap of at least 6-inches when in the most extended position. Covers shall be cast iron with integrally-cast direction-to- open arrow, and the word WATER shall also be integrally cast. Aluminum or plastic are not acceptable. A means of lateral support for the valve extension shafts shall be provided in the top portion of the valve box.

4. The upper section of each box shall have a top flange of sufficient bearing area to prevent settling. The bottom of the lower section shall enclose the stuffing box and operating nut of the valve and shall be oval.

5. A position-indicating device shall be provided for each gate and butterfly valve. The position-indicating device shall be GPI Series Geared Position Indicator by Dyna-Torque Inc., Muskegon, MI or equal, which shall mount over the shaft and visually show the position of the valve at all times. All material shall be non-corrosive, nonmagnetic and shall require no lubrication. Unit shall be furnished and arranged for use with the valve box. The required valve box adapters and cover shall be furnished.

6. An approved operating key or wrench shall be furnished.

7. All fasteners shall be Type 304 stainless steel.

8. Valve boxes shall be manufactured by Buffalo, two-piece design, Caldwell No. 10 gate box – 5-1/4-inch shaft used with 12-inch and smaller sliding types: Size 664, extending from 38 to 60 inches, top section 26 inches, bottom section 36 inches, weight of 110 lbs. All valve boxes shall be consistent with Owner's specifications.

B. Valve boxes shall be of sufficient size to fully accommodate operation of valves and for manual air release valves. Inside diameter of valve boxes shall be minimum 5-1/4 inches for butterfly valves and manual air release valves.

2.03 FLOOR BOXES

A. All gate valves within the Inlet and Outlet Structure shall be provided extension stems, operating nuts and floor boxes as follows:

1. A floor box shall be the plain type, for support of non-rising type stem; complete with stem, operating nut, and stem guide brackets.

2. Extension stem shall be Type 304 stainless steel and the operating nut shall be 2-inch square.

3. The stem guide shall be spaced such that stem L/R ratio does not exceed 200. Anchors shall be supplied as required.

4. A position-indicating device shall be provided for each gate and butterfly valve. The position-indicating device shall be GPI Series Geared Position Indicator by Dyna-Torque Inc., Muskegon, MI or equal, which shall mount over the shaft and visually show the position of the valve at all times. All material shall be non-corrosive, nonmagnetic and shall require no lubrication. Unit shall be furnished and arranged for use with the valve box. The required floor box adapters and cover shall be furnished.

5. Covers shall be cast iron with integrally-cast direction-to- open arrow, and the word WATER shall also be integrally cast. Aluminum or plastic are not acceptable.

2.04 RESILIENT SEATED GATE VALVES

A. Valves 3-inch through 12-inch shall be manufactured in accordance with AWWA C509 and as specified herein. Valves shall be:

1. The Series 2360 resilient wedge gate valve (available in 2-inch through 12-inch) by Mueller Company of Decatur, Illinois;

2. The Model A-USP0 resilient wedge gate valve (available in 2-inch through 12-inch) by the US Pipe, Valve & Hydrant Division of Mueller Company of Decatur, Illinois;

3. Or equal.

B. All valves shall be fully manufactured in the United States.

C. Valves shall be provided with a minimum of two O-ring stem seals.

D. Bonnet and gland bolts and nuts shall be either Type 304 or 316 stainless steel. The hot-dip process in accordance with ASTM A153 is not acceptable. Allen-wrench type bonnet and gland fastening shall not be acceptable and will be rejected.

E. Wedges shall be totally encapsulated.

F. Units shall be, in addition, UL and FM approved.

G. Cast the word "OPEN" and an arrow indicating direction to open on each valve body or operator.

H. Operating nut for all gate valves shall be 2-inch square.

I. Valves shall be non-rising stem.

J. AWWA standards for thrust collars and stems to be integrally cast (not pinned on), and copper alloy valve stems shall be strictly enforced.

K. Valves shall have mechanical joint ends compliant with AWWA C111 unless otherwise noted.

L. A 10-year warranty shall be provided for all resilient seated gate valves furnished on the Project.

M. The pH of the fluids (potable water) flowing through the valves is expected to be between 9.0 and 9.5 pH units.

2.05 TAPPING SLEEVES AND TAPPING VALVES

A. Tapping sleeves shall be of iron or steel, designated for working pressure not less than 200 psi. Armored end gaskets shall be provided for the full area of the sleeve flanges.

B. Tapping sleeves shall be of the split mechanical joint design, high-strength iron or steel body with a heavy coat of corrosion resistant coating and separate end and side gaskets. The side gasket shall extend the entire length of the tapping sleeve, forming a watertight joint. Tapping sleeves shall conform to all required AWWA standards. Tapping sleeves shall be as manufactured by:

1. Mueller H-615 or H-616.

2. JCM Industries Model No. 414.

3. Or equal.

C. Nuts and bolts shall be Type 304 stainless steel.

D. Tapping valves shall conform to the requirements specified above for gate valves except that one end shall be flanged and one mechanical. Tapping valves shall be provided with an oversized opening to permit the use of full size cutters.

2.06 BUTTERFLY VALVES

A. Valves shall be manufactured in strict accordance with AWWA C504. Valves shall be bubble tight at rated pressures. Valve discs shall rotate 90 degrees from full closed to open. Operators shall be assembled to the valve by the valve manufacturer. The valve/operator shall be tested as a complete assembly by the valve manufacturer. The manufacturer shall have produced AWWA butterfly valves for a minimum of 5 years.

B. Valve bodies shall be constructed of cast iron ASTM A126, Class B. Valves 20-inches and larger on water transmission mains shall be flanged. Flange drilling shall be in accordance with ANSI B16.1, Class 150. Laying length shall be short body as listed in AWWA C504. Other buried butterfly valves smaller than 20-inches shall be mechanical joint end conforming to ANSI C111.

C. Valve discs shall be constructed of cast iron ASTM A126 or A48, ductile iron ASTM A536. Material mating with the seat shall be either Type 304 or Type 316 stainless steel.

D. Rubber valve seats shall be Buna-N, Buna-S, or EPDM. The seat shall be in the valve body and seat retaining hardware such as screws and segments are used they shall be monel. If screws are used, monel plugs shall be affixed in the valve body and tapped to receive these screws.

E. Valve shafts shall be Type 304 stainless steel, ASTM A276 and shall be of a diameter not less than those listed in AWWA C504, Class 150B.

F. Shaft seals shall be furnished where the shaft projects thru the valve body. Shaft seals shall be standard split-v type packing or of an O-ring design.

G. Valves shall be fitted with sleeve type bearings contained in the trunions of the valve body. Bearing material shall be nylon for valves thru 20-inches and fiberglass with teflon lining for valves 24-inches and larger.

H. Valve manufacturer shall furnish and mount operator suitable for buried service. Operators shall be self-locking and suitable for submergence to 20-feet. A 2-inch square operating nut shall be furnished. Operator stops shall be capable of withstanding an input of 450 foot-lbs.

I. All valves shall be hydrostatically and leak tested.

J. Valve class shall be AWWA Class 150B with operators sized for bi-directional flow.

K. Valves shall be manufactured by Henry Pratt (the "Groundhog" series); Mueller (Model 3211); or approved equal.

L. Butterfly valves shall be manufactured in the United States.

2.07 FIRE HYDRANTS

A. Fire hydrants shall be dry-barrel type conforming to the requirements of AWWA C502. Hydrants shall be designed such that the hydrant valve closes with line pressure preventing loss of water and consequent flooding in the event of traffic damage

B. Hydrants shall have 6-inch mechanical joint inlet connections, two 2-1/2-inch hose connections and one 4-1/2-inch pumper connection. Threads for the hose and pumper connections shall be in accordance with National Standard Thread. Hydrants shall be according to manufacturer's standard pattern. Hydrants shall be equipped with O-ring packing. Each nozzle cap shall be provided with a Buna-N rubber washer.

C. Hydrants shall be so arranged that the direction of outlets may be turned 90 degrees without interference with the drip mechanism or obstructing the discharge from any outlet. Hydrants shall be installed so that the 4-1/2-inch pumper nozzle faces the roadway.

D. A bronze or rustproof steel nut and check nut shall be provided to hold the main hydrant valve on its stem.

E. Hydrant valve opening shall have an area at least equal to that area of a 5-1/4-inches minimum diameter circle and be obstructed only by the valve rod. Each hydrant shall be able to deliver 500 gallons minimum through its two 2-1/2-inch hose nozzles when opened together with a loss of not more than 2 psi in the hydrant.

F. Hydrants shall be designed for installation in a trench that will provide minimum cover as noted on Drawings. Hydrant extensions shall be as manufactured by the company furnishing the hydrants and of a style appropriate for the hydrants as furnished.

G. Hydrants shall open by turning operating nut to the right (clockwise) and shall be marked with a raised arrow and the work "open" to indicate the direction to turn stem to open hydrant.

H. Hydrants shall be furnished with caps, double galvanized steel hose cap chain, galvanized steel pumper hose cap chain, a galvanized steel chain holder and any other hooks and/or appurtenances required for proper use.

I. Hydrant operating nut shall be AWWA Standard pentagonal type measuring 1-1/2-inch point to flat.

J. Hydrants shall be hydrostatically tested as specified in AWWA C502.

K. Hydrants shall be furnished with a repairable traffic breakaway flange.

L. Hydrants shall have an automatic drain that is operated by the main valve rod. The drain valve is to open as the main valve is closed and the drain valve is to close as the main valve is opened. The port and seat of the main valve shall be bronze.

M. Contractor shall determine the depth of all existing water mains to determine bury depth of all hydrants prior to ordering and installing hydrants.

N. The minimum distance allowable between the centerline of the lowest nozzle and the ground line is 18 inches.

O. Hydrants shall be manufactured by the following:

1. Mueller, Super Centurian No. A-423.

2. Darling B62B.

3. Or equal.

P. All iron work to be set below ground, after being thoroughly cleaned, shall be painted with two coats of asphalt varnish specified in AWWA C502. Iron work to be left above ground shall be shop painted with two coats of paint of quality and color to correspond to the present standard of the Owner.

2.08 MANUAL AIR RELEASE VALVES FOR BUTTERFLY VALVES

A. Manual air release valves shall be installed for all new transmission main butterfly valves as shown on the Drawings and shall be 2-inches. Valves shall be installed within valve boxes with locking covers and be equipped with an operating handle/rod. Manual air release valves shall be manufactured by Wedge Manufacturing, LLC of Connecticut or approved equal.

B. Valve boxes shall be of sufficient size to fully accommodate manual air release valves. Inside diameter of valve boxes shall be minimum 5-1/4 inches for manual air release valves.

2.09 INSERTION VALVES

A. Insertion valves shall be of a standard duty, clamp-on type, stainless steel, designated for working pressure not less than 200 psi. Insertion valve shall be capable for use on pipes ranging in size from 4 inches through 12 inches of various materials including but not limited to steel, cast iron, ductile iron, asbestos cement, PVC and PE and shall be by Hydra-Stop or approved equal.

B. Valves shall be provided with a standard AWWA 2-inch nut and valve shall open to the right.

C. Valve gate shall be made of SBR rubber and provide for unobstructed flow of water. Valve stem shall be made to AWWA C500-93 Section 3.12 standards.

D. Valve housing flange shall be heavy duty ANSI A-105, 150 lbs. rated flange.

2.10 CHECK VALVES

A. Iron Swing Check Valves for Waterworks Service and Metallic Lines of 2-inch to 48-inch Diameter:

1. Check valves shall be swing type and shall meet the requirements of AWWA C508. Valves shall be iron body, bronze mounted, single disc, minimum 200 psi working pressure for 2- to 12-inch, minimum 150 psi working pressure for 14- to 48-inch, non-shock and hydrostatically tested at 300 psi. When there is no flow through line, disc shall hang lightly against its seat in practically a vertical position. When open, disc shall swing clear of waterway. Valves shall be so constructed that disc and body seat may easily be removed and replaced without removing valve from line.

2. Check valves shall have bronze seat and body rings, bronze or ductile clapper arm and bronze nuts on the bolts of bolted covers. Shaft assembly and key shall be ASTM A582 Type 416 stainless steel. Hinge shaft shall extend from body of valve, sealed with stuffing box, packing and gland. Shaft side plug bearing, stuffing box and gland shall be bronze, packing shall be reinforced Teflon, both side plug and stuffing box shall be provided with grease fittings.

3. Valves 6-inch and larger shall be fitted with an extended hinge arm with outside lever and weight. Position of weight shall be adjustable. Various weights shall be provided and installation approved by Engineer. Lever shall be installed to horizontal in closed position, for both horizontal and vertical pipeline installations.

4. Where check valve position switches are required if shown on Drawings, check valves shall be furnished complete with position switch mounting bracket and actuation lever mounted to stem shaft. Where outside lever and weights are required, stem shaft shall extend both sides of valve body and position switch assembly shall be mounted on opposite side of lever and weight assembly.

5. Where position switches are to be supplied (if required as shown on the Drawings) for existing check valves with external shaft and lever, supply mounting brackets and hardware required to mount position switches to existing valves. Contractor shall use existing bolting where possible to mount brackets. If bolting is not available in required area, Contractor shall drill and tap valve body if required to mount position switches. Drill location and depth shall be reviewed with, and approved by Engineer.

6. Position switches, if required as shown on the Drawings, shall be lever type, NEMA 7 enclosure, SPST, 120VAC, 6A, Square D Type 9007CR or equal. Hardware shall be Type 316 stainless steel.

7. Check valves shall meet the requirements of NSF/ANSI 61 for potable water service.

8. Check valves shall be manufactured by American Flow Control; M&H/Clow/Kennedy; Golden Anderson; Mueller; or equal.

2.11 SURFACE PREPARATION AND SHOP COATINGS

A. The interior ferrous metal surfaces, except finished or bearing surfaces, shall be blast cleaned in accordance with SSPC SP-10 and painted with two coats of an approved two-component epoxy coating specifically formulated for potable water use. The coating shall be NSF certified to Standard 61.

B. Exterior ferrous metal surfaces of all buried valves and hydrants shall be blast cleaned in accordance with SSPC SP-6 and given two shop coats of an approved two-component coal tar epoxy paint.

PART 3 EXECUTION

3.01 INSPECTION AND PREPARATION

A. During installation of all valves and appurtenances, verify that all items are clean, free of defects in material and workmanship and function properly.

B. All valves shall be closed and kept closed until otherwise directed by the Engineer.

C. Butterfly valves shall be field tested as specified prior to installation.

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3.02 INSTALLATION OF BURIED VALVES AND VALVE BOXES

A. Buried valves shall be cleaned and manually operated before installation. Buried valves shall be installed in accordance with AWWA C504 and C509 as applicable and as specified herein. Buried valves and valve boxes shall be set with the stem vertically aligned in the center of the valve box. Valves shall be set on a firm foundation and supported by tamping pipe bedding material under the sides of the valve. The valve box shall be supported during backfilling and maintained in vertical alignment with the top flush with finish grade. The valve box shall be set so as not to transmit traffic loads to the valve.

B. All butterfly valves larger than 16-inches shall be hydrostatically and leak tested on-site in the field prior to installation. Contractor shall provide all the necessary piping, blind flanges, restraints, taps, pressure gauges, corporations and testing equipment to verify valve seats are leak proof. Hydrostatic and leak test shall be as follows:

1. Conduct a functional field test of each valve, including actuators and valve control equipment, in presence of Owner and/or Engineer, to demonstrate that each part and all components together function correctly. All testing equipment required shall be furnished by the Contractor.

2. Contractor shall provide blind flanges of the same nominal diameter as the valves being tested, tapped for two 1/2-inch minimum corporation stops to use for on-site pressure testing of butterfly valves prior to their installation. One tap shall be placed in the lower portion and the other tap shall be placed in the upper portion of the blind flange.

3. To one side of the valve, bolt and restrain the blind flange of the same nominal diameter as the valve being tested. Blind flange shall have been previously tapped for two 1/2-inch corporation stop connections.

4. Set and restrain the blind flange tightly to the valve. Water shall be introduced through the lower corporation to fill the cavity between the closed valve disk and the blind flange. Water will continue to be supplied until all air has been purged from the cavity.

5. After all air has been purged, install a pressure gauge on the upper corporation to measure the test pressure throughout the duration of the test.

6. Continue filling the cavity between the valve disk and blind flange until pressure is 1.5 times the working pressure of the valve. Maintain pressure for a minimum of 2 hours. Monitor valve and disk for the presence of any leaks during this time. Engineer shall witness testing and verify that valve is of a satisfactory condition to be installed.

7. Repeat steps 2 through 6 to hydrostatically and leak test the other side of the valve and valve disk.

8. Both sides of each valve and valve disc shall pass this hydrostatic and leak test before being installed in the work. Any valve that fails this on-site hydrostatic and leak test on either side of the valve disc shall be rejected or repaired (e.g., seat), at the sole discretion of the Engineer. If a valve is repaired, it must be retested and pass this hydrostatic and leakage testing requirement before being installed in the work. Engineer and Owner reserve the right to reject any valve that does not pass this hydrostatic and leak test and require that the Contractor provide a brand new valve as a replacement.

9. Engineer shall witness testing of all valves and that all valves pass the testing requirement and are satisfactory to be installed. Contractor shall submit a certification report that each valve has been tested and passed the on-site leakage test.

10. It is the responsibility of the Contractor that he/she ensures the safety of any persons performing the testing of the valves. Testing shall be performed at a location selected by the Owner and Engineer.

C. Before backfilling, all exposed portions of any bolts shall be coated with two coats of bituminous paint.

D. Contractor shall exercise care during flowable fill encasement of valves to prevent flowable fill from entering valve boxes and encasing the operating nut. As shown on the Drawings, install a posi-cap to prevent flowable fill from entering the valve box and seizing the operating nut of the valve. Contractor bears full responsibility for protection of the valve. If the valve is damaged or becomes inoperable during installation of flowable fill encasement, the Contractor shall replace the valve at no additional cost to the Owner.

3.03 INSTALLATION OF INSERTION VALVES

A. The Owner shall be contacted and their permission granted prior to tapping a "live" line. The required procedures and time table shall be followed exactly.

B. Installation shall be made under pressure and flow shall be maintained.

C. The entire operation shall be conducted by workers experienced in the installation of insertion valves/tapping sleeves and valves. The tapping machine shall be furnished by the Contractor.

D. Determine the location of the line to be tapped to confirm that the proposed location will be satisfactory and that no interference will be encountered such as joints or fittings. No tap or sleeve will be made closer than three feet from a pipe joint. The exact location of the tap is subject to approval by the Engineer.

E. Prior to completing the tap, the valve shall be swabbed with chlorine solution to ensure that the valve seat is clean. All proper regulatory procedures shall be followed exactly.

F. Insertion valve with boxes shall be set squarely centered on the line to be tapped. Adequate support shall be provided under the sleeve and valve during the tapping operation. Thrust blocks or other permanent restraint acceptable to the Engineer shall be provided behind all tapping sleeves. Proper tamping of supporting pipe bedding material around and under the valve and sleeve is mandatory for buried installations.

G. After completing the tap, the valve shall be flushed to ensure that the valve seat is clean. All proper regulatory procedures (including disinfection) shall be followed exactly.

H. Follow manufacturer’s instructions pertaining to the installation of the tapping sleeve and tapping saddle.

3.04 INSTALLATION OF TAPPING SLEEVES AND VALVES

A. The proper authority shall be contacted and their permission granted prior to tapping a "live" line. The required procedures and time table shall be followed exactly.

B. Installation shall be made under pressure and flow shall be maintained. The diameters of the tap shall be not less than 1/4-inch less than the inside diameter of the branch line.

C. The entire operation shall be conducted by workers experienced in the installation of tapping sleeves and valves. The tapping machine shall be furnished by the Contractor.

D. Determine the location of the line to be tapped to confirm that the proposed location will be satisfactory and that no interference will be encountered such as joints or fittings. No tap or sleeve will be made closer than three feet from a pipe joint. The exact location of the tap is subject to the approval of the Engineer.

E. Tapping sleeve and valve with boxes shall be set squarely centered on the line to be tapped. Adequate support shall be provided under the sleeve and valve during the tapping operation. Thrust blocks or other permanent restraint acceptable to the Engineer shall be provided behind all tapping sleeves. Proper tamping of supporting pipe bedding material around and under the valve and sleeve is mandatory for buried installations. Tapping sleeves shall be installed per manufacturer’s specifications.

F. Prior to completing the tap, the valve shall be swabbed with chlorine solution so that the valve seat is clean. All proper regulatory and AWWA procedures shall be followed exactly.

G. After completing the tap, the valve shall be flushed to ensure that the valve seat is clean. All proper regulatory procedures (including disinfection) shall be followed exactly.

3.05 INSTALLATION OF FIRE HYDRANTS

A. Fire hydrants shall be set at the locations as shown on the Drawings and bedded on a firm foundation. Hydrants and connecting pipe shall have at least the same depth of cover as the distributing pipe. A drainage pit as detailed on the Drawings shall be filled with screened gravel and compacted. The hydrants shall be set upon a slab of concrete not less than 4-inches thick and 15-inches square. During backfilling, additional screened gravel shall be brought up around and 6-inches over the drain port. Each hydrant shall be set in true vertical alignment and properly braced.

B. Concrete thrust blocks shall be placed between the back of the hydrant inlet and undisturbed soil at the end of the trench. Minimum bearing area shall be as shown on the Drawings. Felt roofing paper shall be placed around hydrant elbow before placing concrete. Care shall be taken to ensure that concrete does not plug the drain ports.

C. The hydrant shall be tied to the pipe with suitable rods or clamps, galvanized, painted, or otherwise rustproof treated. Hydrant paint shall be touched up as required after installation.

D. Fire hydrants shall be painted in accordance with Owner's standard practice.

3.06 INSTALLATION OF AIR RELEASE VALVES

A. Air release valves shall be installed as shown on the Drawings and in conformance with AWWA C512.

B. After water mains have been returned to service, monitor all air release valves for the presence of leaks. Operate all manual air release valves. Notify Engineer of the presence of any leaks.

3.07 INSTALLATION OF CHECK VALVES

A. Valves and appurtenances shall be installed per manufacturer's instructions in locations shown, true to alignment and rigidly supported. Damage to above items shall be repaired by the Contractor to the satisfaction of Engineer before they are installed.

B. Install brackets, extension rods, guides, various types of operators and appurtenances as shown on Drawings, or otherwise required. Before setting these items, check Drawings and figures which have a direct bearing on their location. Contractor shall be responsible for proper location of valves and appurtenances during construction of the work.

C. Materials shall be carefully inspected for defects in construction and materials. Debris and foreign material shall be cleaned out of openings, etc. Valve flange covers shall remain in place until connected piping is in place. Operating mechanisms shall be operated to check their proper functioning and nuts and bolts checked for tightness. Valves and other equipment which do not operate easily, or are otherwise defective, shall be repaired or replaced at no additional cost to Owner.

D. Where installation is covered by a referenced standard, installation shall be in accordance with that standard, except as herein modified, and Contractor shall certify such. Also note additional requirements in other parts of this Section.

E. Unless otherwise noted, joints for valves and appurtenances shall be made up utilizing same procedures as specified under applicable type connecting pipe joint and valves and other items shall be installed in proper position as recommended by manufacturer. Contractor shall be responsible for verifying manufacturers' torqueing requirements for all valves.

F. Check valves shall be installed in full accordance with AWWA C508 and manufacturer’s instructions and requirements.

3.08 MANUFACTURER'S SERVICE

A. Furnish the services of a qualified representative of the tapping equipment manufacturer to provide on-site instruction during wet tapping of the existing water mains indicated on the Drawings.

B. Following installation of the butterfly valves, furnish the services of a qualified, factory-trained representative of the manufacturer of the respective valves, to check the installations before they are placed in operation, supervise initial operations and testing in the presence of the Engineer, instruct Owner’s personnel in care and maintenance of the equipment, and make all necessary field adjustments. In the event of trouble with the equipment, the representative of the respective manufacturer shall revisit the site as often as necessary until all troubles are corrected and the installation is entirely satisfactory.

3.09 FIELD TESTS AND ADJUSTMENTS

A. Conduct a functional field test of each valve, including actuators and valve control equipment, in presence of Engineer to demonstrate that each part and all components together function correctly. All testing equipment required shall be furnished by the Contractor.

B. Take care not to over pressurize valves or appurtenances during pipe and valve testing. If any union proves to be defective, it shall be replaced or repaired to the satisfaction of the Engineer.

C. No testing shall be performed until the manufacturer's service engineer has provided written certification that the following installed equipment has been examined and found to be in complete accordance with the manufacturer's requirements.

D. The various pipelines in which valve and appurtenances are to be installed are specified to be field-tested. During these tests any defective valves or appurtenances shall be adjusted, removed and replace or otherwise made acceptable to the Engineer.

E. Valves and appurtenances shall be tested to demonstrate their conformance with the specified operational capabilities, and any deficiencies shall be corrected or the device shall be replaced or otherwise made acceptable to the Engineer.

3.10 CLEANING AND DISINFECTION

A. All items (including valve interiors) shall be cleaned and disinfected prior to installation, testing, and final acceptance in accordance with AWWA 651 standards.

END OF SECTION

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SECTION 02657
DECKING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish, install, maintain and remove decking over street or trench openings where, in the opinion of the Engineer, traffic requires unrestricted use of the street or location. At such locations work may be suspended during periods of heavy traffic, to insure the public safety.

B. All areas ordered decked by the Engineer shall be sheeted and braced regardless of depth unless otherwise instructed by the Engineer. The Contractor shall furnish, put in place, and maintain such sheeting and bracing required to support the sides of the excavation and prevent loss of ground which could damage or delay the work or endanger adjacent structures. If the Engineer is of the opinion that at any points sufficient or proper supports have not been provided, he may order additional supports placed at the expense of the Contractor. Compliance with such order shall not relieve the Contractor from his responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed they shall be immediately filled and rammed.

C. If decking is placed by the Contractor over any opening when not so ordered by the Engineer, all costs of decking at such location, maintaining traffic and safeguarding open excavation shall be included in the price bid for installing new water mains.

D. Before the decking and supporting systems are placed, the Contractor shall submit to the Engineer detailed plans showing the structure he proposes to use. The construction shall be steel. The decking and supports shall be of sufficient strength to carry a load of 200 psi over the entire deck area or 10 tons on an axle with wheels five feet on centers without exceeding the allowable stress specified in the ASSHTO Standard Specifications for Highways and Bridges.

E. Decking placed at an opening shall remain over the open excavation until backfilling is complete except to provide access for work required as shown on the Drawings, or for other work under this Contract directed by the Engineer.

1.02 RELATED WORK NOT INCLUDED

A. Sheeting and bracing for trench excavation is included in Section 02221.

PART 2 PRODUCTS

A. Materials and structures shall conform to the requirements of paragraph 1.01 Scope of Work, this Section.

PART 3 EXECUTION

A. Execution of decking work shall conform to the requirements of paragraph 1.01 Scope of Work, this Section.

END OF SECTION

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SECTION 02658
TEST PITS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required for excavating test pits as directed by the Engineer to establish field conditions at critical points in advance of other work under this contract.

B. The excavation of test pits will require work by the Contractor including: excavation, cutting the existing pavement or sidewalk, disposal of excavated materials and/or reuse in the backfill of suitable materials, sheeting, supporting utilities, bracing and drainage, decking (if required or directed), re-bedding existing pipe backfilling, providing granular materials if so directed, water handling, disposal of surplus material, and temporary and/or permanent pavement restoration as directed.

C. Test pits shall be refilled using backfilling techniques and procedures suitable for permanent re-bedding of the pipe and refilling of the excavation to provide suitable subgrade for heavy vehicular traffic. Temporary pavement shall be provided and maintained until permanent pavement restoration is made at the direction of the Engineer.

D. Test pits shall be of sufficient dimensions and depths to definitely establish: pipe depths, existing pipe materials, outside pipe diameters; locations of existing joints, fittings, and valves; and other information on the existing subsurface conditions that may be needed for planning the Contractor's operations and selecting and ordering materials for the work reasonably in advance of executing the work for its orderly progression and completion, and for the minimum inconvenience to the public.

E. Barricades shall be provided as specified or as directed for protection of the public.

F. Test pit work shall conform to the requirements of this section and to the applicable requirements of other sections of the Contract Documents. Test pit work shall be coordinated with the Engineer.

1.02 RELATED WORK

A. Excavating, Backfilling and Compaction is included in Section 02221.

B. Granular materials are included in Section 02230.

C. Decking is included in Section 02657.

PART 2 PRODUCTS

A. Materials shall conform to the requirements of these specifications, as specified in other related sections.

PART 3 EXECUTION

A. Excavation of test pits shall conform to the requirements of Part 1: Scope of Work.

END OF SECTION

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SECTION 02263
WATER SERVICE CONNECTIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required in tapping and making service connections where directed by the Engineer. Furnish all necessary labor and equipment to excavate the trenches, backfill the trenches after the new connections are completed and restore the street, sidewalk and/or area to their original condition. Trench excavation and backfilling shall be done in accordance with all the related Sections.

B. Corporation stops shall be installed for connecting all services to new water mains. Keep a record of the locations of all corporation stops installed and indicate on the record those corporation stops that have not been connected to service piping. A copy of this record shall be given to the Engineer at the completion of the work. Copper tubing, curb stops and necessary adapters shall be used to make connections between new corporation stops and new and existing service piping. Unless otherwise directed, the new curb stops shall be located 1.5-feet back of the curb line. Be responsible for the removal and/or installation of curb stops in the locations directed by the Engineer.

C. All existing services shall be maintained until new service connections have been fully installed to the satisfaction of the Engineer. All service connections shall then be made to the mains as specified below. Connect each existing service to new service connections provided after the completed installation has been accepted by the Engineer. All abandoned services shall have ends crimped.

D. All existing lead service connections encountered, whether or not they are shown on the Drawings, are to be replaced with copper tubing, complete with new corporation stop and curb stop.

E. Any existing lead service connections encountered which are not specified for replacement on the Drawings or in this Specification, shall also be replaced with a new corporation stop, copper service tubing, curb stop, adapters and fittings of the necessary size required. Existing service connections, unless otherwise shown on the Drawings or specified herein for replacement, shall be reconnected to the new water mains with a new corporation stop, copper service tubing, adapters and fittings of the necessary size required. The Contractor shall dispose of all lead service connections removed in accordance with all local, state and federal laws and regulations.

1.02 RELATED WORK

A. Trenching, backfilling and compaction are included in Section 02221.

B. Granular fill material is included in Section 02230.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, and within 10 days after signing the contract a list of materials to be furnished, the name of suppliers and the date of delivery of materials on the job site.

1.04 REFERENCE STANDARDS

A. ASTM International

1. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

B. American Water Works Association (AWWA)

1. AWWA C800 - Underground Service Line Valves and Fittings.

C. City of New Bedford Construction Specifications, latest edition.

D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 PRODUCTS

2.01 MATERIALS

A. Service pipe shall be soft, annealed seamless copper tubing conforming to ASTM B88, Type K. The name and trademark of the manufacturer shall be stamped along the pipe. Copper tubing shall be of the size shown on the Drawings. Copper service tubing for domestic water service connections shall be minimum 1-inch and shall match the existing service connection size in kind.

B. Corporation stops shall be compliant with AWWA C800 and shall be brass with standard shop threads conforming to AWWA C800 on the inlet end with required joint and coupling for connection to copper pipe, and shall be NL Ball Style Corporation Stop – 74701BQ AWWA/CC x Q CTS Compression by A.Y. McDonald Mfg. Co. or approved equal in accordance Owner's standards. Corporation stops for service connections shall not be less than 1-inch in diameter. Corporation stops of the required size shall be installed where shown on the Drawings, specified or required. Corporation stops shall be rated at minimum 150 psig working pressure for 1/2, 3/4 and 1-inch sizes, and at minimum 150 psig working pressure for 1-1/4, 1-1/2, and 2-inch sizes.

C. Curb stops shall be compliant with AWWA C800, and shall be water works inverted ground key type, oval or round flow way, tee handle, without drains. Pipe connections shall be suitable for the type of service pipe used. All parts shall be of bronze with female iron-pipe size connections or compression-pattern flared tube couplings and shall be designed for a hydrostatic test pressure not less than 200 psi. Curb stops shall be NL Ball Style Curb Stop – 76100Q Q CTS Compression x Q CTS Compression by A.Y. McDonald Mfg. Co. or approved equal in accordance Owner's standards. Curb stops shall be bronze with copper fittings, and shall be of the inverted key type with base cap and stops. Working pressure shall be minimum 150 psig.

D. Service boxes shall be installed for all service connections. Curb stops shall be furnished with curb boxes of the extension type with stationary rod and arch pattern base. Service boxes shall be cast-iron. Extension service boxes of the required length and having slide-type adjustment shall be installed at all service box locations. The boxes shall have housings of sufficient size to completely cover the curb stop and shall be complete with identifying covers. Service boxes shall be furnished with cover which reads "WATER".

E. Adapter couplings for connecting new copper tubing to existing service connection shall be standard straight coupling fittings conforming to AWWA C800. When connecting new water service to existing water service, the Contractor may encounter different pipe materials such as steel, brass, lead etc. Couplings used to connect new to existing services shall electrically isolate the two materials and be comprised of corrosion resistant material.

F. Line fittings, if required on new service line, shall be standard three-part unions conforming to AWWA C800.

G. Service saddles shall conform to the Owner's standards, latest edition:

1. Bodies: Double strap ductile-iron ASTM-A536, CC outlets.

2. Straps: Carbon Steel ASTM-A108 (61018) electro-galvanized with di-chromate seal ASTM-B633.

3. Studs: Type 304 – 5/8-inch stainless steel.

4. Nuts: Cold formed semi-finished heavy hex steel A563 electro-galvanized with di-chromate seal ASTM-B633 or Type 304 stainless steel Teflon coated for stainless steel.

5. Washers: Carbon steel ASTM-A108 electro-galvanized with di-chromate seal ASTM-B633 or Type 304 stainless steel for stainless steel.

6. Gaskets: Grade 60 compounded to resist oil, natural gas, acids, alkalies, hydrocarbon fluids, water and other chemicals.

7. Finish: Fusion bonded nylon to a minimum thickness of 12 mils or optional topcoat enamel.

H. All service connections shall be in accordance with Owner's Construction Specifications, latest edition.

PART 3 EXECUTION

3.01 INSTALLATION

A. Corporation stops. The tapping machine shall be rigidly fastened to the pipe as near the horizontal diameter as possible. The length of travel of the tap should be so established that when the stop is inserted and tightened with a 14-inch wrench, not more than one to three threads will be exposed on the outside. When a wet tapping machine is used, the corporation cock shall be inserted with the machine while it is still in place. Stops shall be tightened only sufficiently to give watertightness and care must be constantly exercised not to overtighten them.

B. Straight couplings. Install straight couplings to existing water mains of the sizes required in the locations designated by the Engineer in the field. Utilize the manufacturer's recommended installation procedures while performing the work. Care shall be taken to ensure a watertight connection.

C. Curb stops will, in most cases, be installed 1.5-feet from the curb line or pavement limit. Install the curb stops and boxes in a workmanlike manner as described herein and as directed by the Engineer and shall place compacted screened gravel around and below the cock to permit ready draining of the pipe through the waste opening.

D. The boxes shall be set in a true vertical position and if they are within the limits of the roadway or within limits where the plowing of snow will take place in the winter, the tops of the boxes shall be set about 1/2-inches below the top of the finished grade. In locations where these boxes are not likely to be disturbed, the tops shall be set flush with the adjoining ground.

E. Copper tubing. Care shall be exercised in the placing and laying of copper tubing to be sure that the pipe does not have kinks or sharp bends and to assure against it being in contact with sharp stones or ledge which would cause damage to the pipe. At least 6-inches of selected fill shall be placed adjacent to and above the pipe and no stone shall be placed over the pipe until the depth of backfill above the latter is in excess of 1-foot.

F. All service connections must be installed perpendicular (90 degrees) from water main to property line and shall have a minimum of 4 feet of cover and must not be laid in the same trench as other utilities (i.e., gas, electric, sewer).

END OF SECTION

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SECTION 02666
TEMPORARY SERVICES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install and remove bypass and temporary service pipe and fire hydrants of the sizes required to provide adequate service to any and all service connections whose service will be interrupted by new water main installation or valve replacements and to fulfill fire service requirements. Existing fire hydrants connected to pipe being replaced and serving as temporary fire hydrants shall be connected to the temporary pipe at locations directed by the Engineer.

B. Furnish all labor, materials, equipment, and incidentals required for providing tap holes for temporary service by as required by the Engineer/Owner. The work to be done, without limiting the generality thereof, shall be as follows:

1. Excavate all tap holes as required.

2. Provide at no additional cost, sheeting and bracing, and decking as required.

3. Make taps in existing water mains of the necessary size required as approved by the Engineer.

4. Install tapping sleeve and valve at existing main.

5. Backfill all tap holes as required.

6. Restore the excavated surface.

C. The Contractor shall notify the Owner and all respective Fire Department(s) of all existing hydrants taken out of service. The Contractor shall cover all out-of-service hydrants with bags clearly labeled “Not In Service” or “Out Of Service”.

D. The Contractor is responsible for ensuring that all temporary hydrants are compatible with equipment used by the Owner’s Fire Department and any other affected Fire Departments in where hydrants are taken out of service.

E. The Contractor shall provide temporary water service to all locations with small diameter services currently connected to mains to be shut off, in order to facilitate the work, by means of temporary hose connections. All hoses shall be 1-inch minimum diameter and shall be capable of withstanding at least 1.5 times the normal working pressure. All hoses that are to supply potable water to buildings are to be NSF 61 and/or FDA approved for contact with drinking water. These temporary service connections shall be made to sill stops outside the buildings or to temporary connections at the meter inside the buildings, as may be required or directed. All temporary piping and temporary service connections to be installed shall be included in the respective bid prices included on the Bid Form.

F. In cases where access to the building water meter is not possible or where temporary service connection using hoses would not provide adequate supply capacity a temporary service

connection shall be made to the existing service pipe in the street between the shutoff valve at the main and the property line, or in the sidewalk area between the shutoff valve and the service shut off valves inside the building. Payment for temporary service connections shall be included in the respective Bid Prices on the bid form.

G. The work of relocating existing service and of furnishing and installing temporary service pipe, temporary customer services and other branches, maintaining the same, providing suitable safety precautions and removal of the temporary service pipe system shall be the sole responsibility and expense of the Contractor.

H. Temporary services shall not be used between November 1st and April 15th in order to prevent freezing.

I. The Contractor shall submit to the Engineer a daily log of all locations and addresses where temporary service connections have been installed and removed. Payment for temporary service connections and submittal of these daily logs shall be included in the Bid Price for furnishing and installing temporary pipe and temporary service connections. No payment will be made for furnishing and installing temporary pipe until the Contractor has submitted all daily logs of buildings/houses transferred to and removed from temporary service pipe.

J. Size requirements for temporary bypass piping and temporary bypass piping water supply layouts shall be as follows:

1. The minimum size of temporary bypass piping shall be 2-inches.

2. The minimum size of temporary bypass piping that supplies temporary fire hydrants shall be 4-inches (6-inches for areas/streets where existing hydrants are supplied directly by existing water transmission mains 20-inches or larger).

3. Contractor shall make 6-inch temporary taps into existing water mains, if required, to facilitate supply to the temporary bypass piping layout.

4. Temporary hydrants shall be attached to temporary bypass piping that is at least 4-inches in size. If 4-inch temporary bypass piping is not looped and is supplied at one end only, the length shall not exceed 400 feet. For 4-inch temporary bypass piping that is looped and supplied at both ends, the length shall not exceed 1,200 feet. Temporary bypass piping that is 6-inches in size shall be used when the bypass piping lengths exceed 400 feet if bypass piping is supplied at one end only or when lengths exceed 1,200 feet when bypass piping is supplied at both ends.

5. All areas/streets where existing 20-inch or larger transmission mains are located that have service connections and hydrants supplied directly by the existing these water transmission mains shall be supplied as follows:
   a. Hydrants shall be connected to temporary bypass piping that is minimum 6-inches in diameter for these areas.
   b. All other requirements of Paragraph 1.01.J herein shall also apply when determining bypass piping sizes.

6. Side line/side street water mains that are connected to and supplied by 20-inch and larger water transmission mains shall be supplied as follows:

a. Temporary bypass piping installed on the side of the street that supplies existing hydrants shall be minimum 4-inches. Hydrants shall be connected to temporary bypass piping that is minimum 4-inches in diameter for these areas/streets.
b. If bypass piping is needed to supply service connections on the side of the street opposite existing hydrants, it shall be minimum 2-inches in diameter.
c. All other requirements of Paragraph 1.01.J herein shall also apply when determining bypass piping sizes.

7. Contractor shall review Owner records to determine all water service locations and sizes that need to be supplied by temporary bypass piping. Contractor shall consult with the Owner to confirm locations of all affected water mains, hydrants and service connections within anticipated shut down limits.

K. Construction sequence and special work requirements are included in Section 01014.

L. Contractor shall submit, in accordance with Section 01300:

1. Plans for temporary bypass piping.

2. Proposed temporary bypass piping layouts to maintain water supply to all locations affected by water mains to be shut down.

3. Materials to be used for temporary bypass water supply shall be submitted for Engineer's review and approval.

4. Engineer and Owner reserve the right to review Contractor's proposed temporary bypass water supply plans and layouts. The safety and integrity of the water system is of prime importance.

M. If after installation of temporary bypass piping there are problems with water supply to any areas, Contractor shall make necessary changes to temporary bypass piping layouts as directed by Engineer. The safety and integrity of the water supply system is of prime importance.

1.02 RELATED WORK

A. Excavation and backfill is included under Section 02221.

1.03 REFERENCE STANDARDS

A. American Water Works Association (AWWA)

1. AWWA C651 - Disinfecting Water Mains.

B. National Sanitation Foundation (NSF)

1. NSF 61 – Drinking Water System Components Health Effects.

C. Where reference is made to the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 PRODUCTS

2.01 TEMPORARY SERVICE PIPE

A. Taps for temporary service pipe – 6-inch tap with tapping sleeve and valve. Furnish and install 6-inch blind flange when tap is abandoned.

B. The temporary service pipe, connections and branches shall be of the highest quality and shall be fully adequate to withstand the pressures and all conditions of use. Contractor shall provide wye connections at all customer sill cocks so locations have access to water supply for outdoor watering. All hoses shall be minimum 1-inch diameter and shall be capable of withstanding at least 1.5 times the normal working pressure. All hoses that are to supply potable water to buildings shall be NSF 61 approved for contact with drinking water.

PART 3 EXECUTION

3.01 INSTALLATION

A. Temporary service pipe shall not be installed without the prior approval of the Engineer.

B. The Contractor shall submit a plan for the proposed layout of the temporary service pipe and connections to the existing distribution system for the Engineer's approval. This plan shall be drawn on a clean set of project drawings or Owner' water distribution system drawings and the temporary service pipe layout shall be consistent with the Contractor's proposed sequence of operations. Proposed changes in the layout of temporary service piping that the Contractor wishes to make, as the work proceeds, shall also be submitted for the Engineer's approval.

C. Make the required taps using approved methods as directed by the Engineer.

D. Wet tap connections (6-inch) will be installed for temporary water supply to locations where interruption to water is deemed impossible. Contractor shall furnish all labor, material, equipment and incidentals required to install the connection. Wet tap connections will be made only at the discretion of the Engineer. Contractor shall disinfect tapping sleeve, valve and piping prior to installation as specified herein.

E. Generally, temporary service pipe shall be laid in gutters; however in business areas the Contractor shall, if directed by the Engineer, lay temporary service pipe behind buildings. At driveways, pipe crossings shall be protected by cold patch cover or other approved method. At street intersections, the Contractor shall cut a straight line in the existing bituminous paving and lay the temporary service pipe in a shallow trench covered with temporary surfacing. At the Engineer's options, the Contractor may be allowed to use hose to come around bends or to cross driveways. Sanitary precautions shall be satisfactory to the Engineer and shall meet all requirements of the public health authorities having jurisdiction. The installation shall be watertight. Care shall be exercised throughout to avoid any possible pollution of mains, house services, or the temporary service pipe. The interior of temporary service pipe, temporary hoses and any other connection pipe to convey water for potable use shall be disinfected prior to its use in accordance with AWWA C651.

F. All temporary pipe shall be suitably valved and meet the approval of the Engineer. A valve shall be provided at each hydrant connection and each tap hole connection. Valves shall be located no further than 500-feet apart when directed by the Engineer.

G. Contractor at minimum shall provide a temporary fire hydrant for each existing fire hydrant connected to water mains taken out of service to facilitate new work.

H. Whether it is being installed, in service, or being removed, the amount of temporary service pipe kept on the job shall be the minimum that will allow the work to continue at a reasonable rate. The Owner and Engineer reserve the right to review and approve the Contractor's proposed temporary bypass piping plans and layouts to verify that the proposed amount of existing system piping shut down and the amount of temporary bypass piping proposed for installation at any one time is in direct proportion to the required areas of existing water mains required to be shut down to facilitate the installation of new work. The safety and integrity of the water system is of prime importance.

END OF SECTION

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SECTION 02767
PIPELINE HOT TAPPING AND LINE STOPPING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to perform hot tapping and line stopping on the existing water mains as specified herein and as shown on the Drawings.

1.02 RELATED WORK

A. Suggested Construction Sequence and Special Work Requirements are included in Section 01014.

B. Submittals are included in Section 01300.

C. Pipe preparation is included in Section 02120.

D. Dewatering and Drainage is included in Section 02140.

E. Trenching, Backfilling and Compaction is included in Section 02221.

F. Granular Fill Material is included in Section 02230.

G. Excavation Support and Protection is included in Section 02311.

H. Ductile Iron Pipe and Fittings are included in Section 02616.

I. Valves and Appurtenances are included in Section 02640.

1.03 SUBMITTALS

A. Submit, in accordance with submittal requirements, copies of all materials required to establish compliance with these Specifications. Submittals shall include the following:

1. Complete step-by-step descriptions of the methods to install the taps and line stops.

2. Complete drawings showing the location of the existing pipelines and the proposed locations of the taps and line stops.

3. Complete detail drawings of the proposed pipe tapping and line stopping equipment showing equipment and fitting positioning and overall dimensions and weight.

4. Complete detail drawings and description of materials of the line stop tapping sleeves and completion plug and blind flange.

5. Complete detail drawings and design calculations of the proposed reinforced concrete thrust block design for restraining the tapping sleeve and line stop as specified in Paragraph 2.01.E of this Section. The design drawings and calculations for the required thrust blocks for

restraining the tapping sleeves and line stops shall be prepared, stamped and signed by a Registered Professional Engineer in the Commonwealth of Massachusetts and submittals shall include copies of the Registered Professional Engineer's certification in Massachusetts (see Section 01300).

6. Statement indicating the design pressure rating of the line stop, tapping sleeves, tapping machine, and line stop equipment.

7. List of experience with similar pipe materials and sizes.

8. After completion of the tap, submit the coupon removed to the Owner.

1.04 DESCRIPTION OF SYSTEM

A. Tapping and line stopping shall be performed upon the pipelines as specified herein in such a manner that service in the pipelines shall not be affected. Except for the segment of pipe between the line stops closed for water main shut downs, flow in the pipelines shall not be stopped, and the pipelines shall not be drained during any portion of the tapping and line stopping operation.

B. Perform tapping and line stopping to allow for the isolation and dewatering of the existing water mains and installation of new work as shown on the Drawings. Upon completion of the connections, testing and acceptance of the work as described in the suggested construction and dewatering sequence on the Drawings and in the Specifications, remove the line stop(s) and plug the tapping sleeve branch outlets.

C. The tapping and line stopping operation shall be performed upon the pipelines as shown upon the Drawings. The anticipated maximum working/operating pressure along the pipelines shall be as specified in Section 01014.

1.05 QUALIFICATIONS

A. The Contractor shall employ a specialty subcontractor to perform the tapping and line stopping work. The specialty subcontractor shall have demonstrated experience with tapping and line stopping work on pipelines of similar materials and size to the pipelines on this project. Submit evidence that specialty subcontractor has completed a minimum of five taps and line stops on pipelines of similar materials and size to this project within the past ten years. Evidence of specialty subcontractor's experience shall be submitted with shop drawing submittals.

PART 2 PRODUCTS

2.01 TAPPING AND LINE STOPPING EQUIPMENT

A. The tapping and line stopping shall be accomplished utilizing specialized machinery and methods and shall consist of tapping sleeves permanently attached to the pipeline, plugs and blind flanges for permanently plugging the outlet of the tapping sleeve, temporary tapping valve, tapping machine, and line stopping machine. Tapping and line stopping equipment shall include all accessories required to successfully perform the work described herein.

B. The components of the tapping and line stopping system, including concrete thrust block, shall be designed for a system working/operating pressure as specified in Section 01014.

C. The tapping sleeve for cast iron pipe shall be of shop fabricated steel construction consisting of three parts, the top and bottom saddle sections and the nozzle. The fitting shall be full encirclement type. The top and bottom saddle sections shall be shaped to accurately fit around the pipeline in such a manner that they will provide structural support for the existing pipe section after removal of the tapping coupon.

1. The top saddle section shall bear against the pipe wall and clamp around the pipe to provide structural reinforcement for the portion of the pipe to be removed. The thickness of the tapping sleeve components shall be based upon the design calculations for the operating pressure of the pipe system and the grade of the steel used for the sleeve. Material shall be ASTM A285 Grade C, ASTM A36, or equal. All weldments shall be braced and stress relieved. The top saddle section shall fit essentially half the circumference of the pipeline to provide support and structural integrity to the remaining portion of the existing pipeline.

2. The top saddle shall incorporate a gasket to be placed against the existing pipeline to seal between the saddle and the pipeline. Gaskets shall be molded from elastomer compounds that resist compression setting and are compatible with potable water in the 32 to 140 degrees Fahrenheit temperature range.

3. The bottom saddle section shall fit essentially half the circumference of the pipeline. The section shall be of continuous steel plate or individual bands shaped to accurately fit the pipe circumference.

4. The top and bottom saddle sections shall be joined to clamp against the pipe wall with a sufficient number and size of bolts for the specified operating pressure.

5. The nozzle section shall be of the same nominal pipe size as required for the line stop machine. The nozzle shall be ASTM A285 Grade C, ASTM A36, or equal. All weldments shall be braced and stress relieved. The nozzle outlet shall be flanged with flange dimensions conforming to ANSI B16.5, 150 lb. pattern. The nozzle shall bear against the exposed cast-iron pipe. The nozzle shall incorporate a gasket to be placed against the existing cast-iron pipe to seal between the nozzle and the pipeline. Gaskets shall be molded from elastomer compounds that resist compression setting and are compatible with potable in the 32 to 140 degrees Fahrenheit temperature range.

6. The completion plug shall be machined from a stress relieved carbon steel plate. It shall contain two circumferential grooves; one to receive the locking devices from the nozzle flange, and the second to contain a compressible O-ring to seal pressure tight against the bore of the flange.

7. Upon completion of the work the line stop nozzles shall be closed with a blind flange placed over the completion plug. Facing and drilling of the blind flange shall be compatible with that of the nozzle flange. Minimum blind flange thickness shall be that of AWWA C207, Class D. The blind flange shall include a minimum 1-inch NPT tapped outlet with plug to allow pressure testing of the complete plug.

8. The tapping sleeve, completion plug, and blind flange shall be designed for permanent installation in the pipeline, to provide permanent plugging of the temporary tap. As such, the tapping sleeve components shall be manufactured of corrosion resistant materials, or shall be treated to enhance corrosion resistance. All exterior surfaces shall receive a coal tar epoxy

coating. Gasket contact surfaces and other surfaces not to be coated with coal tar epoxy shall receive coatings to minimize corrosion during handling and installation.

D. All temporary components for performing the tap and line stop, including the tapping machine, tapping valves, and line stops shall be designed for the specified operating pressure of the pipeline system.

E. A concrete encasement (thrust block) shall be installed around each completed tapping sleeve following successful pressure testing of the completed sleeve installation, but prior to installation of the tapping machine and start of the tapping operation. Concrete shall be lean concrete, ready-mix, cast-in-place concrete with minimum compressive strength of 4,000 psi after 28 days. Concrete and reinforcement shall be detailed in the drawings and calculations required to be submitted for the design of the required thrust blocks for the line stops in accordance with Paragraph 1.03.A.5 of this Section. The encasement shall provide support for the pipe to support the weight of the tapping and line stopping machines and shall provide thrust restraint for the pipe. The encasement shall be constructed in accordance with the subcontractor's recommendations and designed for the operating pressure of the pipeline. Provide additional thrust restraint as required to prevent movement of the pipe and joint failure. For the design of the encasement and restraints, it shall be assumed that the existing joints of the pipeline provide no thrust restraint.

PART 3 EXECUTION

3.01 INSTALLATION OF TAPPING SLEEVES

A. The Owner shall be contacted and their permission granted prior to tapping a "live" line. The required procedures and time table shall be followed exactly.

B. Installation shall be made under pressure and flow shall be maintained. The diameters of the tap shall be not less than 1/4-inch less than the inside diameter of the line.

C. The entire operation shall be conducted by workers experienced in the installation of tapping sleeves and valves. The equipment shall be furnished by the Contractor.

D. Determine the location of the line to be tapped to confirm that the proposed location will be satisfactory and that no interference will be encountered such as joints or fittings. Contractor shall excavate test pits as required for this purpose. No tap or sleeve will be made closer than three feet from a pipe joint. The exact location of the tap is subject to approval by the Engineer.

E. Adequate support shall be provided under the sleeve during the tapping operation. Thrust blocks or other permanent restraint acceptable to the Engineer shall be provided behind all tapping sleeves. Proper tamping of supporting pipe bedding material around and under the sleeve is mandatory for buried installations. Tapping sleeves will be installed per manufacturer's specifications and instructions.

F. Prior to completing the tap, the all components that will come into contact with potable water shall be swabbed with chlorine solution to ensure that they are disinfected. All proper regulatory procedures shall be followed exactly. All tapping sleeve, valve, line stop and components that will come into contact with potable water must be cleaned and disinfected in accordance with AWWA standards.

3.02 INSTALLATION OF LINE STOPS

A. The work of line stopping shall be done with the pipelines filled and under pressure. Service in the pipelines shall not be interrupted.

B. The Contractor and his Subcontractor shall be responsible for determining the maximum operating pressures acceptable for the existing pipelines. The Owner shall endeavor to provide the Contractor with information about the existing pipe and materials of construction.

C. The tapping operation shall proceed approximately as follows:

1. Perform an initial field inspection of the pipe to receive the tap under the supervision of the Engineer to verify each location of line stop tap and determine its exact pipe dimensions (diameter and ovality) for shop fabrication of the tapping sleeve components. Contractor shall excavate tests pits to measure the exact pipe dimensions prior to order tapping sleeves for line stopping operation.

2. Following fabrication of the tapping sleeves, install the sleeves and bolt in place. Power wire brush and grind the exterior surface of the main to remove any debris, corrosion deposits or other surface. Disinfect as specified herein the surface of all components of the tapping sleeve, valve, piping and tapping equipment that will come into contact with potable water prior to the installation of the tapping sleeve and valve.

3. Prepare the coupon to be removed from the pipe by the tapping operation such that the coupon will be retained by the tapping machine and removed from the line. None of the cut material shall remain in the pipeline.

4. Install the tapping nozzle in place. Install the tapping valve and pressure test the nozzle and tapping saddle to the operating pressure of the line using caution to not exceed the collapse pressure of the pipeline. The Engineer shall witness the pressure test. Upon successful completion of the pressure test, install the concrete encasement around the tapping sleeve.

5. Install the tapping machine. The tapping machine cutting component (shell cutter and pilot drill) shall be designed to provide a clean cut of the pipe wall and to retain the cut coupon for removal. Upon approval from the Engineer, perform the tap and withdraw the cutter.

6. The line stops shall be a full-size, pivotal head line stop with a plugging head sealing element. The plugging head shall have an expandable elastomer sealing element that is monolithically molded from a polyurethane compound suitable for potable water service. The element shall be flat in a plane perpendicular to the flow in the pipeline when the line stop is in position. The plugging head shall have a sealing element to seal against the inside of the pipeline when in the full open position. The plugging head shall be advanced into and retracted from the main by means of a linear actuator. When retracted, the plugging head and carrier shall be housed in an adapter, bolted pressure tight between the tapping valve and the actuator.

7. Upon closure of the existing pipelines with the line stops, work shall proceed as expeditiously as possible. Prior to open cutting the main pipelines, open existing blowoffs and/or hydrants to drain the segments of the existing pipelines. Upon completion of construction and acceptance of new piping and valves as described on the suggested

construction and dewatering sequence on the Drawings and in the Specifications, the line stops shall be removed. A permanent blind flange shall be placed on the outlet of each tapping sleeve. All components of the tapping sleeve shall receive a coat of coal tar epoxy to a minimum cured thickness of not less than 0.020 inches.

END OF SECTION

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SECTION 02901
MISCELLANEOUS WORK AND CLEANUP

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and perform the miscellaneous work not specified in other Sections but obviously necessary for the proper completion of the work as shown on the Drawings.

B. When applicable, perform the work in accordance with other related Sections. When no applicable specification exists, perform the work in accordance with the best modern practice and/or as directed by the Engineer.

C. The work of this Section includes, but is not limited to, the following:

1. Submittals
2. Temporary facilities
3. Coordination of policing with Owner
4. Coordination with other contractors and connection to work by others
5. Photographic and video documentation
6. Erosion and sedimentation control, staked hay/straw bales, silt fences and catch basin drop inlet sediment filters
7. Furnishing and installing temporary service pipe, temporary service connections, and temporary fire hydrants, if required based on Contractor’s proposed approach and sequence of construction.
8. Crossing and relocating existing utilities
9. Repair of existing utilities damaged during construction
10. Protection of existing water system facilities during construction and all miscellaneous and incidental work needed and required as specified in Section 01014.
11. Restoration and replacement of driveways, sidewalks, fences and curbing
12. Protection and/or removal and reinstallation of signs, lampposts and mailboxes
13. Protection and bracing of utility poles
14. Restoring easements and Right-Of-Ways
15. Loaming and seeding
16. All other restoration

17. Record documents

18. Cleaning up

19. Incidental work

1.02 SUBMITTALS

A. Submit, in accordance with Article 2.05B of the General Conditions, a breakdown of the lump sum for the above items.

B. Submit shop drawing and all other submittals as specified in Section 01300.

1.03 TEMPORARY FACILITIES

A. Provide, maintain and remove all temporary facilities required for construction as specified in Section 01500.

1.04 COORDINATION OF POLICING WITH OWNER

A. Policing, if needed, shall be in accordance with Section 01576.

B. The Contractor shall be responsible for coordinating with the Owner all requirements for proper policing manpower, if needed. The Contractor shall coordinate all policing with the Owner. Any costs incurred by the Contractor for coordination for policing shall be reimbursed under the Miscellaneous Work and Cleanup item. All invoices for policing will be made to the Owner and the Owner shall pay expenses incurred, including the salaries of the assigned police personnel.

1.05 COORDINATION WITH OTHER CONTRACTORS AND CONNECTION TO WORK BY OTHERS

A. Construction on other contracts may be carried on during the same period as construction under this Contract. It will be necessary for the Contractor to plan his/her work and cooperate with the other contractors related to connections to each other's work or related to coordination between work/projects and to prevent any interference and delay for which the Contractor shall receive no other compensation than that agreed upon for this Item.

B. The Contractor shall be responsible for all required coordination, including but not limited to all the requirements specified in Sections 01014 and 01170 and elsewhere in these Specifications.

1.06 PHOTOGRAPHIC AND VIDEO DOCUMENTATION

A. Contractor shall provide photographs and/or video of the project areas as specified in Section 01322.

1.07 EROSION AND SEDIMENTATION CONTROL, STAKED HAY/STRAW BALES, SILT FENCES AND DROP INLET SEDIMENT FILTERS

A. The Contractor shall be responsible for furnishing and installing all work required for erosion and sedimentation control, staked hay/straw bales, silt fences and catch basin drop inlet

sediment filters for construction near wetlands and in environmentally sensitive areas as directed by the Engineer.

1.08 TEMPORARY BYPASS PIPE, SERVICE CONNECTIONS AND HYDRANTS

A. If Contractor's proposed approach and sequence of construction requires the use of any temporary bypass service pipe, service connections, and/or hydrants to maintain water supply as specified, Contractor shall perform all work required and as specified in Section 02666 to furnish, install, maintain and remove all temporary bypass service pipe, service connections and hydrants.

1.09 CROSSING AND RELOCATING EXISTING UTILITIES

A. Perform any extra work required in crossing culverts, water courses including brooks and drainage ditches, drains, gas mains, water mains and water services and other utilities. This work shall include: bracing, hand excavation, backfill and any other work required for crossing the utility or obstruction not included for payment in other items of the Bid Form. Notification of Utility Companies shall be as specified in Section 01046.

B. In locations where existing utilities cannot be crossed without interfering with the construction of the work as shown on the Drawings, remove and relocate the utility as directed by the Engineer or cooperate with the Utility Companies concerned if they relocate their own utility. The Contractor will be responsible for coordinating any and all utility relocations with the respective Utility Company, whether or not these relocations are shown on the Drawings.

C. At pipe crossings and where designated by the Engineer, furnish and place screened gravel bedding so that the existing utility or pipe is firmly supported for its entire exposed length. The bedding shall extend to the mid-diameter of the pipe crossed.

1.10 REPAIR OF EXISTING UTILITIES DAMAGED DURING CONSTRUCTION

A. The Contractor shall assume full responsibility for the protection of all buildings, structures, utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, sewer service laterals, drains, manholes, catch basins, electric ducts, cable ducts, and telephone ducts, whether or not they are shown on the Drawings. The Contractors shall carefully support and protect all structures and utilities from damage of any kind during construction. Any damage resulting from the Contractor's operations shall be repaired by him/her at his/her expense. Any costs incurred by the Contractor for repairing utilities or structures damaged during construction shall be reimbursed under the Miscellaneous Work and Cleanup item. It is the Contractor's responsibility to locate all utilities prior to excavation, whether or not they are shown on the Drawings.

B. Protection and/or Removal and Replacement of Traffic Signal Conduit, Wiring and Loop Detectors and City Fire Box Wiring that are damaged during construction:

1. Existing traffic signal conduit, wiring and loop detectors and fire box wiring conduit and wiring that are damaged or removed during construction shall be reconstructed, restored in "like new" working condition, and approved by Owner and Engineer in the same location from which they were removed.

2. Temporary loop detectors shall be placed in temporary patching and as directed by the Engineer. Permanent loop detectors shall be placed in permanent trench patch areas, final binder course or as directed by the Engineer.

3. The Contractor shall test all replaced loop detectors following installation in accordance with the MHSSHB and IMSA testing procedures in the presence of the Engineer and submit a copy of the testing results to the City of New Bedford.

C. Any damage to Owner's existing utilities resulting from the Contractor's operations shall be repaired by the Contractor in accordance with the Owner's Construction Specifications, latest edition, which are hereby incorporated by reference.

1.11 ALL INCIDENTAL AND MISCELLANEOUS WORK REQUIRED PER SECTION 01014

A. The Contractor is responsible for all incidental and miscellaneous work required to meet all the requirements as specified in Section 01014 for which no separate payment item is included in the bid form, including but not limited to all protection of the active water supply and TV inspection of the existing drain lines in High Hill Reservoir, and all costs associated with this work shall be included in the bid item for Miscellaneous Work and Cleanup.

1.12 RESTORING DRIVEWAYS, SIDEWALKS, CURBING AND FENCES

A. Restoration, repair and replacement of existing driveways, sidewalks, curbing and fences shall be in accordance with Owner's Construction Specifications, latest edition, which is hereby incorporated by reference. It is the responsibility of the Contractor to obtain copies of Owner's Construction Specifications to fully comply with these requirements.

B. Existing public and private driveways disturbed by construction shall be replaced. Paved drives shall be repaved to the limits and thicknesses existing prior to construction. Gravel dirt roads and drives shall be replaced and regraded in kind. Bituminous driveways shall be saw cut across the full width at the limits of construction prior to excavation, the entire width shall be excavated and re-constructed to match the limits and thickness existing prior to construction. Cement concrete driveways shall be saw cut across the full width at the nearest expansion or construction joint beyond the limits of construction prior to excavation, the entire width shall be excavated and re-constructed to match the limits and thickness existing prior to construction.

C. Existing public and private sidewalks disturbed by the construction shall be replaced with sidewalks of equal quality and dimension. All concrete sidewalks shall be saw cut at the nearest expansion or construction joint across the entire sidewalk width and replaced. The entire concrete sidewalk panel shall be removed and replaced with a concrete sidewalk of equal quality and dimension. All bituminous sidewalks shall be saw cut at the limits of disturbance across the entire sidewalk width and replaced with a bituminous sidewalk of equal quality and dimension. New sidewalks shall be in accordance with the Massachusetts Department of Transportation specifications and details and American Disabilities Act (ADA) standards and requirements.

D. Existing concrete, bituminous, timber or granite curbing shall be protected. If necessary, curbing shall be removed and replaced after backfilling. Curbing that is damaged during construction shall be replaced with curbing of equal quality and dimension at the Contractor's expense. Granite curbing removed and reset shall conform to Owner's Construction

Specifications. Joints between sections shall be pointed as required after resetting. Bituminous berms shall conform to Owner's Construction Specifications.

E. Fences in the vicinity of the work shall be protected from damage under this item. If damaged, fences shall be replaced in condition equal to that prior to being damaged and the work shall be satisfactory to the Engineer.

1.13 PROTECTION AND/OR REMOVAL AND REINSTALLATION OF SIGNS, LAMPPOSTS AND MAILBOXES

A. Existing signs, lampposts and mailboxes which may be damaged or removed during the course of the work shall be reinstalled in a vertical position at the same location from which they were removed. Replace damaged items with items of equal or better quality than the damaged items. Provide a concrete anchor as necessary, to ensure a rigid alignment. Exercise care in the reinstallation of all items to prevent damage to the newly installed pipelines.

1.14 PROTECTION AND BRACING OF UTILITY POLES

A. Make all arrangements with the proper utility companies for bracing and protection of all utility poles that may be damaged or endangered by the operations. Work under this item shall include that related to removal and reinstallation of guy wires, or support poles whether shown on the Drawings or not.

1.15 RESTORING EASEMENTS AND RIGHTS-OF-WAY

A. Contractor is responsible for all damage to private property due to construction operations. Protect from injury all walls, fences, cultivated shrubbery and vegetables, fruit trees, pavement, underground facilities, such as water pipe, or other utilities that may be encountered along the easement. If removal and replacement are required, it shall be done in a workmanlike manner so that replacement is equivalent to that which existed prior to construction.

B. Existing lawn and sod surfaces damaged by construction in easements shall be replaced. Cut and replace the lawn and sod, restore the areas with an equivalent depth and quality of loam, seeded and fertilized as specified in Section 02930. These areas shall be maintained and reseeded, if necessary, until all work under this Contract has been completed and accepted. Any additional work required to restore easements to their original condition shall be performed.

C. Existing trees, shrubs, plants and bushes outside of easements shall be fully protected as specified in Section 01046. The work shall also include replacing those trees, shrubs and bushes that are damaged during construction with an item in kind to the satisfaction of the Engineer and Owner. Be fully responsible for ensuring that any and all trees, bushes and shrubs planted "take" and return to a viable state. Any planted item that fails to "take" or that is so damaged as to be unsuitable shall be replaced, at no additional cost to the Owner, with a tree, bush or shrub equal to the one removed. Prior to any tree removal, Contractor is required to coordinate and consult with Owner's arborist.

D. The Engineer will inspect all work for provisional acceptance upon the written request received at least 10 days before the anticipated date of inspection.

1. After all necessary corrective work has been completed, the Engineer will certify in writing the provisional acceptance of the planting.

E. All plants, shrubs and trees shall be guaranteed for not less than 1 full year from the time of provisional acceptance.

1. At the end of this period, any plant that is missing, dead, or not in satisfactory growth, as determined by the Engineer, shall be replaced.

2. All replacements shall be plants of the same kind and size. They shall be furnished and planted as specified herein. The cost of replacement shall be borne except where it can be definitely shown that loss resulted from vandalism or the Owner's failure to maintain planting as instructed.

3. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted by the landscape contractor at least 10 days before the anticipated date.

4. After all necessary corrective work has been completed and tree staking has been removed, the Engineer will certify in writing the final acceptance of the planting.

1.16 LOAMING AND SEEDING

A. The Contractor shall be responsible for replacing all loamed and seeded areas that are disturbed during construction. Damaged areas shall be restored to conditions equal to or better than the original conditions. The Contractor shall be responsible for the condition of the restored area for a period of one year.

1.17 ALL OTHER RESTORATION

A. As specified, Contractor shall visit the site before preparing a Bid to become familiar with local conditions that may in any manner affect cost, progress or performance of the Work and to meet requirements as specified herein, including reviewing and verifying all the conditions that exist prior to construction and the restoration needed to restore all areas to conditions equal to or better than what existed prior to construction. Contractor is responsible for restoring the site and all facilities to the conditions that existed before construction, including any facility that is modified or changed based on Contractor’s proposed means and methods to construct the work, to a condition equal to or better than what existed prior to construction. Restoration for which no separate payment item is included in the bid form shall be paid for under Miscellaneous Work and Cleanup and Contractor shall include all costs associated therewith in this bid item.

1.18 RECORD DOCUMENTS

A. Contractor shall provide record information and documents as specified in Section 01720.

1.19 CLEANING UP

A. Remove all construction material, excess excavation, buildings, equipment and other debris remaining on the job as a result of construction operations and restore the site of the work to a neat and orderly condition.

1.20 INCIDENTAL WORK

A. Do all incidental work not otherwise specified, but obviously necessary to the proper completion of the work as shown on the Drawings and as specified herein.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials required for this Section shall be the same quality of materials that are to be restored or as otherwise specified. Where possible and only if approved by the Engineer, reuse existing materials that are removed. If materials are not specified herein, Contractor shall use materials as specified in Owner's Construction Standards, latest edition, which are hereby incorporated by reference. If materials are not specified herein or specified in Owner's Construction Standards, Contractor shall submit proposed materials to Engineer for review and approval.

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 02930
LOAMING AND HYDROSEEDING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and provide erosion control and place topsoil, finish grade, apply lime and fertilizer, hydraulically apply seed and mulch and maintain all seeded areas as shown on the Drawings and as specified herein, including all areas disturbed.

1.02 RELATED WORK

A. Site preparation including clearing, grubbing and stripping is included in Section 02100.

B. Trenching, Backfilling and Compaction including the stockpiling of topsoil is included in Section 02200.

C. Sedimentation and erosion control is included in Section 02270.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, samples of all materials for inspection and acceptance.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil shall be fertile, friable, natural topsoil typical of topsoil of the locality and shall be obtained from a well-drained site that is free of flooding. It shall be without admixture of subsoil or slag and free of stones, lumps, plants or their roots, sticks, clay, peat and other extraneous matter and shall not be delivered to the site or used while in a frozen or muddy condition. Topsoil as delivered to the site or stockpiled shall have pH between 6.0 and 7.0 and shall contain not less than 5 percent nor more than 8 percent organic matter as determined by loss of ignition of moisture-free samples dried at 100 degrees Celsius. The topsoil shall meet the following mechanical analysis:

Percentage Finer

1. 1-inch screen opening 100
2. No. 10 mesh 95 to 100
3. No. 270 mesh 35 to 75
4. mm* 5 to 25
5. *Clay size fraction determined by pipette or hydrometer analysis.

B. At least 30 days prior to anticipated start of topsoiling operations a one-pint sample of topsoil material shall be delivered to the Engineer for testing and approval. Based on tests performed by the Engineer, the topsoil shall be identified as acceptable, acceptable with certain fertilizer and limestone applications or unacceptable. If the topsoil is found acceptable the fertilizer and lime requirements will be as specified or as recommended by the Engineer. If the topsoil is found unacceptable, identify another source of topsoil and incur all expenses associated with testing additional samples. All topsoil incorporated into the site work shall match the sample provided to the Engineer for testing. Topsoil stockpiled under other Sections of this Division may be used subject to the testing and approval outlined above. Contractor shall be responsible for screening stockpiled topsoil and providing additional topsoil as required at his own expense.

C. Fertilizer shall be commercial mixed free flowing granules or pelleted fertilizer, 10-20-10 (N-P2O5-K2O) grade for lawn and naturalized areas. Fertilizer shall be delivered to the site in original unopened containers each showing the manufacturer's guaranteed analysis conforming to applicable state fertilizer laws. At least 40 percent of the nitrogen in the fertilizer used shall be in slowly available (organic) form.

D. Lime shall be ground limestone containing not less than 85 percent calcium and magnesium carbonates and be ground to such fineness that at least 50 percent shall pass a 100-mesh sieve and at least 90 percent shall pass a 20-mesh sieve.

E. Seed shall be labeled in accordance with USDA Rules and Regulations under the Federal Seed Act and applicable State seed laws. Seed shall be furnished in sealed bags or containers bearing the date of the last germination, which date shall be within a period of 6 months prior to commencement of planting operations. Seed shall be from same or previous year's crop; each variety of seed shall have a purity of not less than 85 percent, a percentage of germination not less than 90 percent, shall have a weed content of not more than 1 percent and contain no noxious weeds. The seed mixtures shall consist of seed proportioned by weight as follows:

1. Lawn Area Seed Mix
   a. "Rebel II" Tall Fescue 70 percent
   b. "Baron" Kentucky Bluegrass 10 percent
   c. "Palmer" Perennial Ryegrass 20 percent

2. Natural Area Seed Mix (For all slopes and disturbed areas not otherwise indicated)
   a. Kentucky 31 Fescue 40 percent
   b. Palmer Perennial Ryegrass 30 percent
   c. Birds Foot Trefoil (Empire Variety) 15 percent
   d. Red Clover 5 percent
   e. White Clover 5 percent
   f. Redtop (Streaker Variety) 5 percent

F. The seed shall be furnished and delivered premixed in the proportions specified above. A manufacturer's certificate of compliance to the specified mixes shall be submitted by the manufacturers for each seed type. These certificates shall include the guaranteed percentages of purity, weed content and germination of the seed and also the net weight and date of shipment. No seed may be sown until the certificates have been submitted.

G. Seed shall be delivered in sealed containers bearing the dealer's guaranteed analysis.

H. Mulch shall be specially processed 100 percent Virgin wood fiber mulch containing no growth or germination-inhibiting factors. Wood fiber mulch shall be "Second Nature Regenerated wood fiber as by Central Fiber Corporation, Wellsville, KS or equal. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogeneous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture. Each package of the wood fiber shall be marked by the manufacturer to show the air-dry weight content and shall have a moisture content of 12%, +/- 3%.

I. Erosion control blanket is specified in Section 02270.

J. Straw Mulch is specified in Section 02270.

K. Tackifier is specified in Section 02270.

PART 3 EXECUTION

3.01 APPLICATION

A. Unless otherwise shown on the Drawings, topsoil shall be placed to a minimum compacted depth of 6-inches on all parts of the site not covered with structures, pavement, or existing woodland.

B. For all areas to be seeded:

1. Lime shall be applied at the rate of 150 lbs./1,000 square feet or as determined by the soil test to bring topsoil pH to a range of 6.0 to 7.0.

2. Fertilizer (10-20-10) shall be applied at the rate of 30 lbs./1,000 square feet or as determined by the soil test.

3. Seed shall be applied at the rate of 5 lbs./1,000 square feet.

4. Fiber mulch shall be applied at the rate of 45 lbs./1,000 square feet.

5. Straw mulch shall be applied to all slopes of 3 horizontal to 1 vertical and steeper at a rate of 75 lbs./1000 square feet.

6. Tackifier shall be installed per manufacturer's instructions and reapplied as necessary to insure the straw mulch is stabilized until reasonable turf growth is established as determined by the Engineer with a minimum rate of 1 gallon/1000 square feet per application.

C. If possible, limestone shall be applied 2 to 3 months before the application of fertilizer. Limestone may not be mixed with fertilizer for application and shall be applied a minimum of 2 weeks prior to fertilizer application.

D. After the topsoil is placed and before it is raked to true lines and rolled, limestone shall be spread evenly over the loam surface and thoroughly incorporated by heavy raking to at least one half the depth of topsoil.

E. The application of fertilizer may be performed hydraulically in one operation with hydroseeding and fiber mulching. Clean all structures and paved areas of unwanted deposits of the hydroseeded mixture.

F. Straw Mulch and Tackifier shall be applied immediately following seeding operations (same day) unless otherwise approved by the Engineer.

3.02 INSTALLATION

A. Previously established grades, as shown on Drawings shall be maintained in a true and even condition.

B. Subgrade shall be prepared by tilling prior to placement of topsoil to obtain a more satisfactory bond between the two layers. Tillage operations shall be across the slope. Tillage shall not take place on slopes steeper than 2 horizontal to 1 vertical or where tillage equipment cannot be operated. Tillage shall be accomplished by disking or harrowing to a depth of 9-inches parallel to contours. Tillage shall not be performed when the subgrade is frozen, excessively wet, extremely dry or in other conditions which would not permit tillage. The subgrade shall be raked and all rubbish, sticks, roots and stones larger than 2-inches shall be removed. Subgrade surfaces shall be raked or otherwise loosened immediately prior to being covered with loam.

C. Topsoil shall be placed over approved areas to a depth sufficiently greater than required so that after natural settlement and light rolling, the complete work will conform to the lines, grades and elevations indicated. No loam shall be spread in water or while frozen or muddy.

D. After topsoil has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. All stiff clods, lumps, roots, litter and other foreign material shall be removed from the loamed area and disposed of. The areas shall also be free of smaller stones, in excessive quantities, as determine by the Engineer. The whole surface shall then be rolled with a hand roller weighing not more than 100 lbs./feet of width. During the rolling, all depressions caused by settlement of rolling shall be filled with additional loam and the surface shall be regraded and rolled until a smooth and even finished grade is created.

E. Seeding, mulching and conditioning shall only be performed during those periods within the seasons which are normal for such work as determined by the weather and locally accepted practice, as approved by the Engineer. Hydroseed and straw mulch only on a calm day.

F. Schedules for seeding and fertilizing must be submitted to the Engineer for approval prior to the work. Seeding as specified herein shall be accomplished between the period of April 1 to June 1 or August 15 to October 1. Seeding during the period from October 2 to March 31 shall only be undertaken upon approval of the Engineer. Seeding during the period from June 1 to August 14 shall only be performed if irrigation is provided.

G. Seeding shall be done within ten days following soil preparation. Seed shall be applied hydraulically at the rates and percentages indicated. The spraying equipment and mixture shall be so designed that when the mixture is sprayed over an area, the grass seed and mulch shall be equal in quantity to the specified rates. Prior to the start of work, furnish the Engineer with a certified statement as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the hydroseeder. Upon completion of seeding operations, furnish the Engineer with a certified statement on the actual quantity of solution applied.

H. In order to prevent unnecessary erosion of newly topsoiled and graded slopes and unnecessary siltation of drainage ways, carry out seeding and mulching as soon as he has satisfactorily completed a unit or portion of the project. For the purpose of this project a unit is defined as 10,000 square feet. When protection of newly loamed and graded areas is necessary at a time which is outside of the normal seeding season, protect those areas by whatever means necessary as approved by the Engineer and shall be responsible for prevention of siltation in the areas beyond the limit of work.

I. Erosion control blankets shall be installed in all drainage swales and ditches as shown on the Drawings or as directed by the Engineer in accordance manufacturer's instructions. The area to be covered shall be properly prepared, fertilized and seeded before the blanket is applied. When the blanket is unrolled, the netting shall be on top and the fibers in contact with the soil over the entire area. The blankets shall be applied in the direction of water flow, butted snugly at the ends and side and stapled. Blankets shall be placed a minimum of three rows (of 4-feet) wide (total 12-feet width) within the drainage swale/ditch and stapled together in accordance with manufacturer's instructions. The staples shall be made of wire, .091-in in diameter or greater, "U" shaped with legs 6-inches in length and a 1-inch crown. The staples shall be driven vertically into the ground, spaced approximately two linear yards apart, on each side and one row in the center alternately spaced between each size. Adjoining shall not be overlapped and shall utilize a common row of staples to attach.

J. When newly graded subgrade areas cannot be topsoiled and seeded because of season or weather conditions and will remain exposed for more than 30 days, protect those areas against erosion and washouts by whatever means necessary such as straw applied with a tar tack, wood chips or by other measures as approved by the Engineer. Prior to application of topsoil, any such materials applied for erosion control shall be thoroughly incorporated into the subgrade by discing. Fertilizer shall be applied prior to spreading of topsoil.

K. On slopes in addition to straw mulch and tackifier, provide against washouts by an approved method. Any washout which occurs shall be regraded and reseeded at the Contractor's expense until a good turf is established.

3.03 MAINTENANCE AND PROVISIONAL ACCEPTANCE

A. Keep all seeded areas watered and mowed and in good condition, reseeding all seeded areas if and when necessary until a good, healthy, uniform growth is established over the entire area seeded and shall maintain all seeded areas in an approved condition until provisional acceptance.

B. The Engineer will inspect all work for provisional acceptance at the end of the 10-week maintenance period, upon the written request received at least 10 days before the anticipated date of inspection. The maintenance period must occur during the growing season between March 31 and October 1 and shall include a minimum of three mowings.

C. A satisfactory turf will be defined as:

1. No bare spots larger than 3 square feet.

2. No more than 10 percent of total area with bare spots larger than 1 square feet.

3. Not more than 15 percent of total area with bare spots larger than 6-inches square.

D. After the inspection has occurred but prior to provisional acceptance, a soil test shall be performed to determine if additional soil fertilization should occur. If necessary additional fertilizer not to exceed 30 lbs./1000 square feet of 20-10-10 shall be applied as directed by the Engineer.

E. Furnish full and complete written instructions for maintenance of the seeded areas to the Owner at the time of provisional acceptance.

F. The inspection by the Engineer will determine whether maintenance shall continue. Continue maintenance until all areas of the site meet the minimum requirements specified above.

G. After all necessary corrective work and clean-up has been completed, and maintenance instructions have been received by the Owner, the Engineer will certify in writing the provisional acceptance of the turf areas. Maintenance of all turf areas shall cease on receipt of provisional acceptance.

3.04 GUARANTEE PERIOD AND FINAL ACCEPTANCE

A. All seeded areas shall be guaranteed for not less than 1 full year from the time of provisional acceptance.

B. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted at least 10 days before the anticipated date. Seeded areas not demonstrating satisfactory stands as outlined above, as determined by the Engineer, shall be renovated, reseeded and maintained meeting all requirements as specified herein.

C. After all necessary corrective work has been completed, the Engineer shall certify in writing the final acceptance of the seeded areas.

END OF SECTION

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SECTION 03301
CONCRETE AND REINFORCING STEEL

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install all concrete work complete as shown on the Drawings and as specified herein.

1.02 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings and product data for:

1. Placing drawings and bar bending details in conformity with the recommendations of ACI 315.

2. Technical data on all materials and components.

3. Material Safety Data Sheets (MSDS) for all concrete admixtures and curing agents.

B. Test Reports

1. Sieve analysis, mechanical properties and deleterious substance content for fine and coarse aggregates.

2. Concrete mixes: For each formulation of concrete proposed for use, submit constituent quantities per cubic yard, water cementitious ratio, concrete slump, type and manufacturer of cement. Provide either a. or b., below, for each mix proposed.
   a. Standard deviation data for concrete mixes based on statistical records.
   b. Water cementitious ratio curve for concrete mixes based on laboratory tests. Provide average cylinder strength test results at 7 and 28 days for laboratory concrete mix designs. Provide results of 14 day tests if available.

C. Certifications

1. Certify that admixtures used in the same concrete mix are compatible with each other and the aggregates.

2. Certificate of conformance for concrete production facilities from NRMCA.

3. Certify admixtures are made for use in concrete in contact with potable water after 30 days of concrete curing.

1.03 REFERENCE STANDARDS

A. ASTM International

1. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

2. ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

3. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.

4. ASTM C33 - Standard Specification for Concrete Aggregates.

5. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

6. ASTM C94 - Standard Specification for Ready-Mixed Concrete.

7. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete

8. ASTM C150 - Standard Specification for Portland Cement

9. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

10. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

11. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.

12. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.

B. American Concrete Institute (ACI).

1. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.

2. ACI 301 - Specification for Structural Concrete.

3. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

4. ACI 305R - Hot Weather Concreting.

5. ACI 306R - Cold Weather Concreting.

6. ACI 315 - Details and Detailing of Concrete Reinforcement.

7. ACI 318 - Building Code Requirements for Structural Concrete.

8. ACI 350 - Code Requirement for Environmental Engineering Concrete Structures.

C. American National Standards Institute (ANSI)

1. ANSI/NSF 61 - Drinking Water Systems Components - Health Effects

D. Concrete Reinforcing Steel Institute (CRSI)

1. MSP - Manual of Standard Practice

E. National Ready Mixed Concrete Association (NRMCA)

1. Quality Control Manual, Section 3- Certification of Ready Mixed Concrete Production Facilities

F. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 QUALITY ASSURANCE

A. Comply with ACI 318, ACI 350 and other stated specifications, codes and standards. Apply the most stringent requirements of stated specifications, codes, standards, and this Section when conflicts exist.

B. If, during the progress of the work, it is impossible to secure concrete of the specified workability and strength with the materials being furnished, the Engineer may order such changes in proportions or materials, or both, as may be necessary to secure the specified properties. Make all changes so ordered at the no additional cost to the Owner.

C. All field testing and inspection services and related laboratory tests required will be provided by the Owner. The cost of such work will be paid for by the Owner. Methods of testing will comply with the latest applicable ASTM methods.

D. Develop concrete mixes and their testing by an independent testing laboratory engaged by and at the expense of the Contractor. Methods of testing shall comply with the latest applicable ASTM methods.

1.05 DELIVERY, STORAGE AND HANDLING

A. Ship and store reinforcing steel with bars of the same size and shape fastened in bundles with durable tags, marked in a legible manner with waterproof markings showing the same designations as those shown on the submitted placement drawings. Provide reinforcing steel free from mill scale, loose rust, mud, dirt, grease, oil, ice or other foreign matter. Store off the ground, protect from moisture and keep free from rust, mud, dirt, grease, oil, ice or other injurious contaminants.

B. Store products in conformity with the manufacturer's recommendations.

C. Store or stockpile sand, aggregates, and cement in conformity with ACI 301.

PART 2 PRODUCTS

2.01 GENERAL

A. The use of manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. Like items of materials shall be the end products of one manufacturer in order to provide standardization for appearance, maintenance and manufacturer's service.

C. Materials shall comply with this Section and any applicable State or local requirements.

2.02 MATERIALS

A. Cement: Domestic portland cement conforming to ASTM C150. Do not use air entraining cements. The allowable types of cement for each class of concrete are shown in Table 1.

B. Fine Aggregate: Washed inert natural sand conforming to ASTM C33.

C. Coarse Aggregate: Well-graded crushed stone or washed gravel conforming to ASTM C33, size 67. Limits of deleterious substances and physical property requirements as listed in ASTM C33, Table 3 for severe weathering regions.

D. Water: Potable water free of oil, acid, alkali, salts, chlorides, (except those attributable to drinking water) organic matter, or other deleterious substances.

E. Admixtures: Use admixtures free of chlorides and alkalis (except for those attributable to drinking water). The admixtures shall be from the same manufacturer when it is required to use more than one admixture in the same concrete mix. Use admixtures compatible with the concrete mix including other admixtures and made for use in contact with potable water after 30 days of concrete curing.

1. Air Entraining Admixture: Conforming to ASTM C260. Proportion and mix in accordance with manufacturer's recommendations.

2. Water Reducing Admixture: Conforming to ASTM C494, Type A. Proportion and mix in accordance with manufacturer's recommendations.

3. Do not use admixtures causing retarded or accelerated setting of concrete without written approval from the Engineer. Use retarding or accelerating water reducing admixtures when so approved.

F. Deformed Concrete Reinforcing Bars: ASTM A615, Grade 60 deformed bars.

G. Welded Steel Wire Fabric: Conforming to ASTM A1064

H. Reinforcing Steel Accessories

1. Plastic Protected Wire Bar Supports: CRSI Bar Supports, Class 1 - Maximum Protection.

I. Tie Wires for reinforcement: 16 gauge or heavier black annealed wire.

2.03 MIXES

A. Select proportions of ingredients to meet the design strength and materials limits specified in Table 1 and to produce placeable, durable concrete conforming to these Specifications. Proportion ingredients to produce a homogenous mixture which will readily work into corners and angles of forms and around reinforcement without permitting materials to segregate or allowing free water to collect on the surface.

B. Base concrete mixes on standard deviation data of prior mixes with essentially the same proportions of the same constituents or, if not available, develop concrete mixes by laboratory tests using the materials proposed for the work.

C. Compression Tests: Provide testing of the proposed concrete mix or mixes to demonstrate compliance with the compression strength requirements in conformity with the provisions of ACI 318.

D. Entrained air, as measured by ASTM C231, shall be as shown in Table 1.

E. Slump of the concrete as measured by ASTM C143, shall be as shown in Table 1.

F. Proportion admixtures according to the manufacturer's recommendations. Two or more admixtures specified may be used in the same mix provided that the admixtures in combination retain full efficiency and have no deleterious effect on the concrete or on the properties of the other admixture(s).

TABLE 1

Class	Design Strength (1)	Cement ASTM C150	Cementitious Content (2)	W/C (3)	WR (4)	Slump Range Inches
D	4500	Type II	610	0.42 max	Yes	3-5

TABLE 1 NOTES:
(1) Minimum compressive strength in psi at 28 days
(2) Minimum cementitious content in lbs per cubic yard
(3) W/C is Maximum Water Cementitious ratio by weight
(4) WR is water reducing admixture
(5) All concrete classes shall have 3.5 to 5 percent air entrainment.

2.04 MEASURING, BATCHING, MIXING AND TRANSPORTING CONCRETE

A. Measure, batch, mix and transport concrete in conformance with ASTM C94 and the requirements herein or as otherwise approved in writing by the Engineer.

B. Ready-mixed concrete, whether produced by a concrete supplier or the Contractor shall conform to the requirements above. Do not hand mix.

C. Dispense admixtures into the batch in conformity with the recommendations of the admixture manufacturer.

D. Mix concrete until there is uniform distribution of the materials and discharge completely before the mixer is recharged. The mixer shall be rotated at a speed recommended by the mixer manufacturer and mixing shall be continued for at least 1-1/2 minutes after all the materials are in the mixer. Place concrete within 1-1/2 hours of the time at which water was first added, otherwise it will be rejected. Concrete which has been remixed or retempered, or to which an excess amount of water has been added, will also be rejected.

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2.05 FORMS

A. Provide forms free from roughness and imperfections, watertight and braced and tied to prevent motion when concrete is placed. Wooden spreaders will not be allowed in the concrete.

B. Wire ties will not be allowed. Metal ties or anchorages which are necessary within the forms shall be so constructed that the metal work can be removed for a depth of at least 1-1/2-in from the concrete surface without damage by spalling. Clean forms before using and treat with form release agent, or other approved material.

C. All exposed edges of the finished concrete shall be chamfered 3/4-in.

PART 3 EXECUTION

3.01 REINFORCING STEEL

A. Fabricate reinforcing steel accurately to the dimensions shown. Bend bars around a revolving collar having a diameter of not less than that recommended in ACI 318. All bars shall be bent cold.

B. Provide tension lap splices in compliance with ACI 318. Stagger splices in adjacent bars where possible. Provide Class B tension lap splices at all locations unless otherwise indicated.

C. Lap splices in welded wire fabric in accordance with the requirements of ACI 318 but not less than 12-in. Tie the spliced fabrics together with wire ties spaced not more than 24-in on center and lace with wire of the same diameter as the welded wire fabric. Offset splices in adjacent widths to prevent continuous splices.

D. Use plastic protected bar supports or steel supports with plastic tips where the reinforcing steel is to be supported on forms for a concrete surface that will be exposed to weather, high humidity, or liquid.

E. Before placing in position, clean reinforcement of loose mill scale and rust, mud, dirt, grease, oil and other coatings, including ice that reduce or destroy bond. When there is a delay in depositing concrete after the reinforcement is in place, bars shall be re-inspected and cleaned again when necessary.

F. Coat reinforcement which is to be exposed for a considerable length of time after being placed with a heavy coat of cement grout.

G. Do not cover any reinforcing steel with concrete until the amount and position of the reinforcement has been checked and the Engineer has given permission to proceed.

3.02 INSPECTION AND COORDINATION

A. Batching, mixing, transporting, placing and curing of concrete shall be subject to the inspection of the Engineer at all times. Advise the Engineer of readiness to proceed at least six working hours prior to each concrete placement. The Engineer will inspect the preparations for concreting including the preparation of previously placed concrete, the reinforcing and the alignment, cleanliness and tightness of formwork. Do not place concrete without the inspection and acceptance of the Engineer.

3.03 CONCRETE APPEARANCE

A. Remix concrete showing either poor cohesion or poor coating of the coarse aggregate with paste. If this does not correct the condition, the concrete shall be rejected.

B. Provide concrete having a homogeneous structure which, when hardened, will have the specified strength, durability and appearance. Provide mixtures and workmanship such that concrete surfaces, when exposed, will require no finishing except as specified herein.

3.04 PLACING AND COMPACTING

A. Do not place concrete until forms, condition of subgrade and method of placement have been approved by the Engineer. Remove all debris, foreign matter, dirt, ice and standing water from the forms before depositing concrete. Do not place concrete on frozen subgrade, snow or ice. The contact surface between concrete previously placed and new concrete shall be cleaned and brushed with cement paste. Concrete, except as indicated on the Drawings, shall not be placed in water or submerged within 24 hours after placing, nor shall running water be permitted to flow over the surface of fresh concrete within 4 days after its placing.

B. Deposit concrete as near its final position as possible to prevent segregation due to rehandling or flowing. Pumping of concrete will be permitted when an approved design mix and aggregate sizes suitable for pumping are used. Do not deposit concrete which has partially hardened or which has been contaminated by foreign materials. If the section cannot be placed continuously, place construction joints as specified or as approved. Place concrete for walls using tremie tubes in 12-in to 24-in lifts, keeping the surface horizontal. Do not drop concrete more than 4-ft.

C. Use high frequency mechanical vibrators to obtain proper consolidation of the concrete. Do not use vibrators to move or transport concrete in the forms. Do not over-vibrate so as to segregate. Continue vibration until the frequency returns to normal, trapped air ceases to rise and the surface appears liquefied, flattened and glistening. Use spades, rods or forks so that concrete is completely worked around reinforcement, embedded items, pipe stubs, and openings and into corners of forms.

3.05 CURING AND PROTECTION

A. Protect all concrete work against injury from the elements and defacements of any nature during construction operations.

B. Cure all concrete in conformance with ACI 301. Concrete that is to be used for the containment of water shall be water cured. Water curing shall be by ponding, by continuous sprinkling or by covering with continuously saturated burlap. Other concrete shall be cured by either water curing, sheet material curing or liquid membrane curing compound except that liquid membrane curing compound shall not be used on any concrete surface where additional concrete is to be placed.

C. Protect finished surfaces and slabs from the direct rays of the sun to prevent checking and crazing.

D. During cold weather concrete shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 306R. Do not use salt, manure or other chemicals for cold weather protection.

E. During hot weather concrete shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 305R. The temperature of the concrete shall be such that it will cause no difficulties from loss of slump, flash set or cold joints. Immediately cover plastic concrete with sheet curing material during hot weather.

3.06 FIELD TESTS

A. Sets of field control cylinder specimens will be taken by the Engineer during the progress of the work, in compliance with ASTM C31. The number of sets of concrete test cylinders taken of each class of concrete placed each day will not be less than one set per day, nor less than one set for each 150 cu yds of concrete nor less than one set for each 5,000 sq ft of surface area for slabs or walls. Specimens will be formed in 6-in diameter by 12-in long non-absorbent cylindrical molds.

1. A "set" of test cylinders shall consist of four cylinders: one to be tested at seven days and two to be tested and their strengths averaged at 28 days. The fourth may be used for a special test at 3 days or to verify strength after 28 days if 28 day test results are low.

2. When the average 28 day compressive strength of the cylinders in any set falls below the required compressive strength or below proportional minimum seven-day strengths (where proper relation between seven and 28 day strengths have been established by tests), change proportions, cementitious content, or temperature conditions to achieve the required strengths at no additional cost to the Owner.

B. Cooperate in the making of tests by allowing free access to the work for the selection of samples. Provide an insulated closed curing box for the specimens and protect the specimens against injury or loss through construction operations. Furnish material and labor required for the purpose of taking concrete cylinder samples. All shipping of specimens will be paid for by the Owner.

C. Slump tests will be made in the field by the Engineer in conformity with ASTM C143.

D. Tests for air content will be made in the field by the Engineer in compliance with either the pressure method (ASTM C231) or by the volumetric method (ASTM C173).

3.07 STRIPPING AND FINISHING CONCRETE

A. Do not remove forms before the concrete has attained a strength of at least 70 percent of the specified design strength nor before reaching approximately "100 day-degrees" of moist curing (whichever is the longer). Degree-days are defined as the total number of 24 hour periods multiplied by the weighted average daily air temperature at the surface of the concrete (e.g., 7 days at an average 50 degrees F = 350 degree-days).

B. Exercise care to prevent damaging edges or obliterating the lines of chamfers, rustications or corners when removing the forms or doing any other work adjacent thereto.

C. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to the satisfaction of the Engineer.

D. Immediately after removal of forms remove tie cones and metal portions of ties. Fill holes promptly upon stripping as follows: Moisten the hole with water, followed by a 1/16-in brush

coat of neat cement slurry mixed to the consistency of a heavy paste. Immediately plug the hole with a 1 to 1.5 mixture of cement and concrete sand mixed slightly damp to the touch (just short of "balling"). Hammer the grout into the hole until dense, and an excess of paste appears on the surface in the form of a spider web. Trowel smooth with heavy pressure. Avoid burnishing.

E. Defective concrete and honeycombed areas: Chip down square and at least 1-in deep to sound concrete with hand chisels or pneumatic chipping hammers. Irregular voids or surface stones need not be removed if they are sound, free of laitance, and firmly embedded in the parent concrete. If honeycomb exists around reinforcement, chip to provide a clear space at least 3/8-in wide all around the steel. For areas less than 1-1/2-in deep, the patch may be made in the same manner as described above for filling form tie holes, care being exercised to use adequately dry (non-trowelable) mixtures and to avoid sagging. Thicker repairs will require build-up in successive 1-1/2-in layers on successive days, each layer being applied (with slurry, etc.) as described above.

F. Concrete not exposed in the finished work shall have off-form finish with fins and other projections removed and tie cones and defects filled as specified above.

3.08 SCHEDULE

A. The following (Table 2) are the general applications for the various concrete design strengths to be used:

TABLE 2

Class	Design Strength (psi)	Description
D	4,500	All concrete

END OF SECTION

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SECTION 03600
GROUT

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install grout complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Concrete and Reinforcing Steel is included in Section 03301.

B. Modifications to existing concrete are included in Section 03740.

C. Miscellaneous metals are included in Section 05500.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings and product data showing materials of construction and details of surface preparation, mixing and installation for:

1. Commercially manufactured non-shrink cementitious grout. Include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, conformity to the specified ASTM standards, and Material Safety Data Sheet.

2. Cement grout. Include the type and brand of cement, the gradation of fine aggregate, product data on any proposed admixtures and the proposed grout mix.

B. Samples

1. Submit samples of commercially manufactured grout products when requested by the Engineer.

C. Certifications

1. Certify that commercially manufactured grout products and admixtures for cement grout are made for use in contact with potable water 30 days after installation (non-toxic and free of taste and odor).

D. Qualifications

1. Submit documentation that grout manufacturers have a minimum of 10 years experience in the production and use of the grouts proposed.

1.04 REFERENCE STANDARDS

A. ASTM International

1. ASTM C33 - Standard Specification for Concrete Aggregates

2. ASTM C150 - Standard Specification for Portland Cement

3. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts and Monolithic Surfacings and Polymer Concretes

4. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes

5. ASTM C827 - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures

6. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation

7. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)

8. ASTM E329 - Standard specification for agencies engaged in the testing and/or inspection of materials used in construction

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. Qualifications

1. Grout manufacturers shall have a minimum of 10 years experience in the production and use of the type of grout proposed.

1.06 SYSTEM DESCRIPTION

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the jobsite in original, unopened packages, clearly labeled with the manufacturer's name, product identification, batch numbers and printed instructions.

B. Store materials in full compliance with the manufacturer's recommendations. Limit total storage time from date of manufacture to date of installation to six months or the manufacturer's recommended storage time, whichever is less.

C. Remove immediately from the site material which becomes damp, contains lumps, or is hardened and replace with acceptable material at no additional cost to the Owner.

D. Deliver non-shrink cementitious grout as a pre-portioned blend in prepackaged mixes requiring only the addition of water.

1.08 DEFINITIONS

A. Non-shrink Grout: A commercially manufactured product that does not shrink in either the plastic or hardened state, is dimensionally stable in the hardened state and bonds to a clean base plate.

PART 2 PRODUCTS

2.01 GENERAL

A. The use of a manufacturer's name and product or catalog number is for the purpose of establishing the standard of quality desired.

B. Like materials shall be the products of one manufacturer or supplier in order to provide standardization of appearance.

2.02 MATERIALS

A. Non-shrink Cementitious Grout

1. Non-shrink cementitious grouts: Conform to ASTM C1107. Grouts shall be portland cement based, contain a pre-proportioned blend of selected aggregates and shrinkage compensating agents and require only the addition of water. Non-shrink cementitious grouts shall not contain expansive cement or metallic particles. The grouts shall exhibit no shrinkage when tested in conformity with ASTM C827.
   a. General purpose non-shrink cementitious grout: Conform to the standards stated above. SikaGrout 212 by Sika Corp.; Set Grout by BASF Building Systems; NS Grout by The Euclid Chemical Co.; Five Star Grout by Five Star Products, Inc., or equal.

   b. Flowable (Precision) non-shrink cementitious grout: Conform to the standards stated above. Masterflow 928 by BASF Building Systems; Hi-Flow Grout by The Euclid Chemical Co.; SikaGrout 212 by Sika Corp.; Five Star Grout by Five Star Products, Inc., or equal.

B. Cement Grout

1. A mixture of one part portland cement conforming to ASTM C150, Type I, II, or III and one to two parts sand conforming to ASTM C33 with sufficient water to place the grout. The water content shall be sufficient to impart workability to the grout but not to the degree that it will allow the grout to flow.

C. Water

1. Potable water free of oil, acid, alkali, salts, chlorides (except those attributable to drinking water), organic matter, or other deleterious substances.

PART 3 EXECUTION

3.01 PREPARATION

A. Place grout where indicated or specified over existing concrete and cured concrete which has attained its specified design strength unless otherwise approved by the Engineer.

B. Concrete surfaces to receive grout shall be clean and sound; free of ice, frost, dirt, dust, grease, oil, form release agent, laitance and paints and free of all loose material or foreign matter which may affect the bond or performance of the grout.

C. Roughen concrete surfaces by chipping, sandblasting, or other dry mechanical means to bond the grout to the concrete. Remove loose or broken concrete. Irregular voids or projecting coarse aggregate need not be removed if they are sound, free of laitance and firmly embedded into the parent concrete.

1. Air compressors used to clean surfaces in contact with grout shall be the oilless type or equipped with an oil trap in the airline to prevent oil from being blown onto the surface.

D. Remove all loose rust, oil or other deleterious substances which may affect the bond or performance of the grout from metal embedments or bottom of beams prior to the installation of the grout.

E. Wash concrete surfaces clean and then keep moist for at least 24 hours prior to the placement of non-shrink cementitious or cement grout. Saturation may be achieved by covering the concrete with saturated burlap bags, use of a soaker hose, flooding the surface or other method acceptable to the Engineer. Upon completion of the 24 hour period, remove visible water from the surface prior to grouting.

F. Provide forms for grout. Line or coat forms with release agents recommended by the grout manufacturer. Provide forms anchored in place and shored to resist the forces imposed by the grout and its placement.

1. Forms for all grout other than concrete grout shall be designed to allow the formation of a hydraulic head and shall have chamfer strips built into forms.

3.02 INSTALLATION - GENERAL

A. Mix, apply and cure products in strict compliance with the manufacturer's recommendations and these specifications.

B. Provide staffing and equipment available for rapid and continuous mixing and placing. Keep all necessary tools and materials ready and close at hand.

C. Maintain temperatures of the beam, supporting concrete, and grout between 40 and 90 degrees F during grouting and for at least 24 hours after placement, until grout compressive strength reaches 1000 psi or as recommended by the grout manufacturer, whichever is longer. Do not allow differential heating or cooling of beams and grout during the curing period.

D. Take special precautions for hot weather or cold weather grouting as recommended by the manufacturer when ambient temperatures and/or the temperature of the materials in contact with the grout are outside of the 40 to 90 degrees F range.

3.03 INSTALLATION - NON-SHRINK CEMENTITIOUS GROUTS AND CEMENT GROUTS

A. Mix in accordance with manufacturer's recommendations. Do not add cement, sand, pea gravel or admixtures without prior approval by the Engineer.

B. Do not mix by hand. Mix in a mortar mixer with moving blades. Pre-wet the mixer and empty excess water. Add pre-measured amount of water for mixing, followed by the grout. Begin with the minimum amount of water recommended by the manufacturer and then add the minimum additional water required to obtain workability. Do not exceed the manufacturer's maximum recommended water content.

C. Placements greater than 3-in in depth shall include the addition of clean, washed pea gravel to the grout mix when approved by the manufacturer. Comply with the manufacturer's recommendations for the size and amount of aggregate to be added.

D. Provide forms as specified in Paragraph 3.01.F. Place grout into the designated areas and prevent segregation and entrapment of air. Do not vibrate grout to release air or to consolidate the material. Fill all spaces and provide full contact between the grout and adjoining surfaces. Provide grout holes and vent holes as necessary.

E. Place grout rapidly and continuously to avoid cold joints. Do not place grout in layers. Do not add additional water to the mix (retemper) after initial stiffening.

F. Just before the grout reaches its final set, cut back the grout to the substrate at a 45 degree angle from the lower edge of bearing plate unless otherwise ordered and approved by the Engineer. Finish this surface with a wood float or brush finish.

G. Begin curing immediately after form removal, cutback, and finishing. Keep grout moist and within its recommended placement temperature range for at least 24 hours after placement, until grout compressive strength reaches 1000 psi or as recommended by the manufacturer, whichever is longer. Saturate the grout surface by use of saturated burlap bags, soaker hoses or ponding. Provide sunshades. If drying winds inhibit the ability of a given curing method to keep grout moist, erect wind breaks until wind is no longer a problem or curing is finished.

3.04 SCHEDULE

A. The following list indicates where the particular types of grout are to be used:

1. General purpose non-shrink cementitious grout: Use at all locations where indicated on the Drawings.

2. Flowable (precision) non-shrink cementitious grout: Use at all locations indicated on the Drawings to receive flowable non-shrink grout.

END OF SECTION

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SECTION 03740
MODIFICATIONS AND REPAIRS TO EXISTING CONCRETE

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to cut, remove, repair or otherwise modify parts of existing concrete structures or appurtenances as shown on the Drawings and as specified herein as necessary to complete the work. Work under this Section shall also include bonding new concrete to existing concrete.

1.02 RELATED WORK

A. Concrete and Reinforcing Steel is included in 03301.

B. Grout is included in Section 03600.

C. Miscellaneous metals are included in Section 05500.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, manufacturer's technical literature on all products. The submittal shall include the manufacturer's installation and/or application instructions.

B. A list of five of the Contractor’s projects for which the repair methods specified herein were successfully completed. The list for each repair method shall contain the following information for each project:
   a. Project name and location.
   b. Owner of project.
   c. Owner’s representative including address and phone number.
   d. Brief description of work.
   e. Cost of the repair work and the total project cost.
   f. Date of completion of the repair work.

C. Submit documentation of the qualifications as specified in Paragraphs 1.05D, 1.05E, and 1.05F.

D. Sealant:

   1. Product data including location of use, catalogue cut, technical data, storage requirements, mixing and application instructions, and conformity to ASTM standards.

   2. Certify that sealant is made for use in continuous immersion in contact with potable water and is certified by NSF/ANSI Standard 61

   3. Certify that sealant for the Reservoir is made for use in continuous immersion in contact with potable water having a pH range of 7.5 to 11.0 and chlorine at a concentration of 2.5 milligrams per liter and that sealant is unaffected by the chemicals to be used for structure disinfection at the concentrations and time limits specified in AWWA C652, and is certified by NSF/ANSI Standard 61.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

2. ASTM C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.

3. ASTM C883 - Standard Test Method for Effective Shrinkage of Epoxy-Resin Systems Used with Concrete.

4. ASTM D570 - Standard Test Method for Water Absorption of Plastics.

5. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.

6. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.

7. ASTM D732 - Standard Test Method for Shear Strength of Plastics by Punch Tool.

8. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

9. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

B. American National Standards Institute (ANSI)

1. ANSI/NSF 61 - Drinking Water Systems Components - Health Effects

C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. No existing structure or concrete shall be shifted, cut, removed, or otherwise altered until authorization is given by the Engineer.

B. When removing materials or portions of existing structures and when making openings in existing structures, all precautions shall be taken and all necessary barriers, shoring and bracing and other protective devices shall be erected to prevent damage to the structures beyond the limits necessary for the new work, protect personnel, control dust and to prevent damage to the structures or contents by falling or flying debris. Unless otherwise permitted, shown or specified, line drilling will be required in cutting existing concrete.

C. Unless otherwise permitted, shown or specified, line drilling will be required in cutting existing concrete.

D. Manufacturer qualifications. The manufacturer shall have a minimum of 10 years experience in the manufacture of the products specified and shall have an ongoing program of training, certifying and technically supporting the Contractor's personnel.

E. Contractor qualifications. Contractors shall complete a program of instruction in the application of the approved manufacturer's material specified in this Section and provide certification from the manufacturer attesting to their training and status as an approved applicator.

F. Furnish a notarized certificate stating that the materials meet the requirements of this Section and have the manufacturer's current printed literature on the specified product.

G. The Contractor's supervisor shall have attended a training program sponsored by the manufacturer supplying the materials for this project.

H. A representative of the product manufacturer shall be present for the first three days of instructions for the installation crew.

I. A representative of the product manufacturer shall make periodic site visits to insure the product is being installed in accordance with published procedures.

J. Provide services of a manufacturer's field representative of the sealant who has performed at least five projects of similar size and complexity within the last 5 years. The field representative shall be present at the work site prior to any mixing of components to instruct on mixing, application and inspection procedures and to inspect the finish of the prepared surfaces prior to application of the sealant.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver products in original, unopened containers displaying the manufacturer's name, labels, product identification and batch numbers.

B. Store and condition products as recommended by the manufacturer.

1.07 PROJECT CONDITIONS

A. The Contract Documents contain additional information and requirements on existing conditions.

B. The Contractor shall make available all locations and phases of the work for access by the Owner, Engineer or other designated personnel. The Contractor shall provide ventilation, egress, safety tripods, scaffolding, harnesses, and any other means required for the Engineer, inspector, or Owner's designated personnel to access the work areas.

PART 2 PRODUCTS

2.01 MATERIALS

A. General

1. Materials shall comply with these Specifications and any state or local regulations.

2. All materials used together in a given joint shall be compatible with one another. Coordinate selection of suppliers and products to provide compatibility. Do not use asphaltic bond breakers or asphaltic joint fillers in joints receiving sealant.

3. All materials shall be approved for use in contact with potable water after 30 days (non-toxic and free of taste or odor).

B. Repair Mortar (Polymer-Modified Portland Cement Mortar)

Horizontal Surfaces

1. Repair mortar is a two-component polymer-modified, portland cement, fast-settling, trowel-grade mortar used to repair horizontal surfaces with a migrating corrosion inhibitor.

2. Material

   a. Properties of the cured material:

      (1) Compressive Strength (ASTM C109): 7000 psi minimum at 28 days.

      (2) Splitting Tensile Strength (ASTM C496): 750 psi minimum at 28 days.

      (3) Flexural Strength (ASTM C293): 2000 psi minimum at 28 days.

      (4) Freeze/Thaw Resistance (ASTM C666): 300 cycles at 98 percent

      (5) Bond Strength (ASTM C882 Modified) Hardened to Plastic: 2200 psi minimum at 28 days moist cure.

      (6) Permeability (AASHTO T277): 500 coulombs at 28 days.

      (7) Color: Gray.

3. Approved manufacturer's include: Sika Corporation, Lyndhurst, NJ – SikaTop 122 Plus or equal.

Vertical and Overhead Surfaces

1. Repair mortar is a two-component polymer-modified, portland cement, fast settling, non-sag mortar used to repair vertical and overhead surfaces with a migrating corrosion inhibitor.

2. Material

   a. Properties of the cured material:

      (1) Compressive Strength (ASTM C109): 7000 psi minimum at 28 days.

      (2) Splitting Tensile Strength (ASTM C496): 900 psi minimum at 28 days.

      (3) Flexural Strength (ASTM C293): 2000 psi minimum at 28 days.

      (4) Freeze/Thaw Resistance (ASTM C666): 300 cycles at 98 percent.

(5) Bond Strength (ASTM C882 Modified) Hardened to Plastic: 2200 psi minimum at 28 days moist cure.

(6) Permeability (AASHTO T277): 500 coulombs at 28 days.

(7) Color: Gray.

3. Approved manufacturer's include: Sika Corporation, Lyndhurst, NJ - SikaTop 123 Plus or equal.

C. Crack Repair Epoxy Adhesive

1. General:
   a. Crack Repair Epoxy Adhesive shall be a two-component, solvent-free, moisture insensitive epoxy resin material suitable for repairing cracks in concrete by injection or gravity feed. It shall be formulated for the specific size of opening or crack being injected. Crack Repair Epoxy Adhesive shall comply with the requirements of ASTM C881, Type V, Grade 2, Class C.
   b. All concrete surfaces containing potable water or water to be treated for potable use that are repaired by epoxy adhesive injection shall be coated with an acceptable epoxy coating approved for use in contact with potable water.
   c. Approved Manufacturers:
      1) Sika Corporation, Lyndhurst, NJ – Sikadur 32, Hi-Mod.
      2) or approved equal.

D. Injection Gel Epoxy

1. General
   a. Injection Gel Epoxy shall be a 2-component, 100% solids, moisture-tolerant, high-modulus, high-strength, structural epoxy, non-abrasive, paste adhesive suitable for repairing cracks in concrete by injection or manual method. Injection Gel Epoxy shall conform to the current ASTM C-881, Types I and IV, Grade-3, Class-C and AASHTO M-235 specifications.
   b. Approved Manufacturers:
      1) Sika Corporation, Lundhurst, NJ – Sikadur Injection Gel
      2) or approved equal.

E. Epoxy-Modified Bonding Agent and Anti-Corrosion Coating

1. General

   a. Reinforcing protection shall be an anti-corrosion coating used in concrete restoration. The coating shall be a three-component, solvent-free, moisture-tolerant, epoxy-modified, cementitious product formulated as a bonding agent and an anti-corrosion coating.

2. Materials

   a. Epoxy resin/Portland cement adhesive

1) Component “A” shall be an epoxy resin/water emulsion containing suitable viscosity control agents. It shall not contain butyl glycidyl ether.

2) Component “B” shall be primarily a water solution of a polyamine.

3) Component “C” shall be a blend of selected Portland cements and sands.

4) The material shall not contain asbestos.

3. Typical Properties for Mixed Components

a. Properties of the mixed epoxy resin/portland cement adhesive.

1) Pot life: 90 minutes at 73 degrees F

2) Contact Time:

95 degrees F	(35 degrees C)	6 hours
68 degrees F	(20 degrees C)	12 hours
50 degrees F	(10 degrees C)	16 hours
40 degrees F	(5 degrees C)	24 hours

3) Color: dark gray

4. Typical Properties for Cured Material

a. Properties of the cured epoxy resin/portland cement adhesive.

1) Compressive Strength (ASTM C109)

a) 3 day: 4500 psi

b) 7 day: 6500 psi

c) 28 day: 8500 psi

2) Splitting Tensile Strength (ASTM C496)

a) 28 day: 600 psi

3) Flexural Strength (ASTM C348)

a) 14 day:1250 psi

4) Bond Strength ASTM C882 at 14 days

a) Wet on Wet, 0-hr. open time: 2800 psi
b) 24-hr. open time: 2600 psi

5) Bond of Steel Reinforcement to Concrete (pullout test)

a) Plastic Concrete to Steel: 573 psi

6) The epoxy resin/portland cement adhesive shall not produce a vapor barrier.

5. Approved Manufacturer

a. Sika Armatec 110 EpoCem by Sika Corporation, Lyndhurst, NJ or equal.

F. Epoxy Paste Adhesive

1. Epoxy paste adhesive shall be a two-component, solvent-free, moisture insensitive epoxy resin material used as an adhesive for mating surfaces where the glue line is 1/8-in or less and to bond fresh, plastic concrete to clean, sound hardened concrete. The material shall comply with the requirements of ASTM C881, Type IV, Grade 3, Class C.

2. Approved Manufacturers:
   a. Sika Corporation, Lyndhurst, NJ – Sikadur 31 Hi-Mod Gel.
   b. Euclid Chemical Company, Cleveland, OH – Dural 452 Gel.
   c. BASF Corporation, Shakopee, MN – MasterEmaco ADH 1420.
   d. or approved equal.

G. Sealant

1. Provide sealant for joints in horizontal surfaces conforming to ASTM C920, Type S or M, Grade P or NS, Class 25. Provide sealant for joints in sloping and vertical surfaces conforming to ASTM C920, Type S or M, Grade NS, Class 25.

2. Provide sealants made for use in continuous immersion in contact with potable water and certified by NSF/ANSI Standard 61. Provide gray colored sealants unless otherwise indicated on the Drawings, specified, or approved.

3. For the Reservoir, provide sealants made for use in continuous immersion in contact with potable water having a pH range of 7.5 to 11.0 and chlorine at a concentration of 2.5 milligrams per liter and unaffected by the chemicals to be used for structure disinfection at the concentrations and time limits specified in AWWA C652. Comply with requirements specified in Paragraphs 2.01.F.1 and 2.01.F.2.

PART 3 EXECUTION

3.01 PRE-CONSTRUCTION INSPECTION OF RESERVOIR

A. Prior to proceeding with any structural repair work to each side of the reservoir, the contractor shall allow the engineer to inspect the interior and exterior of the tank. The purpose of this inspection is to confirm the types of deficiencies, repair methods and locations of repairs.

B. Each side of the reservoir has been thoroughly cleaned prior to the inspection.

C. The Contractor shall notify the Engineer a minimum of two weeks prior to the readiness of each side of the reservoir for inspection. The contractor shall allow one week for inspection of each side of the reservoir by the Engineer.

D. The Engineer shall notify the Contractor of the type of repair methods and locations of repairs within six weeks of completion of the inspection.

E. The Contractor shall provide the Engineer with complete access to the tank for inspection, and shall provide all labor, materials, and equipment required by the Engineer to perform these inspections. This includes but is not limited to providing and moving access ladders to allow the Engineer safe entry and safe access to all elements, providing lighting within the reservoir and any other requirements necessary for the Engineer to work safely for an extended period of time. The Contractor shall also prepare the reservoir for inspection of the tank by cleaning all concrete surfaces. Remove all coatings, efflorescence, dirt, and foreign matter so the concrete surface is free of all laitance by power washing or other means acceptable to the Engineer, dispose all sediment in the tank, and dewater low spots using pumps so no standing water is present.

3.02 HOISTING, SCALFOLDING, STAGING AND PLANKING

A. The Contractor shall design, construct and maintain all work platforms, staging, scaffolding and rigging necessary to complete the work of this section.

3.03 GENERAL

A. Cut, repair, remove, or otherwise modify parts of the existing structures or appurtenances, as indicated on the Drawings, specified, or necessary to complete the work. Finishes, reinforcement, sealants, etc, are specified in their respective sections. All work shall comply with the requirements of this Section and as shown on the Drawings.

B. Contractor shall examine areas and conditions under which repair work is to be installed and notify Engineer in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Engineer.

C. The locations, details, and limits of the repairs are shown on the Drawings.

D. All commercial products specified in this Section shall be stored, mixed and applied in strict compliance with the manufacturer's recommendations.

E. In all cases where concrete is repaired in the vicinity of an expansion joint or control joint the repairs shall be made to preserve the isolation between components on either side of the joint.

F. When drilling holes for reinforcing dowels/bolts, drilling shall stop if rebar is encountered. As approved by the Engineer, the hole location shall be relocated to avoid rebar. Rebar shall not be cut without prior approval by the Engineer. Where possible, rebar locations shall be identified prior to drilling using "rebar locators" so that drill hole locations may be adjusted to avoid rebar interference.

G. The Engineer may from time to time direct the Contractor to make additional repairs to existing concrete. These repairs shall be made as specified or by such other methods as may be appropriate.

3.04 CONCRETE REMOVAL

A. Concrete designated to be removed to specific limits as shown on the Drawings or directed by the Engineer, shall be done by line drilling at limits of removal followed by chipping or jack-hammering as appropriate in areas where concrete is to be taken out. Remove concrete in such a

manner that surrounding concrete and existing reinforcing to be left in place and existing in place equipment are not damaged. Sawcutting at limits of concrete to be removed shall only be done if indicated on the Drawings, specified herein, or after obtaining written approval from the Engineer.

B. In all cases where the joint between new concrete or grout and existing concrete will be exposed in the finished work, except as otherwise shown or specified, the edge of concrete removal shall be a 3/4-in deep saw cut on each exposed surface of the existing concrete or as indicated on the Drawings.

C. Concrete specified to be left in place which is damaged shall be repaired by approved means to the satisfaction of the Engineer.

3.05 CONNECTION SURFACE PREPARATION

A. Connection surfaces shall be prepared as specified below for concrete areas requiring patching, repairs or modifications as shown on the Drawings, specified, or as directed by the Engineer.

B. Remove all loose and deteriorated materials, efflorescence, existing repair materials (sealants, adhesives, epoxies, etc.) dirt, oil, grease, and all other bond inhibiting materials from the surface by dry mechanical means, i.e. - sandblasting, chipping, wire brushing, or other mechanical means as approved by the Engineer. Uniformly roughen the concrete surface to approximately 1/4-in amplitude with pointed chipping tools. Thoroughly clean surface of loose or weakened material by sandblasting or airblasting. Irregular voids or surface stones need not be removed if they are sound, free of laitance, and firmly embedded into parent concrete.

C. If reinforcing steel is exposed, it must be mechanically cleaned to remove all loose material, contaminants, rust, etc, as approved by the Engineer. If half of the diameter of the reinforcing steel is exposed, chip out behind the steel. The distance chipped behind the steel shall be a minimum of 1-in. Reinforcing to be incorporated in new concrete and/or repair mortar shall not be damaged during the removal operation.

D. Reinforcing from existing removed or deteriorated concrete which is shown to be incorporated in new concrete and/or repair mortar shall be cleaned by mechanical means to remove all loose material and products of corrosion before proceeding. It shall be cut, bent or lapped to new reinforcing as shown on the Drawings and provided with 2-in minimum cover all around.

E. The following are specific concrete surface preparation "methods" to be used where called for on the Drawings, specified or as directed by the Engineer.

1. Method B - After the existing concrete surface has been roughened and cleaned, apply epoxy bonding agent at connection surface. The field preparation and application of the epoxy bonding agent shall comply strictly with the manufacturer's recommendations. Place new concrete or grout mixture to limits shown on the Drawings within time constraints recommended by the manufacturer to ensure bond.

3.06 CRACK REPAIR AT CONCRETE BEAMS AND COLUMNS (EPOXY ADHESIVE INJECTION)

A. Cracks on vertical surfaces shall be repaired by pressure injecting crack repair epoxy adhesive through injection ports sealed to surface with crack repair epoxy adhesive per manufacturer's recommendations.

B. The cracks shall be cleaned by sandblast, water jet or high pressure air to remove loose matter, dirt, laitance, oil, grease or other contaminants in accordance with the manufacturer's instructions. Prior to injection of the crack a surface seal of epoxy paste shall be applied to the faces of the crack. Openings in the surface seal (injection ports) shall be established along the crack. The distance between injection ports shall not be greater than the thickness of the slab or wall. Injection shall begin at the first port at one end of the crack. For vertical or inclined surfaces this shall be the lowest point of the crack. Injection shall continue at the first port until the injected epoxy begins to flow out of the second port in line. The first port shall be plugged and injection started at the second port. The entire crack shall be injected with the same sequence. Continue injecting crack and do not stop until crack is completely injected. After the injected epoxy has cured, remove or cut off ports and grind flush with adjacent concrete surface. There shall be no indentations or protrusions caused by placement of ports.

C. The Engineer may take random 2-in diameter core samples for visual inspection and strength testing to verify adequacy of repairs.

3.07 CRACK REPAIR AT CONCRETE LINER (INJECTION GEL EPOXY)

A. The cracks shall be cleaned by sandblast, water jet or high pressure air to remove loose matter, dirt, laitance, oil, grease or other contaminants in accordance with the manufacturer's instructions. The surface of the crack shall be routed ¼-in wide by ½-in deep along the entire length of the crack. Rout for a minimum of 2” beyond the visible end of the crack. Clean the crack of loose particles by air pressure. Surface must be clean and free of dust, laitance, grease, curing compounds, impregnations, waxes and any other contaminants. The injection gel shall be injected using automated injecting equipment or manual method in accordance with the manufacturer’s recommendations.

3.08 SPALLED/DETERIORATED UNSOUND CONCRETE REPAIR

A. The only material acceptable for surface repair of spalled, deteriorated, or unsound concrete is polymer- modified portland cement repair mortar as specified herein.

B. All loose, broken softened, and deteriorated concrete shall be removed by abrasive blasting and chipping down to sound concrete as specified herein. Saw cut perimeter of deteriorated concrete to form a rectangle with straight edges to a depth as shown on the Drawings. Chip concrete substrate to obtain a surface profile with a new fractured aggregate surface.

C. Clean concrete surfaces as specified herein and as required by the manufacturer. Additional surface preparation shall follow the recommendations of the repair mortar manufacturer.

D. Where reinforcing steel with active corrosion is encountered, the procedure shall be as follows:

1. Remove all contaminants and rust from exposed reinforcing steel.

2. When half of the diameter of the rebar is exposed, chip out behind the reinforcing steel, 1-in minimum.

3. The distance chipped behind the rebar shall be equal to or exceed the minimum placement depth of the material to be used.

4. Anti-corrosion coating shall be applied to all exposed reinforcing steel bars prior to placement of repair mortar. Surface preparation for, application of, and curing of corrosion coating shall be in accordance with the manufacturer's recommendations.

E. Cracks encountered in the substrate in the area or the spalled/deteriorated concrete repair shall be treated as approved by the Engineer.

F. Repair Mortar Placement:

1. The procedures recommended by the manufacturer for the mixing and placement of the repair mortar shall be followed.

2. After the initial mixing of the repair mortar, additional water shall not be added to change the consistency should the mix begin to stiffen.

3. Substrate shall be saturated surface dry (SSD) with no standing water during application.

4. Apply scrub coat to substrate, filling all pores and voids.

5. While scrub coat is still plastic, apply the polymer-modified repair mortar. Care shall be taken to fully consolidate the repair material, completely filling all portions of the area to be filled. The repair mortar shall be placed to an even, uniform plane to restore the member to its original surface.

6. For applications greater than 1-in in depth, apply repair mortar in lifts. Score the exposed surface of each lift to produce a roughened surface before applying the next lift. Allow the lift to reach final set before proceeding with the next lift.

G. Finishing:

1. The repair mortar shall receive a smooth, steel trowel finish, unless otherwise noted.

2. Tops of roof slabs shall receive a broomed finish.

3. When completed, there shall be no sharp edges. All exterior corners, such as at penetrations, shall be made with a one-inch radius. All interior corners shall be square.

H. Curing: Curing shall be performed as recommended by the repair mortar manufacturer except that the cure period shall be at least 24 hours and shall be by means of a continuous fog spray or moist cure with wet burlap.

3.09 GROUTING

A. Grouting shall be as specified in Section 03600.

3.10 SEALANT

A. Install sealants in clean dry recesses free of frost, oil, grease, form release agent, loose material, laitance, dirt, dust and other materials which will impair bond at the locations shown on the Drawings. Apply sealant conforming to the manufacturer's recommendations including concrete cure, temperature, moisture, mixing, primer, primer cure time, joint and recess preparation, tooling, and curing. Apply masking tape to each side of the joint prior to the installation of the sealant and remove afterwards along with any spillage to leave a sealant installation with neat straight edges.

B. At locations where sealant is being replace

3.11 INSPECTION

A. At completion of all repairs, the Contractor, Engineer and Installers of the material used on the repairs shall inspect the work. Any leaking joints or cracks shall be repaired in accordance with the manufacturer’s instructions at no additional cost to the Owner.

END OF SECTION

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SECTION 05500
MISCELLANEOUS METALS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install all miscellaneous metal complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings and product data showing materials of construction and details of installation for:

1. Shop drawings, showing sizes of members, method of assembly, anchorage and connection to other members.

2. Submit 6-in by 6-in samples of cover plates, illustrating surface finish, color, texture and jointing details.

3. Submit samples as requested by the Engineer during the course of construction.

B. Test Reports

1. Certified copy of mill test reports on each steel, stainless steel, and aluminum proposed for use showing the physical properties and chemical analysis.

C. Certificates

1.04 REFERENCE STANDARDS

A. Aluminum Association (AA)

1. AA M31C22A41
   a. M31: Mechanical Finish, Fine Satin
   b. C22: Finish, Medium Matte
   c. A41: Clear Anodic Coating, Class I

B. ASTM International

1. ASTM A36 - Standard Specification for Carbon Structural Steel.

2. ASTM A48 - Standard Specification for Gray Iron Castings.

3. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

4. ASTM A108 - Standard Specification for Steel Bars, Carbon, Cold Finished, Standard Quality.

5. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

6. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

7. ASTM A240 - Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Plate, Sheet, and Strip Pressure Vessels.

8. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.

9. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 Psi Tensile Strength.

10. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

11. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

12. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

13. ASTM A536 - Standard Specification for Ductile Iron Castings.

14. ASTM A570 - Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.

15. ASTM A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

16. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

17. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

18. ASTM B429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

19. ASTM F1554 -Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

20. ASTM F2329 - Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon Screws, Washers, Nuts, and Special Threaded Fasteners

C. American Society of Mechanical Engineers (ASME)

1. ASME B18.2.2 Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)

2. ASME B18.22.1 Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series)

D. American Institute of Steel Construction (AISC)

1. Specification for Structural Steel Buildings – Allowable Stress Design and Plastic Design.

E. American Welding Society (AWS)

1. AWS D1.1 - Structural Welding Code - Steel.

2. AWS D1.2 - Structural Welding Code - Aluminum.

3. AWS D1.6 - Structural Welding Code - Stainless Steel

F. Federal Specifications

1. FS-FF-B-575C - Bolts, Hexagonal and Square

G. Occupational Safety and Health Administration (OSHA)

H. Massachusetts State Building Code (MSBC)

I. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. The work of this Section shall be completely coordinated with the work of other Sections. Verify, at the site, both the dimensions and work of other trades adjoining items of work in this Section before fabrication and installation of items herein specified.

B. Furnish to the pertinent trades all items included under this Section that are to be built into the work of other Sections.

C. All welding shall be performed by qualified welders and shall conform to the applicable AWS welding code. Welding of steel shall conform to AWS D1.1 and welding of aluminum shall conform to AWS D1.2 and welding of stainless steel shall conform to AWS D1.6.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver items to be incorporated into the work of other trades in sufficient time to be checked prior to installation.

B. Store materials on skids and not on the ground and block up so that they will not become bent or otherwise damaged. Handle materials with cranes or derricks. Do not dump material off cars or trucks nor handle in any other way that will cause damage.

C. Repair items that have become damage or corroded to the satisfaction of the Engineer prior to incorporating them into the work.

1.07 PROJECT/SITE REQUIREMENTS

A. Field measurements shall be taken at the site, prior to fabrication of items, to verify or supplement indicated dimensions and to ensure proper fitting of all items.

PART 2 PRODUCTS

2.01 GENERAL

A. The use of manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. Like items of materials shall be the end products of one manufacturer in order to provide standardization for appearance, maintenance and manufacturer's service.

2.02 MATERIALS

A. Unless otherwise noted, materials for miscellaneous metals shall conform to the following standards:

1.	Aluminum Extruded Shapes	ASTM B221, Alloy 6061 T6
2.	Aluminum Sheet and Plate	ASTM B209, Alloy 6061 T6
3.	Aluminum Bolts	ASTM F901, Alloy 6061 T6
4.	Aluminum Heavy Slotted Hex Nut	ASME B18.2.2, Alloy 6061 T6 (likely special-order item)
5.	Aluminum Plain Washers	ASME B18.22.1, Alloy 6061 T6
6.	Stainless Steel Bolts, Nuts, and Washers	ASTM A593, Type 316

2.03 ANCHORS, BOLTS AND FASTENING DEVICES

A. Adhesive anchor system, for fastening to solid concrete substrate, shall be a system manufactured for the installation of post installed studs including anchoring hardware and chemical dispenser. Injection adhesive shall be a two-component epoxy system including a hardener and a resin, furnished in pre-measured side-by-side cartridges which keep the two components separate. Side-by-side cartridges shall be designed to accept a static mixing nozzle which thoroughly blends the two components and allows injection directly into the drilled hole. Adhesive shall be made for use in contact with potable water. Provide zinc plated carbon steel or Type 316 stainless steel stud assemblies as indicated on the Drawings consisting of an all-thread anchor rod with nut and washer. Adhesive anchor system shall be Hilti RE 500 SD; Simpson Strong Tie SET-XP; ITW Ramset Red Head Epcon G5; or equal. Unless otherwise noted, anchorage designs shown on the Drawings are based on Hilti RE 500 SD.

B. Stainless steel machine bolts and nuts shall conform to Federal Specification FF-B-575C. Bolts and nuts shall be hexagon type. Bolts, nuts, screws, washers and related appurtenances shall be Type 316 stainless steel.

2.04 MISCELLANEOUS ALUMINUM

A. All miscellaneous metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.

B. Connections and accessories shall be of sufficient strength to safely withstand the stresses and strains to which they will be subjected. Exposed joints shall be close fitting and jointed where least conspicuous. Threaded connections shall have the threads concealed where practical. Welded connections shall have continuous welds or intermittent welds as specified or shown. The face of welds shall be dressed flush and smooth. Welding shall be on the unexposed side as much as possible in order to prevent pitting or discoloration of the aluminum exposed surface. Provide holes for temporary field connections and for attachment of the work of other trades.

C. Miscellaneous aluminum items shall include: beams, angles, closure angles, bent plates, plates, cover plates and any other miscellaneous aluminum called for on the Drawings and not otherwise specified.

D. Cover plate shall be aluminum diamond plate pattern and shall have a minimum thickness of 3/8-in. Provide welded aluminum stiffeners as indicated. Frames and supports shall be of aluminum construction and fabricated as indicated. Fastening devices and hardware shall be Type 316 stainless steel. Plates shall have a mill finish.

PART 3 EXECUTION

3.01 INSTALLATION

A. Specialty products shall be installed in accordance with the manufacturer's recommendations.

B. Install adhesive anchor system in strict compliance with the manufacturer's recommendations, including drill bit diameter, surface preparation, temperature, moisture conditions, injection and installation of bolts. Use oil free compressed air to blast out loose particles and dust from the drilled holes. Bolts must be clean and free of dirt, oil, grease, ice or other material which would reduce bond.

C. Where aluminum contacts concrete, apply a heavy coat of approved alkali resistant paint to the masonry or concrete.

D. Between aluminum beams, and concrete supports, insert 1/8-in thick neoprene isolator pads, 85 plus or minus 5 Shore A durometer, sized for full width and length of bracket or support.

END OF SECTION

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SECTION 15102
BUTTERFLY VALVES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish labor, materials, equipment and incidentals required and install complete and ready for operation and test valves as shown on Drawings M-1 and M-2 (inlet and outlet structures) and as specified herein.

B. The equipment shall include, but not be limited to, the following.

1. General Requirements

2. High Performance Stainless Steel Butterfly Valves for Clean Water Service

3. Face Plate Assembly and Anchorage for Butterfly Valve mounting

1.02 RELATED WORK

A. Buried valves and appurtenances for water transmission mains are included in Division 2.

B. Piping and disinfection for potable water systems is included in the respective sections of Division 2 and in Section 01014.

1.03 SUBMITTALS

A. Submit to the Engineer, in accordance with Section 01300, materials required to establish compliance with this Section. Submittals shall include at least the following:

1. The manufacturer and supplier.

2. The address at which equipment will be fabricated or assembled.

3. Drawings showing assembly details, materials of construction and dimensions.

4. Descriptive literature, bulletins and/or catalogs of the equipment.

5. The total weight of each item.

6. A complete bill of materials.

7. Additional submittal data, where noted with individual pieces of equipment.

8. Calculations with assumptions, loads and other analysis data for the design of face plate assembly and anchorage prepared, signed and stamped by a licensed professional engineer registered in the Commonwealth of Massachusetts.

B. Test Reports

1. Provide certified hydrostatic test data, per manufacturer's standard procedure or MSS-SP-61 for valves.

C. Certificates

1. For each valve specified to be manufactured, tested and/or installed in accordance with AWWA and other standards, submit an affidavit of compliance with the appropriate standards, including certified results of required tests and certification of proper installation.

D. Manufacturer's Installation and Application Data

E. Operating and Maintenance Data

1. Operating and maintenance instructions shall be furnished to the Engineer. The instructions shall be prepared specifically for this installation and shall include all required cuts, drawings, equipment lists, descriptions and other information required to instruct operating and maintenance personnel unfamiliar with such equipment.

1.04 REFERENCE STANDARDS

A. ASTM International

1. ASTM A240 - Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels.

2. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.

3. ASTM A351 - Standard Specification for Stainless Steel Casting

4. ASTM A436 - Standard Specification for Austenitic Gray Iron Castings

5. ASTM A479 - Standard Specification for Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels

6. ASTM A536 - Standard Specification for Ductile Iron Castings.

B. American Water Works Association (AWWA)

1. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

2. AWWA C504 - Rubber-Seated Butterfly Valves

C. American National Standards Institute (ANSI)

1. ANSI B16.10 - Face-to-Face and End-to-End Dimensions of Valves

2. ANSI B16.104 - Butterfly Valves

D. American Iron and Steel Institute (AISI)

E. Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS)

1. MSS-SP-61 - Pressure Testing of Steel Valves.

2. MSS-SP-67 - Butterfly Valves.

3. MSS-SP-82 - Valve Pressure Testing Methods

F. National Electrical Manufacturers Association (NEMA)

G. Underwriters Laboratories (UL)

H. Factory Mutual (FM)

I. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. Qualifications

1. Valves and appurtenances shall be products of well-established firms who are fully experienced, minimum ten years, reputable and qualified in the manufacture of the particular equipment to be furnished.

2. The equipment shall be designed, constructed and installed in accordance with the industry standards and methods and shall comply with this Section as applicable.

3. Units of the same type shall be the product of one manufacturer.

B. Certifications

1. The manufacturers shall furnish an affidavit of compliance with Standards referred to herein as specified in Paragraph 1.03C above. Refer to PART 3 for testing required for certain items in addition to that required by referenced standards.

C. Inspection of the units may also be made by the Engineer or other representative of the Owner after delivery. The equipment shall be subject to rejection at any time due to failure to meet any of the specified requirements, even though submittal data may have been accepted previously. Equipment rejected after delivery shall be marked for identification and shall be removed from the job site at once.

1.06 SYSTEM DESCRIPTION

A. The equipment and materials specified herein are intended to be standard for use in controlling the flow of water as noted on the Drawings.

B. Valves, appurtenances and miscellaneous items shall be installed as shown on the Drawings and as specified, so as to form complete workable systems.

1.07 DELIVERY, STORAGE AND HANDLING

A. Reference is made to Section 01600 for additional information.

B. Packing and Shipping

1. Care shall be taken in loading, transporting and unloading to prevent injury to the valves, appurtenances, or coatings. Equipment shall not be dropped. Valves and appurtenances shall be examined before installation and no piece shall be installed which is found to be defective. Damage to the coatings shall be repaired in accordance with coating manufacturer's recommendations and as acceptable to the Engineer.

2. Prior to shipping, the ends of the valves shall be acceptably covered to prevent entry of foreign material. Covers shall remain in place until after installation and connecting piping is completed.
   a. Valves 3-inch and larger shall be shipped and stored on site until time of use with wood or plywood covers on each valve end.
   b. Rising stems and exposed stem valves shall be coated with a protective oil film which shall be maintained until the valve is installed and put into use.
   c. Corrosion in evidence at the time of acceptance by the Owner shall be removed, or the valve shall be removed and replaced.

C. Storage and Protection

1. Special care shall be taken to prevent plastic and similar brittle items from being directly exposed to the sun, or exposed to extremes in temperature, to prevent deformation. See the individual piping sections and manufacturer's information for further requirements.

1.08 MAINTENANCE

A. Special tools and the manufacturer's standard spare parts, if required for normal operation and maintenance, shall be supplied with the equipment and where noted, as specified herein. Tools shall be packaged in a steel case, clearly and indelibly marked on the exterior to indicate equipment for which tools are intended.

B. Provide one Operations and Maintenance manual for each type of valve and operator supplied under this specification.

C. Included within the Operations and Maintenance manuals, provide a list of all spare and replacement parts with individual prices and location where they are available.

1.09 WARRANTY

A. High Performance Butter Fly Valves and Actuators shall be provided with an Two-Year Warranty.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT - GENERAL

A. Valves and appurtenances shall be of the size shown on the Drawings or as noted and as far as possible equipment of the same type shall be identical and from one manufacturer.

B. Valves and appurtenances shall have the name of the maker, nominal size, flow directional arrows, working pressure for which they are designed and standard referenced, via riveted stainless-steel nameplate upon some appropriate part of the body.

C. Unless otherwise noted, items shall have a minimum working pressure of 150 psi or be of the same working pressure as the pipe they connect to, whichever is higher and suitable for the pressures noted where they are installed.

D. Joints, size and material - unless otherwise noted or required by the Engineer:

1. Except where noted, joints referred to herein shall be of the same type, nominal diameter, material and with a minimum rating equal to the pipe or fittings they are connected to.

2. Valves and appurtenances shall be of the same nominal diameter as the pipe or fittings to which they are connected.

E. Provide special adaptors as required to ensure compatibility between valves, appurtenances and adjacent pipe.

F. Valves and actuators shall be especially designed for submerged service where water may completely submerge the valve and operator. Other units shall be as a minimum weather tight.

G. No alternative materials will be considered for approval unless complete documentation is provided regarding their satisfactory long-term use in similar conditions; in addition, the consideration of any substitution will be considered only if the superiority of the proposed materials is the intent of the substitution, and only if sufficient evidence is provided to document that superiority.

2.02 BUTTERFLY VALVES

A. High Performance Stainless Steel Butterfly Valves for Clear Water Service:

1. Butterfly valves and actuators up to 48-inch diameter shall be NSF/ANSI-61, 371 certified lead-free for drinking water to meet NSF/ANSI-61. Valves shall have a minimum 150 psi pressure rating or higher as noted on the Drawings or in this Section.

2. Butterfly valves for above grade, submerged, service shall be flanged end with face to face dimensions in accordance with ANSI Class 150 Flanges.

3. Valve Disc shall be of the single offset design to provide uninterrupted 360° sealing and to prevent pressure imbalance applied to the disc. Discs shall be designed with a concave face to minimize dynamic torque, decrease turbulence and maximize flow capacity. Discs shall be 316 stainless steel ASTM A351, Grade CF8M.

4. Valve seats shall be pressure assisted PTFE capable of drip-tight bi-directional and dead-end shutoff. ANSI Class 150 valves shall provide bubble-tight shutoff to 275 psi.

5. The valve body shall be constructed of 316 stainless steel ASTM A351, Grade CF8M. The valve body shall be cast lugged type. Waffer type will not be acceptable.

6. Adjustable Packing shall be multiple V-ring PTFE including anti-extrusion ring, also shall permit inspection, adjustment or complete replacement of packing without disturbing any part of the valve or actuator assembly except the packing follower.

7. The valve shaft shall be of Type 316 stainless steel ASTM A479 and designed for both torsional and shearing stresses when the valve is operated under its greatest dynamic or seating torque. Shafts shall be of one-piece design and shall be centerless ground to minimize bearing and packing wear. No reductions of shaft diameter will be allowed except at the operator connection. Any reduction shall have a full radius fillet.
   a. Disc to shaft connection shall be subject to compression forces only thru the use of Tangential pin or torque plugs. Designs using shear or thru pin connections are not allowed. All valves all have blow-out proof shafts connections.

8. Actuators shall be cast iron epoxy coated manual gear type with full open/close adjustable stops and valve position mechanical indicator. Floorstand mounted actuators shall be cast iron epoxy coated. Stem extension shall be 316 stainless steel. Actuators shall have the ability to be motor operated at a later future date.

9. Floor Stand and Extension Stem. A floor stand, and extension stem shall be the non-rising, indicating type; complete with stem, coupling, handwheel, stem guide brackets, and yoke attachment. The stem guide shall be spaced such that stem L/R ratio does not exceed 200. Anchors shall be supplied as required.

10. High performance Butterfly valves and actuators shall be model BHP as manufactured by DeZURIK or approved equal.

2.03 VALVE ACCESSORIES

A. Extension Bonnet for Valve Operator. All extension bonnets shall be provided as necessary, complete with stem and accessories applicable to the specific valve and operator.

B. Floor Stand and Extension Stem. A floor stand, and extension stem shall be the non-rising, indicating type; complete with stem, coupling, handwheel, stem guide brackets, and yoke attachment. The stem guide shall be spaced such that stem L/R ratio does not exceed 200. Anchors shall be supplied as required.

2.04 SURFACE PREPARATION AND SHOP COATINGS

A. In addition to any of these specified requirements, coatings and lubricants in contact with potable water shall be certified as acceptable for use with that fluid.

B. If the manufacturer's requirement is not to require finished coating on interior surfaces, then manufacturer shall so state and no interior finish coating will be required, if acceptable to the Engineer.

C. The exterior surface of various parts of valves, operators, floor-stands and miscellaneous piping shall be thoroughly cleaned of all scale, dirt, grease or other foreign matter and thereafter one shop coat of an approved rust-inhibitive primer such as Inertol Primer No. 621 shall be applied in accordance with the instructions of the paint manufacturer or other primer compatible with the finish coat provided.

D. Unless otherwise noted, interior ferrous surfaces of valves shall be given a shop finish of an asphalt varnish conforming to AWWA C509, (except mounting faces/surfaces) or epoxy conforming to AWWA C550 with a minimum thickness of 6 mils.

E. Ferrous surfaces obviously not to be painted shall be given a shop coat of grease or other suitable rust-resistant coating. Mounting surfaces shall be coated with a rust preventative.

F. Care shall be taken to protect uncoated items and plastic items from environmental damage.

2.05 FACTORY INSPECTION AND TESTING

A. Factory inspection, testing and correction of deficiencies shall be done in accordance with the referenced standards and as noted herein.

B. Refer to PART 1, for required submission of test data to the Engineer.

C. In addition to tests required by the referenced standards, butterfly valves shall be factory tested to demonstrate drop tight closure at the specified conditions.

2.06 FACE PLATE ASSEMBLY

A. Contractor shall provide analysis and design of face plate assembly and associated anchorage for mounting of the Butterfly Valves within the Inlet and Outlet Structures, based on the valves to be provided by the Valve Manufacturer. Contractor to coordinate all loads and details with the Valve Manufacturer. The design calculations including assumptions, loads and other analysis data should be signed and sealed by a qualified professional engineer, registered in the Commonwealth of Massachusetts who is responsible for their preparation. The loads to the existing structure shall be submitted in a table on the drawings for the Engineers review of the reactions to the structure.

B. The Face Plate Assembly shown on the drawings is conceptual and is not warranted to relieve the contractor of the design responsibility.

C. The Face Plates should be constructed of ASTM A240, Type 316 (Type 316L for Welded) Stainless Steel.

D. All metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.

E. Anchors should be Type 316 Stainless Steel

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Valves and appurtenances shall be installed per the manufacturer's instructions in the locations shown, true to alignment and rigidly supported. Damage to the above items shall be repaired in

accordance with the manufacturer's requirements to the satisfaction of the Engineer before they are installed.

B. Install brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings, or otherwise required. Before setting these items, check Drawings and figures which have a direct bearing on their location. The Contractor shall be responsible for the proper location of valves and appurtenances during the construction of the work.

C. Materials shall be carefully inspected for defects in construction and materials. Debris and foreign material shall be cleaned out of openings, etc. Valve flange covers shall remain in place until connected piping is in place. Operating mechanisms shall be operated to check their proper functioning and nuts and bolts shall be checked for tightness. Valves and other equipment which do not operate easily, or are otherwise defective, shall be repaired or replaced at no additional cost to the Owner.

D. Where installation is covered by a referenced standard, installation shall be in accordance with that standard, except as herein modified, and the Contractor shall certify such. Also note additional requirements in other parts of this Section.

E. Unless otherwise noted, joints for valves and appurtenances shall be made up utilizing the same procedures as specified under the applicable type connecting pipe joint and valves and other items shall be installed in the proper position as recommended by the manufacturer. Contractor shall be responsible for verifying manufacturers' torqueing requirements for valves.

3.02 INSTALLATION OF MANUAL OPERATIONAL DEVICES

A. Unless otherwise noted, operational devices shall be installed with the units at the factory, as shown on the Drawings or as acceptable to the Engineer to allow accessibility to operate and maintain the item and to prevent interference with other piping, valves and appurtenances.

B. Floor boxes, valve boxes, extension stems, and low floor stands shall be installed vertically centered over the operating nut, with couplings as required and the elevation of the box top shall be adjusted to conform to the elevation of the finished floor surface or grade at the completion of the Contract. Boxes and stem guides shall be adequately supported during concrete placement to maintain vertical alignment.

3.03 INSTALLATION OF FACE PLATE ASSEMBLY

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Specialty products shall be installed in accordance with the manufacturer's recommendations.

3.04 INSPECTION, TESTING AND CORRECTION OF DEFICIENCIES

A. See also Division 1. If any unit proves to be defective, it shall be replaced or repaired to the satisfaction of the Engineer.

B. Functional Test: Prior to startup, all items shall be inspected for proper alignment, operation, proper connection and satisfactory performance. After installation, manual valves shall be opened and closed in the presence of the Engineer to show the valve operates smoothly from full open to full close and without leakage.

C. Butterfly Valves shall be tested to demonstrate their conformance with the specified operational capabilities and deficiencies shall be corrected or the device replaced or otherwise made acceptable to the Engineer. Each Butterfly valve and actuator shall be assembled, adjusted, and tested as a unit by the valve manufacturer. Valve shall meet the seat/shell test leakage rate requirements of API 598.

D. Certified Test Report shall include hydrostatic shell and seat factory testing. Test reports shall be kept on file by the manufacturer, for a period of three years from the date of manufacture.

3.05 CLEANING

A. Items including valve interiors shall be inspected before line closure, for the presence of debris. At the option of the Engineer, internal inspection of valve and appurtenances may be required any time that the likelihood of debris is a possibility. All valves shall be cleaned prior to installation, testing disinfection and final acceptance.

3.06 DISINFECTION

A. Disinfection of valves and appurtenances on all potable water lines and where otherwise noted, shall be as noted in Paragraph 1.02B above.

END OF SECTION

INVITATION FOR BID
CITY OF NEW BEDFORD
Department of Public Infrastructure

High Hill Reservoir Rehabilitation

New Bedford, Massachusetts

Bid No. 18450518

SPECIFICATION APPENDICES – VOLUME I
(PART OF CONTRACT DOCUMENTS)

MAY 2018

Jonathan F. Mitchell
Mayor

Dept. of Public Infrastructure
1105 Shawmut Avenue
New Bedford, MA 02746

APPENDIX A

Analytical Data Repots – Sampling of Sediment in High Hill Reservoir

PREMIER LABORATORY, INC.
A MICROBAC LABORATORY

61 Louisa Viens Drive
Dayville, CT 06241
Fax: 860-774-2689
Phone: 860-774-6814
Toll-Free: 800-334-0103

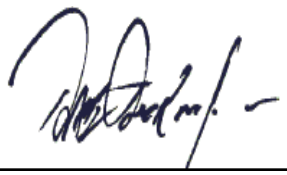
ANALYTICAL DATA REPORT

prepared for:

City of New Bedford DPI
1105 Shawmut Ave.
New Bedford, MA 02746
James Ricci

Report Number: E312D01
Revision 1
Project: High Hill Reservoir

Received Date: 12/13/2013
Report Date: 12/20/2013
Revision Date: 12/27/2013



Premier Laboratory, Inc
Authorized Signature

ACCREDITED IN ACCORDANCE WITH nelac

CT DPH #PH-0465 | EPA #CT00008 | MA DEP #M-CT008 | ME DHHS #CT0050 | NH ELAP #2020
NJ DEP #CT007 | NY ELAP #11549 | PA DEP #68-04413 | RI DOH #LAO00300 | VT DOH #VT11549

101-0000000402087

PREMIER LABORATORY, INC.
A MICROBAC LABORATORY

61 Louisa Viens Drive
Dayville, CT 06241
Fax: 860-774-2689
Phone: 860-774-6814
Toll-Free: 800-334-0103

Report No: E312D01
Client: City of New Bedford DPI
Project: High Hill Reservior

CASE NARRATIVE / METHOD CONFORMANCE SUMMARY

This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included, along with a copy of the chain of custody and any subcontracted analyses reports, if applicable, for the sample(s) in this report. Subcontractor results are identified by 'SUB' next to the analysis.

Premier Laboratory, Inc received five samples from City of New Bedford DPI on 12/13/2013. The samples were analyzed for the following list of analyses in accordance with MA DEP regulations unless otherwise indicated:

Mercury by 7471B in SW
7471B[7471B]
Solids: Total Suspended (TSS) by SM2540D
SM2540D
Trace Metals by 6010C in GW
6010C[3010A]
Solids: Total (TS) by SM2540B
SM2540B
Solids: Total Volatile Suspended (TVSS)
160.4
pH (Corrosivity) by 9040 in Liquid
9040/9045

The metal results are reported on a dry weight basis.

Non-Conformances:

Work Order:

None

Sample:

None

Analysis:

Sample 3, S-3, Total Solids, (TS) by SM2540B: The TSS result is greater than the TS result. This sample contained a large amount of settable solids which interfered with the small sample aliquots used in either of the analyses.

Sample 4, S-4, Total Solids, (TS) by SM2540B: The TSS result is greater than the TS result. This sample contained a large amount of settable solids which interfered with the small sample aliquots used in either of the analyses.

Premier Laboratory, Inc
Analytical Data Report

Report No: E312D01
Date Received: 12/13/2013 17:00

Customer: City of New Bedford DPI
Project: High Hill Reservior

Parameter	Result	DL	Units	Completed	By	Dilution
(1) S-1						
Date Collected: 12/12/2013 09:35	**Matrix: Solid**					
Solids, Suspended (TSS) by SM2540D	14000	500	mg/L	12/17/2013 16:32	M_B	
Solids, Total Volatile Suspended (TVSS) by 160.4	3600	500	mg/L	12/17/2013 16:32	NKB	
Total Solids, (TS) by SM2540B	15000	250	mg/L	12/17/2013 14:51	M_B	
pH, Corrosivity by SW-846 9040	9.6		pH Units	12/17/2013 14:48	NKB	
Trace Metals by 6010C						
Arsenic	11	5.0	mg/kg	12/18/2013 10:51	AJR	
Barium	1900	10	mg/kg	12/18/2013 10:51	AJR	
Cadmium	22	2.0	mg/kg	12/18/2013 10:51	AJR	
Chromium	58	2.0	mg/kg	12/18/2013 10:51	AJR	
Lead	180	2.0	mg/kg	12/18/2013 10:51	AJR	
Selenium	36	5.0	mg/kg	12/18/2013 10:51	AJR	
Silver	ND	2.0	mg/kg	12/18/2013 12:18	AJR	
Aluminum	39000	50	mg/kg	12/18/2013 10:51	AJR	
Iron	70000	50	mg/kg	12/18/2013 10:51	AJR	
Manganese	70000	20	mg/kg	12/18/2013 11:28	AJR	10
Mercury by SW-846 7471B in SW	ND	0.67	mg/kg	12/17/2013 10:53	CPT	
(2) S-2						
Date Collected: 12/12/2013 09:50	**Matrix: Solid**					
Solids, Suspended (TSS) by SM2540D	34000	500	mg/L	12/17/2013 16:32	M_B	
Solids, Total Volatile Suspended (TVSS) by 160.4	7000	500	mg/L	12/17/2013 16:32	NKB	
Total Solids, (TS) by SM2540B	35000	250	mg/L	12/17/2013 14:51	M_B	
pH, Corrosivity by SW-846 9040	9.9		pH Units	12/17/2013 14:48	NKB	
Trace Metals by 6010C						
Arsenic	5.8	4.2	mg/kg	12/18/2013 11:00	AJR	
Barium	1100	8.5	mg/kg	12/18/2013 11:00	AJR	
Cadmium	15	1.7	mg/kg	12/18/2013 11:00	AJR	
Chromium	39	1.7	mg/kg	12/18/2013 11:00	AJR	
Lead	260	1.7	mg/kg	12/18/2013 11:00	AJR	
Selenium	11	4.2	mg/kg	12/18/2013 11:00	AJR	
Silver	2.1	1.7	mg/kg	12/18/2013 12:21	AJR	
Aluminum	32000	42	mg/kg	12/18/2013 11:00	AJR	
Iron	90000	42	mg/kg	12/18/2013 11:00	AJR	
Manganese	29000	17	mg/kg	12/18/2013 11:31	AJR	10
Mercury by SW-846 7471B in SW	ND	0.56	mg/kg	12/17/2013 10:53	CPT	

Premier Laboratory, Inc
Analytical Data Report

Report No: E312D01
Date Received: 12/13/2013 17:00

Customer: City of New Bedford DPI
Project: High Hill Reservior

Parameter	Result	DL	Units	Completed	By	Dilution
(3) S-3						
Date Collected: 12/12/2013 10:07	**Matrix: Solid**					
Solids, Suspended (TSS) by SM2540D	41000	500	mg/L	12/17/2013 16:32	M_B	
Solids, Total Volatile Suspended (TVSS) by 160.4	5300	500	mg/L	12/17/2013 16:32	NKB	
Total Solids, (TS) by SM2540B	36000	250	mg/L	12/17/2013 14:51	M_B	
pH, Corrosivity by SW-846 9040	9.4		pH Units	12/17/2013 14:48	NKB	
Trace Metals by 6010C						
Arsenic	ND	8.6	mg/kg	12/18/2013 11:03	AJR	
Barium	2800	17	mg/kg	12/18/2013 11:03	AJR	
Cadmium	26	3.4	mg/kg	12/18/2013 11:03	AJR	
Chromium	38	3.4	mg/kg	12/18/2013 11:03	AJR	
Lead	100	3.4	mg/kg	12/18/2013 11:03	AJR	
Selenium	61	8.6	mg/kg	12/18/2013 11:03	AJR	
Silver	3.9	3.4	mg/kg	12/18/2013 12:24	AJR	
Aluminum	30000	86	mg/kg	12/18/2013 11:03	AJR	
Iron	64000	86	mg/kg	12/18/2013 11:03	AJR	
Manganese	110000	34	mg/kg	12/18/2013 11:34	AJR	10
Mercury by SW-846 7471B in SW	ND	1.1	mg/kg	12/17/2013 10:53	CPT	
(4) S-4						
Date Collected: 12/12/2013 11:53	**Matrix: Solid**					
Solids, Suspended (TSS) by SM2540D	2000	500	mg/L	12/17/2013 16:32	M_B	
Solids, Total Volatile Suspended (TVSS) by 160.4	1200	500	mg/L	12/17/2013 16:32	NKB	
Total Solids, (TS) by SM2540B	1500	250	mg/L	12/17/2013 14:51	M_B	
pH, Corrosivity by SW-846 9040	9.6		pH Units	12/17/2013 14:48	NKB	
Trace Metals by 6010C						
Arsenic	ND	62	mg/kg	12/18/2013 11:06	AJR	
Barium	2900	120	mg/kg	12/18/2013 11:06	AJR	
Cadmium	ND	25	mg/kg	12/18/2013 11:06	AJR	
Chromium	52	25	mg/kg	12/18/2013 11:06	AJR	
Lead	190	25	mg/kg	12/18/2013 11:25	AJR	
Selenium	ND	62	mg/kg	12/18/2013 11:06	AJR	
Silver	ND	25	mg/kg	12/18/2013 12:33	AJR	
Aluminum	51000	620	mg/kg	12/18/2013 11:06	AJR	
Iron	80000	620	mg/kg	12/18/2013 11:06	AJR	
Manganese	98000	25	mg/kg	12/18/2013 11:06	AJR	
Mercury by SW-846 7471B in SW	ND	8.3	mg/kg	12/17/2013 10:53	CPT	

Premier Laboratory, Inc
Analytical Data Report

Report No: E312D01
Date Received: 12/13/2013 17:00

Customer: City of New Bedford DPI
Project: High Hill Reservior

Parameter	Result	DL	Units	Completed	By	Dilution
(5) N-1						
Date Collected: 12/12/2013 12:03	**Matrix: Solid**					
Solids, Suspended (TSS) by SM2540D	1300	500	mg/L	12/17/2013 16:32	M_B	
Solids, Total Volatile Suspended (TVSS) by 160.4	760	500	mg/L	12/17/2013 16:32	NKB	
Total Solids, (TS) by SM2540B	2100	250	mg/L	12/17/2013 14:51	M_B	
pH, Corrosivity by SW-846 9040	9.7		pH Units	12/17/2013 14:48	NKB	
Trace Metals by 6010C						
Arsenic	ND	120	mg/kg	12/18/2013 11:09	AJR	
Barium	3400	250	mg/kg	12/18/2013 11:09	AJR	
Cadmium	ND	50	mg/kg	12/18/2013 11:09	AJR	
Chromium	66	50	mg/kg	12/18/2013 11:09	AJR	
Lead	150	50	mg/kg	12/18/2013 11:09	AJR	
Selenium	ND	120	mg/kg	12/18/2013 11:09	AJR	
Silver	ND	50	mg/kg	12/18/2013 12:36	AJR	
Aluminum	54000	1200	mg/kg	12/18/2013 11:09	AJR	
Iron	89000	1200	mg/kg	12/18/2013 11:09	AJR	
Manganese	120000	50	mg/kg	12/18/2013 11:09	AJR	
Mercury by SW-846 7471B in SW	ND	17	mg/kg	12/17/2013 10:53	CPT	

Premier Laboratory
61 Louisa Viens Drive
Dayville, CT 06241
Phone: (800) 334-0103
Fax: (860) 774-2689

Chain of Custody

WWW.PREMIERLABORATORY.COM

Lab WO#: E3126D01

Project Manager:

Copy of Report To

CUSTOMER: City of New Bedford DPI
ADDRESS: 1105 Shawmut Ave.
New Bedford, MA 02746
ATTENTION: Mr. James Ricci
E-MAIL: James.Ricci@NewBedford-ma.gov
PHONE: (508) 991-6164 Fax: (508) 961-3054

Billing Information

BILL TO: City of New Bedford DPI
ADDRESS: 1105 Shawmut Ave.
New Bedford, MA 02746
ATTENTION: Accounts Receivable
TELEPHONE: (508) 991-6152
PURCHASE ORDER # :

Project Information

Project: Sullivan's Ledge
Project Location:
Project Manager: Mr. James Ricci
IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL:
E-MAIL: James.Ricci@NewBedford-ma.gov
TELEPHONE: (508) 991-6164
FAX: (508) 961-3054

Sample Identification	Date Collected	Time Collected	Sample Type: COMPOSITE	Sample Type: GRAB	Sample Matrix (DW, WW, GW, Solid)	# OF BOTTLES	Analysis: RCRA 8	Analysis: Iron, Mg, Alum	Analysis: pH	Analysis: T.S.S.	Analysis: V.S.S.	Analysis: Total Solids	Preservatives: H2SO4	HCL	HNO3	NAOH	NON-PRES	MeOH
S-1 = SOUTH 1 Ref. M2	12-12-13	09:35	☐	☑	.	3	✓	✓	✓	✓	✓	✓					X	
S-2 = SOUTH 2 Ref. J8	12-12-13	09:50	☐	☑	.	3	✓	✓	✓	✓	✓	✓					X	
S-3 = SOUTH 3 Ref. M10	12-12-13	10:07	☐	☑	.	3	✓	✓	✓	✓	✓	✓					X	
S-4 = SOUTH 4 Ref. C18	12-12-13	11:53	☐	☑	.	3	✓	✓	✓	✓	✓	✓					X	
N-1 = NORTH-1 Ref C19	12-12-13	12:03	☐	☑	.	2	✓	✓	✓	✓	✓	✓					X	
			☐	☐	.													
			☐	☐	.													
			☐	☐	.													
			☐	☐	.													
			☐	☐	.													

CUSTODY TRANSFER		DATE	TIME
SAMPLER:	Tim .	12-12-13	13:00
RECEIVED:	Butch Butler	12-12-13	
RELINQUISHED:		12.13.13	1455
RECEIVED:	Thomas J. Mund	12.13.13	1455
RELINQUISHED:	Thomas J. Mund	12.13.13	1700
RECEIVED:	Michael Wood	12/13/13	1700

TURNAROUND (INDICATE IN CALENDAR DAYS):
____ FAX ____ HARD COPY ____ E-MAIL
EXPEDITED SERVICE MAY BE SUBJECT TO SURCHARGE

COMMENTS: Need 5 tests ~~for~~ From each Analyte.

CONDITIONS UPON RECEIPT: (CHECK ONE)
☑ COOLED ☐ AMBIENT 2.8 °C Upon Receipt at LAB

PREMIER LABORATORY
A MICROBAC LABORATORY

61 Louisa Viens Drive
Dayville, CT 06241
Fax: 860-774-2689
Phone: 860-774-6814
Toll-Free: 800-334-0103

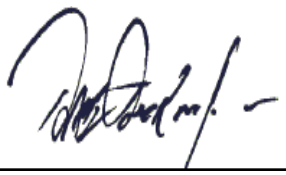
ANALYTICAL DATA REPORT

prepared for:

City of New Bedford DPI
1105 Shawmut Ave.
New Bedford, MA 02746
James Ricci

Report Number: E401918
Project: High Hill Reservoir

Received Date: 01/15/2014
Report Date: 01/21/2014



Premier Laboratory, Inc
Authorized Signature

ACCREDITED IN ACCORDANCE WITH nelac

CT DPH #PH-0465 | EPA #CT00008 | MA DEP #M-CT008 | ME DHHS #CT0050 | NH ELAP #2020
NJ DEP #CT007 | NY ELAP #11549 | PA DEP #68-04413 | RI DOH #LAO00300 | VT DOH #VT11549

101-000000404822

PREMIER LABORATORY
A MICROBAC LABORATORY

61 Louisa Viens Drive
Dayville, CT 06241
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Phone: 860-774-6814
Toll-Free: 800-334-0103

Report No: E401918
Client: City of New Bedford DPI
Project: High Hill Reservoir

CASE NARRATIVE / METHOD CONFORMANCE SUMMARY

This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included, along with a copy of the chain of custody and any subcontracted analyses reports, if applicable, for the sample(s) in this report. Subcontractor results are identified by 'SUB' next to the analysis.

Premier Laboratory, Inc received three samples from City of New Bedford DPI on 01/15/2014. The samples were analyzed for the following list of analyses in accordance with MA DEP regulations unless otherwise indicated:

Mercury by 7471B in SW
7471B[7471B]
Solids: Total Suspended (TSS) by SM2540D
SM2540D
Trace Metals by 6010C in SW
6010C[3050B]
Solids: Total (TS) by SM2540B
SM2540B
Solids: Total Volatile Suspended (TVSS)
160.4
pH (Corrosivity) by 9040 in Liquid
9040/9045

The metal results are reported on a dry weight basis.

Non-Conformances:

Work Order:

None

Sample:

None

Analysis:

Sample 1, N2 LOC 19E, Total Solids, (TS) by SM2540B: The TSS result is greater than the TS result. This sample contained a large amount of settable solids which interfered with the small sample aliquots used in either of the analyses.

Sample 2, N3 LOC D24, Total Solids, (TS) by SM2540B: The TSS result is greater than the TS result. This sample contained a large amount of settable solids which interfered with the small sample aliquots used in either of the analyses.

Sample 2, N3 LOC D24, Trace Metals by 6010C : The relative percent difference for arsenic was outside the expected range. The concentration in the sample was less than five times the reporting limit.

Sample 3, N4 LOC B26, Trace Metals by 6010C : The relative percent difference for selenium was outside the expected range. The concentration in the sample was less than five times the reporting limit.

Premier Laboratory, Inc
Analytical Data Report

Report No: E401918
Date Received: 01/15/2014 15:45

Customer: City of New Bedford DPI
Project: High Hill Reservoir

Parameter	Result	DL	Units	Completed	By	Dilution
(1) N2 LOC 19E						
Date Collected: 01/14/2014 08:55	**Matrix: Solid**					
Solids, Suspended (TSS) by SM2540D	6300	250	mg/L	01/17/2014 21:59	M_B	
Solids, Total Volatile Suspended (TVSS) by 160.4	1300	250	mg/L	01/17/2014 21:59	KWA	
Total Solids, (TS) by SM2540B	5700	500	mg/L	01/17/2014 14:01	KWA	
pH, Corrosivity by SW-846 9040	9.5		pH Units	01/17/2014 13:34	PJC	
Trace Metals by 6010C						
Arsenic	23	8.3	mg/kg	01/20/2014 11:31	AJR	
Barium	3900	17	mg/kg	01/20/2014 11:31	AJR	
Cadmium	31	3.3	mg/kg	01/20/2014 11:31	AJR	
Chromium	100	3.3	mg/kg	01/20/2014 11:31	AJR	
Lead	140	3.3	mg/kg	01/20/2014 11:31	AJR	
Selenium	84	8.3	mg/kg	01/20/2014 11:31	AJR	
Silver	ND	3.3	mg/kg	01/21/2014 13:50	AJR	
Aluminum	52000	83	mg/kg	01/20/2014 11:31	AJR	
Iron	94000	83	mg/kg	01/20/2014 11:31	AJR	
Manganese	140000	33	mg/kg	01/20/2014 13:05	AJR	10
Mercury by SW-846 7471B in SW	ND	0.033	mg/kg	01/17/2014 11:27	AJR	
(2) N3 LOC D24						
Date Collected: 01/14/2014 09:00	**Matrix: Solid**					
Solids, Suspended (TSS) by SM2540D	5800	250	mg/L	01/17/2014 21:59	M_B	
Solids, Total Volatile Suspended (TVSS) by 160.4	1400	250	mg/L	01/17/2014 21:59	KWA	
Total Solids, (TS) by SM2540B	4600	500	mg/L	01/17/2014 14:01	KWA	
pH, Corrosivity by SW-846 9040	9.6		pH Units	01/17/2014 13:34	PJC	
Trace Metals by 6010C						
Arsenic	11	6.9	mg/kg	01/20/2014 13:26	AJR	
Barium	2500	14	mg/kg	01/20/2014 11:55	AJR	
Cadmium	26	2.8	mg/kg	01/20/2014 11:55	AJR	
Chromium	51	2.8	mg/kg	01/20/2014 11:55	AJR	
Lead	230	2.8	mg/kg	01/20/2014 11:55	AJR	
Selenium	56	6.9	mg/kg	01/20/2014 11:55	AJR	
Silver	ND	2.8	mg/kg	01/20/2014 14:03	AJR	
Aluminum	42000	69	mg/kg	01/20/2014 11:55	AJR	
Iron	110000	69	mg/kg	01/20/2014 11:55	AJR	
Manganese	88000	28	mg/kg	01/20/2014 13:17	AJR	10
Mercury by SW-846 7471B in SW	ND	0.033	mg/kg	01/17/2014 11:27	AJR	

Premier Laboratory, Inc
Analytical Data Report

Report No: E401918
Date Received: 01/15/2014 15:45

Customer: City of New Bedford DPI
Project: High Hill Reservoir

Parameter	Result	DL	Units	Completed	By	Dilution
(3) N4 LOC B26						
Date Collected: 01/14/2014 09:15 **Matrix: Solid**						
Solids, Suspended (TSS) by SM2540D	2100	250	mg/L	01/17/2014 21:59	M_B	
Solids, Total Volatile Suspended (TVSS) by 160.4	1300	250	mg/L	01/17/2014 21:59	KWA	
Total Solids, (TS) by SM2540B	2200	500	mg/L	01/17/2014 14:01	KWA	
pH, Corrosivity by SW-846 9040	9.0		pH Units	01/17/2014 13:34	PJC	
Trace Metals by 6010C						
Arsenic	16	8.6	mg/kg	01/20/2014 11:58	AJR	
Barium	1500	17	mg/kg	01/20/2014 11:58	AJR	
Cadmium	16	3.4	mg/kg	01/20/2014 11:58	AJR	
Chromium	46	3.4	mg/kg	01/20/2014 11:58	AJR	
Lead	230	3.4	mg/kg	01/20/2014 11:58	AJR	
Selenium	22	8.6	mg/kg	01/20/2014 13:29	AJR	
Silver	ND	3.4	mg/kg	01/20/2014 14:06	AJR	
Aluminum	36000	86	mg/kg	01/20/2014 11:58	AJR	
Iron	99000	86	mg/kg	01/20/2014 11:58	AJR	
Manganese	43000	34	mg/kg	01/20/2014 13:20	AJR	10
Mercury by SW-846 7471B in SW	ND	0.033	mg/kg	01/17/2014 11:27	AJR	

Wet Chemistry Duplicate/Matrix Spike Summary

E401918

											LCS			
Sample	**Sample**	**Sample Duplicate**	**RPD**	**Spike Amount**	**LFM Result**	**% Recovery**	**LFMD Result**	**% Recovery**	**Recovery Limits**	**RPD**	**Result**	**% Recovery**	**Recovery Limits**	**Date**
TS														
				100							84	84	***80-120***	1/17/2014
E401765-1	376	392	4.2						***10***					
TSS														
				450							392	87	***80-120***	1/17/2014
E401898-1	136	138	1.5						***10***					

ICP Method Blank Summary

Workorder # :	E401918	Matrix: Solids	
Element	Result	DL	Run Date
	mg/Kg	mg/Kg	
Aluminum	ND	2.5	1/20/2014
Arsenic	ND	0.25	1/20/2014
Barium	ND	0.50	1/20/2014
Cadmium	ND	0.10	1/20/2014
Chromium	ND	0.10	1/20/2014
Iron	ND	2.5	1/20/2014
Lead	ND	0.10	1/20/2014
Silver	ND	0.10	1/20/2014
Manganese	ND	0.10	1/20/2014
Selenium	ND	0.25	1/20/2014

FORM 3

Soil 6010C Lab Control Sample

Lab Name: Premier Laboratory, Inc Date Analyzed 1/20/2014

Project No.: E401918 Project: High Hill Reservoir

Sample No.: LCS Location: New Bedford, MA

Lab File ID: 100411A.lim Batch No.: 114129

Compound	Spike Added (ppb)	Sample Concentration (ppb)	% Rec #	QC Limits Rec
Aluminum	10500	10240	98	80-120
Antimony	500.0	494.1	99	80-120
Arsenic	500.0	478.3	96	80-120
Barium	500.0	498.6	100	80-120
Beryllium	500.0	496.6	99	80-120
Boron	500.0	494.3	99	80-120
Cadmium	500.0	483.5	97	80-120
Calcium	10500	10520	100	80-120
Chromium	500.0	492.3	98	80-120
Cobalt	500.0	511.3	102	80-120
Copper	500.0	510.7	102	80-120
Iron	2500	2471	99	80-120
Lead	500.0	488.4	98	80-120
Magnesium	10500	10210	97	80-120
Manganese	500.0	491.6	98	80-120
Molybdenum	500.0	508.8	102	80-120
Nickel	500.0	499.7	100	80-120
Potassium	7000	6907	99	80-120
Selenium	500.0	485.6	97	80-120
Silver	500.0	497.9	100	80-120
Sodium	10500	9623	92	80-120
Thallium	500.0	469.1	94	80-120
Tin	250.0	245.7	98	80-120
Titanium	500.0	499.3	100	80-120
Vanadium	500.0	489.5	98	80-120
Zinc	500.0	489.2	98	80-120

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

FORM 3

SOIL MATRIX SPIKE RECOVERY

Lab Name: PREMIER LABORATORY, LLC Date Analyzed: 01/20/2014

Project No.: E401918 Project: High Hill Reservoir

Sample No.: E401918-01 LFM Location: NewBedford, MA

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC #	QC LIMITS REC
Aluminum	17500	52000	69500	100	75-125
Arsenic	833	22.7	761	89	75-125
Barium	833	3933	4633	84	75-125
Cadmium	833	30.7	778	90	75-125
Chromium	833	101	863	91	75-125
Iron	4167	94333	97967	87	75-125
Silver	833	0	796	96	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 7 outside limits

COMMENTS: _____
_____

FORM DUPLICATE

SOIL DUPLICATE RECOVERY

Lab Name: PREMIER LABORATORY, LLC Date Analyzed: 01/20/2014

Project No.: E401918 Project: High Hill Reservoir

Sample No.: E401918-01Dup Location: New Bedford, MA

COMPOUND	ORIGINAL CONCENTRATION (ppb)	DUPLICATE CONCENTRATION (ppb)	% RPD #	MAX % RPD
Aluminum	52000	52567	1.1	20
Arsenic	22.7	22.1	2.8	20
Barium	3933	3947	0.5	20
Cadmium	30.7	31.0	1.0	20
Chromium	101	96.8	4.2	20
Iron	94333	96200	1.8	20
Lead	145	158	8.1	20
Manganese	140000	140933	0.8	20
Selenium	83.7	90.9	8.3	20
Silver	0	0	0	20

Column to be used to flag RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 10 outside limits

COMMENTS: _____
_____

CV Method Blank Summary

Workorder # :	E401918	Matrix: Solids	
Element	Result	MDL	Run Date
	mg/Kg	mg/Kg	
Mercury CV	ND	0.001	1/17/2014

Fortified Sample/Blank Recovery Report

Date:	January 17, 2014
Time:	11:27
Method:	7471B
Analyst:	AJR

Matrix	
Solid	x

Run Log Reference Number
FIMS100-140117-1

Workorder #: E401918

Fortified Sample ID #: **E401918-1**

Units:mg/kg

Laboratory Fortified Matrix(LFM)/LFM Duplicate											LFB			
Element	Sample	Sample Duplicate	RPD	Spike Amount	LFM Result	% recovery	LFMD Result	% recovery	Recovery Limits	RPD	Spike Amount	Result	% recovery	Recovery Limits
Hg	0.00	0.00	0.0	16.7	17.30	103.6	17.30	103.6	75-125	0.0	0.5	0.51	102.4	80-120

Comments:

Premier Laboratory
61 Louisa Viens Drive
Dayville, CT 06241
Phone: (800) 334-0103
Fax: (860) 774-2689

Chain of Custody

WWW.PREMIERLABORATORY.COM

Lab WO#: E401918

Project Manager: _____

Copy of Report To

CUSTOMER: City of New Bedford DPI
ADDRESS: 1105 Shawmut Ave.
New Bedford, MA 02746
ATTENTION: Mr. James Ricci
E-MAIL: James.Ricci@NewBedford-ma.gov
PHONE: (508) 991-6164 Fax: (508) 961-3054

Billing Information

BILL TO: City of New Bedford DPI
ADDRESS: 1105 Shawmut Ave.
New Bedford, MA 02746
ATTENTION: Accounts Receivable
TELEPHONE: (508) 991-6152
PURCHASE ORDER # : _____

Project Information

Project: [redacted]ge High Hill
Project Location: 795 Faunce Corner Road.
Project Manager: Mr. James Ricci
IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL:
E-MAIL: James.Ricci@NewBedford-ma.gov
TELEPHONE: (508) 991-6164
FAX: (508) 961-3054

Sample Identification	Date Collected	Time Collected	Sample Type: COMPOSITE	Sample Type: GRAB	Sample Matrix (DW, WW, GW, Solid)	# OF BOTTLES	Analysis: RCRA 8	Analysis: IRON, Mg Alumin.	Analysis: PH.	Analysis: TSS	Analysis: VSS	Analysis: Total solids.	Preservatives: H2SO4	Preservatives: HCL	Preservatives: HNO3	Preservatives: NAOH	Preservatives: NON-PRES	Preservatives: MeOH
N2 LOC 19E	1/14/14	8:55AM	☐	☒	DW	3	X	X	X	X	X	X					X	
N3 LOC D24	1/14/14	9:00AM	☐	☒	DW	3	X	X	X	X	X	X					X	
N4 LOC B26	1/14/14	9:15AM	☐	☒	DW	3	X	X	X	X	X	X					X	
			☐	☐	.													
			☐	☐	.													
			☐	☐	.													
			☐	☐	.													
			☐	☐	.													
			☐	☐	.													
			☐	☐	.													
			☐	☐	.													

CUSTODY TRANSFER	DATE	TIME
SAMPLER: Tim Bentley	1/14/14	12:00
RECEIVED:		
RELINQUISHED: Tim Bentley	1/15/14	11:30
RECEIVED: [signature]	1/15/14	11:30
RELINQUISHED: [signature]	1/15/14	15:45
RECEIVED: Michael Noble	1/15/14	15:45

TURNAROUND (INDICATE IN CALENDAR DAYS):
_____ FAX _____ HARD COPY ____ E-MAIL
EXPEDITED SERVICE MAY BE SUBJECT TO SURCHARGE

COMMENTS: Need 5 Tests From each Analyte.

CONDITIONS UPON RECEIPT: (CHECK ONE)
☑ COOLED ☐ AMBIENT 5.9 °C Upon Receipt at LAB

APPENDIX B

Massachusetts Water Resource Authority (MWRA)

Standard Operating Procedures for Performing Construction Work on Pipelines – Dechloramination Information and Tables

Massachusetts Water Resource Authority

Standard Operating Procedures for Performing Construction Work on Pipelines

Dechloramination Information and Tables

Explanation of Dechlorination Table

This table is based on setting up a trailer with a 55 gallon drum of solution to dechlorinate water at a given flow rate (*GPM*).

If a 55 gallon drum is used it would be filled with 45 gallons of water. This would leave room a the top of the drum to avoid spillage. A solution should be mixed to maximize the capability of the solution over time. To maximize the solution the dosage should come as close to 10% as possible. A drum of 45 gallons of water has a weight of $45_{gal} \times 8.34_{lb/gal} = 375.3_{lb}$. To make a solution of 10% by weight 37.53_{lb} of chemicals need to be added. This is an odd weight for the crews to have to handle. If 25_{lb} of chemical are used (*half of a bag*) then the % solution is $25_{lb} / 375.3_{lb} \times 100 = 6.66\%$.

Using the table 3-6 on page 22 from the Chlorine Monitoring and Dechlorination Techniques Handbook, at a TRC of $.5_{mg/L}$ and 5% solution 331_{mL} of solution are needed to neutralize $10{,}000_{gal}$ of chlorinated water, at 10% of solution only 159_{mL} are needed. How much is needed at 6.66% solution.

$$\frac{(331_{mL} - 159_{mL})}{5\%} \times 1.66\% = 57.104_{mL}$$

$$331_{mL} - 57.104_{mL} = 273.896_{mL}$$

Use 274_{mL} of 6.6% solution to neutralize 10,000 gallons of chlorinated water.

At $50_{gal/min} = 3{,}000_{gal/hr}$ it will take 3.3hr for 10,000 gallons to be discharged.

To dispense $274_{mL} / 10{,}000_{gal}$ the dosage rate would be $274_{mL} / 3.3_{hr} = 83_{mL/hr}$

This can be converted to liters per hour or gallons per hour.

Dosage Setting for 6.66% Solution (mL/hr)					
Flow (gpm)	Total Residual Chlorine (TRC)(mg/L)				
	.5	1	1.5	2.0	2.5
50	83	165.5	248.4	331.2.	414
100	164.4	330.6	496.8	662.4	828
150	246.6	495.9	745.2	993.6	1242
200	328.8	661.2	993.6	1324.8	1656
250	410.8	826.5	1242	1656	2070
300	493.2	991.8	1490.4	1987.2	2484
350	575.4	1157.1	1738.8	2318.4	2898
400	657.6	1322.4	1987.2	2649.6	3312
450	739.8	1487.7	2235.6	2980.8	3726
500	822	1653	2484	3312	4140
1000	1644	3306	4968	6624	8280
2000	3288	6612	9936	13248	16560

There are $170{,}325_{mL}$ in 45_{gal}

Hours 45 Gallons Will Last					
Flow (gpm)	Total Residual Chlorine (TRC)(mg/L)				
	.5	1	1.5	2.0	2.5
2000	51	25	17	12	10

For a 10% solution using a 50lb bag of Anhydrous Sodium Thiosulphate

50lb is 10% of 500lb. $\rightarrow 500_{lb} \times 1_{gal} / 8.34_{lb} = 59.95_{gal}$

Use 60_{gal} of water to mix 50lb to get a 10% solution.

Dosage Setting for 10% Solution (mL/hr)					
Flow (gpm)	Total Residual Chlorine (TRC)(mg/L)				
	.5	1	1.5	2.0	2.5
50	47.7	95.4	143.1	190.8	238.5
100	95.4	190.8	286.2	381.6	477
150	143.1	286.2	429.3	572.4	715.5
200	190.8	381.6	572.4	763.2	954
250	238.5	477	715.5	954	1192.5
300	286.2	572.4	858.6	1144.8	1431
350	333.9	667.8	1001.7	1335.6	1669.5
400	381.6	763.2	1144.8	1526.4	1908
450	429.3	858.6	1287.9	1717.2	2146.5
500	477	954	1431	1908	2385
1000	954	1908	2862	3816	4770
2000	1908	3816	5724	7632	9540

$1_{gal} = 3.79_{L} \therefore 1_{gal} = 3{,}790_{mL} \quad \rightarrow 60_{gal} \times 3{,}790_{mL/gal} = 227{,}400 mL$

Hours 60 Gallons Will Last					
Flow (gpm)	Total Residual Chlorine (TRC)(mg/L)				
	.5	1	1.5	2.0	2.5
2000	119	59	39	29	23

Table 3-5
Volume of Sodium Thiosulphate Pentahydrate and Anhydrous Sodium Thiosulphate Required to Neutralize 10,000 Litres of Chlorinated Water

	mL of stock solution per 10,000 litre of chlorinated water					
	2%	5%	10%	*2%*	*5%*	*10%*
Trace Residual Chlorine (TRC) (mg/L)	Sodium Thiosulphate Pentahydrate			*Anhydrous Sodium Thiosulphate*		
0.1	88.8	28.4	12.0	*44.3*	*17.3*	*8.3*
0.3	266	85.2	36.1	*133*	*52.1*	*25.0*
0.5	444	142	60.2	*223*	*87*	*41.7*
0.7	621	199	84.2	*312*	*122*	*58.4*
0.9	800	256	108	*401*	*157*	*75.3*
1	888	284	120	*445*	*174*	*83.5*
5	4440	1420	602	*2.230*	*870*	*418*
50	44.950	14.380	6.090	*22.570*	*8.810*	*4.230*

Table 3-6
Volume of Sodium Thiosulphate Pentahydrate
and Anhydrous Sodium Thiosulphate
Required to Neutralize 10,000 Gallons of Chlorinated Water

	mL of stock solution per 10,000 gallons of chlorinated water					
	2%	5%	10%	2%	5%	10%
Trace Residual Chlorine (TRC) (mg/L)	Sodium Thiosulphate Pentahydrate			*Anhydrous Sodium Thiosulphate*		
0.1	338	108	46	*169*	*66.1*	*31.8*
0.3	1.010	324	137	*508*	*198.4*	*95.3*
0.5	1.690	540	229	*847*	*331*	*159*
0.7	2.360	756	320	*1.190*	*463*	*222*
0.9	3.040	972	412	*1.520*	*595*	*286*
1	3.380	1.080	458	*1.690*	*661*	*318*
5	16.880	5.400	2.290	*8.470*	*3.310*	*1.590*
50	168.750	54.000	22.880	*84.730*	*33.070*	*15.880*

DECHLORINATION TRAILER OPERATIONS AND MAINTENANCE MAN

(*Source:* Metropolitan Water District of Southern California, Water Quality Division, January 1987)

1.0 INTRODUCTION

This manual contains technical information on the operation and maintenance of equipment for the mobile dechlorination trailer. The primary purpose of this trailer is to eliminat any chlorine residual during discharge operations from District facilities and pipelines. The District is being required by the California Regional Water Quality Control Board to dechlorinate any chlorinated water discharged into storm drains or open channels. Other types of chemicals (: u as calcium hypochlorite, flocculants, coagulants, etc.) ca: fed from the trailer by changing the chemical used and modifying the chemical feed system. For treatment schemes other than dechlorination, the Process Coordination Sectio: should be consulted.

The following areas are covered in this manual: operationa procedures, maintenance procedures, troubleshooting, manufacturers and descriptions of equipment, parts lists, drawings, and equipment manuals.

2.0 EQUIPMENT AND CHEMICAL REQUIREMENTS

2.1 DECHLORINATION

2.1.1 DISCHARGE SITE(S)

Steps

1. Determine the number of discharge sites.
2. Determine the number of dechlorination trailers needed for the dewatering operation.
3. Reserve dechlorination trailers through the Water Quality Division, Process Coordination Section.

2.1.2 DISCHARGE QUANTITY, RATE, AND LENGTH

Steps

1. Determine the discharge quantity (100 gal, 5 acre-feet, etc.).

2. Determine the discharge rate (100 gpm, 10 cfs, etc.).

3. Calculate the discharge length (15 min, 4 hr, etc.).

Example

$$\text{Discharge time} = \frac{\text{Discharge quantity}}{\text{Discharge rate}}$$

$$= \frac{2 \text{ af} \times 43{,}560 \text{ cf/af}}{10 \text{ cfs} \times 3{,}600 \text{ sec/hr}}$$

= 3 hr (2 hr, 25 min)
(round up to nearest hour)

2.2 CHLORINATION

2.2.1 CHLORINATION SITE(S)

Steps

1. Determine the number of chlorination sites.

2. Determine the number of dechlorination trailers required for the treatment.

3. Reserve dechlorination trailers through Water Quality Division, Process Coordination Section.

2.2.2 CHLORINATION DOSAGE, FLOW RATE, AND TREATMENT TIME

Steps

1. Determine the dosage required (1.5 mg/L, etc.).

2. Determine the flow rate of the water to be treated (30 gpm, 450 cfs, etc.).

3. Determine the treatment time (15 min, 10 hr, etc.).

2.3 OTHER APPLICATIONS

Contact the Water Quality Division, Process Coordination Section, for assistance.

3.0 CHEMICAL MIXING

3.1 SODIUM THIOSULFATE

3.1.1 QUANTITY OF DRY SODIUM THIOSULFATE REQUIRED (lb per 100 gal of water)

Steps

1. Refer to Table 1A, 1B, 1C, or 1D.
2. Find the discharge rate (gpm or cfs)
3. Find the feed rate (gpm).
4. Determine amount of sodium thiosulfate required.

Example

Discharge rate = 10 cfs

Feed rate = 4.3 gpm

Solution strength = 10 lb/100 gal water

3.1.2 QUANTITY OF SODIUM THIOSULFATE SOLUTION REQUIRED

Steps

1. Determine the discharge length (min or hr).
2. Determine the feed rate (gpm).
3. Determine the solution strength (lb per 100 gal).

Example

$$\text{Solution quantity} = \text{Discharge length} \times \text{Feed rate}$$

= 3 hr x 4.3 gpm x 60 min/hr

= 774 gal

= 800 gal (round up to nearest 100)

$$\text{Lb of sodium thiosulfate} = \frac{\text{Solution quantity} \times \text{lb}}{100 \text{ gal}}$$

$$= \frac{800 \text{ gal} \times 10 \text{ lb}}{100 \text{ gal}}$$

$$= 80 \text{ lb}$$

3.2 CALCIUM HYPOCHLORITE

3.2.1 QUANTITY OF DRY CHLORINE REQUIRED (lb per 100 gal of water)

Steps

1. Refer to Table 2A, 2B, or 2C.
2. Find the flow rate (cfs).
3. Find the feed rate (gpm).
4. Determine the amount of the dry chlorine required.

Example

Flow rate = 70 cfs

Feed rate = 1.9 gpm

Solution strength = 32 lb/100 gal water

3.2.2 QUANTITY OF CHLORINE SOLUTION REQUIRED

Steps

1. Determine how long the chlorine feed will be required (min or hr).
2. Determine the feed rate (gpm).
3. Determine the solution strength (lb/100 gal).

Example

$$\text{Solution quantity} = \text{Feed time} \times \text{Feed rate}$$

$$= 6 \text{ hr} \times 1.9 \text{ gpm} \times 60 \text{ min/hr}$$

$$= 684 \text{ gal}$$

$$= 700 \text{ gal (round up to nearest 100)}$$

3.3 OTHER CHEMICALS

Contact the Water Quality Division, Process Coordination Section, for specific mixing instructions for other treatment applications.

4.0 OPERATIONAL PROCEDURES (see Figures 1, 2, and 3)

4.1 TRAILER

Steps

1. Lower trailer onto towing vehicle (2" hitch ball required) and lock. (Be sure to put bolt through hitch lock.)
2. Raise trailer jack all the way and attach trailer jack wheel to bracket located on trailer tongue.
3. Attach both safety chains to vehicle.
4. Hook up electrical plug and breakaway wire to towing vehicle.
5. Check lights, tires, and signals on both trailer and towing vehicle. (Trailer tires = 45 to 50 psi.)
6. Check gas tank, oil, and coolant on generator and gas can before leaving for the storage location.
7. Check hoses and PVC piping for deteriorati caused by sunlight, chemicals, etc.
8. Record generator meter reading before and after running.
9. Upon arrival at location, chock trailer wheels on each side, level trailer by usin trailer jack, and secure four trailer stabilizing supports.

NOTE: SECT. 4.2 AND 4.3 CAN BE STARTED AT THE SAME TIM

4.2 GENERATOR

Steps

1. Turn fuel valve ON and pull choke OUT.
2. Switch circuit breaker OFF.
3. Switch auto-throttle OFF (leave in this position).
4. Turn engine ignition key to START generator.
5. Once engine starts, push choke IN.
6. After generator has run for a minimum of 3 to 5 min, switch circuit breaker ON.
7. Additional information on the generator can be found in sections 10.1 and 11.0.

4.3 TANK

Steps

1. Disconnect one or two sections of hose from reel. Connect to a water source and to tank fill line.
2. Open valve A and source-water valve and begin filling tank.
3. Using sight gauge or totalizer meter, fill tank with required amount of water for treatment activity (min 100 gal to max 1000 gal).
4. Wearing eye protection and respirator, add appropriate amount of chemical, as previously determined.

4.4 MIXER

Steps

1. Unlock mixer shaft and adjust mixer to D-5 position by loosening Allen setscrew and then retightening.
2. Check to see that Allen setscrew on mixer mounting clamp is secure.
3. After tank has been filled with water and chemical and generator has warmed up, START mixer.

4. Switch mixer ON at control panel.

5. When chemical is totally dissolved, mixer OFF (normally requires 10 to 1 of mixing).

6. After completing treatment activity, mixer to vertical position and secure in holding bracket.

7. Additional information on the mixer can found in sections 10.4 and 11.0.

4.5 PUMP

Steps

1. Connect hose on reel to injection point attach to spray nozzle.

2. OPEN both lower pump inlet valve C (ful and upper bypass valve B (halfway) on before turning pump ON.

3. Check generator to make sure auto-swit in OFF position.

WARNING: DO NOT START PUMP WITH GENERATOR AUTO SWI "ON" POSITION, OR PUMP MOTOR DAMAGE WILL

4. START pump at control panel.

5. Adjust flowmeter to proper feed rate b opening valve D and partially closing b valve B.

NOTE: DO NOT CLOSE PUMP INLET VALVE C.

6. Maintain a back pressure between 40 an psi.

7. When solution level in tank reaches approximately 50 gal, pump will shut of automatically.

8. To restart pump, hold pump bypass toggl switch in ON position and START pump.

9. Continue pumping until a few inches of solution is left in tank or pressure ga indication drops.

WARNING: DO NOT LET PUMP RUN DRY, OR DAMAGE WILL RE

10. Monitor treated water to verify that appropriate results are occurring.

11. Flow can be adjusted by opening or closing discharge valve D and bypass valve B.

12. STOP pump after treatment activity has been completed.

13. Additional information on the pump can be found in sections 10.5 and 11.0.

4.6 LIGHTS

Steps

1. After generator has been warmed up for 3-5 min, lights may be switched ON at control panel.

2. Switch lights OFF when no longer required.

4.7 CLEANUP

Steps

1. After treatment activity has been completed, dispose of any remaining chemical solution into a sanitary sewer.

2. Rinse out tank and rinse off trailer. (Valve E may be used during this step.)

3. Top off generator fuel tank and 5-gal fuel storage can. (Fuel should be charged to trailer property number.)

4. After generator has cooled off, replace and secure cover.

5. Secure all equipment before leaving site.

5.0 MAINTENANCE PROCEDURES

5.1 TRAILER

1. Check tires for wear and proper inflation.

2. Check lights and wiring.

3. Check all bolts and nuts for tightness.

4. Check and repack wheel bearings every 12 months.

5. Additional information can be found in section 10.1.

5.2 GENERATOR

1. Check gas, oil, coolant, and battery water levels.

2. Additional information can be found in sections 10.2 and 11.0.

5.3 TANK

1. Check fittings for cracks or leaks.

2. Check tank for cracks or leaks.

3. Additional information can be found in section 10.3.

5.4 MIXER

1. Check all Allen setscrews for tightness.

2. Check to see that shaft is not bent.

3. Additional information can be found in sections 10.4 and 11.0.

5.5 PUMP

1. Check pump and fittings for leaks.

2. Additional information can be found in sections 10.5 and 11.0.

5.6 LIGHTS

1. Check bulbs for tightness.

2. Replace with 150-watt outdoor floodlight bulbs.

6.0 TROUBLESHOOTING

6.1 REFERENCE SOURCES

Refer to equipment manuals in section 11.0.

6.2 ASSISTANCE

Contact Water Quality Division, Process Coordination Section, for assistance.

7.0 TABLES

TABLE 1A

DECHLORINATION

FEED RATES FOR SODIUM THIOSULFATE SOLUTIONS

(assuming a chlorine residual of 1.5 mg/L)

DISCHARGE RATE (cfs)	SODIUM THIOSULFATE SOLUTION (lbs per 100 gallons of water) FEED RATE (gpm)				
	500 (a)	400	300	200	100
25	--	--	--	--	1.1
50	--	--	--	1.1	2.1
75	--	--	1.1	1.6	3.2
100	--	1.1	1.4	2.1	4.3
125	1.1	1.3	1.8	2.7	5.3
150	1.3	1.6	2.1	3.2	6.4
175	1.5	1.9	2.5	3.7	7.5
200	1.7	2.1	2.9	4.3	8.6
225	1.9	2.4	3.2	4.8	9.6
250	2.1	2.7	3.6	5.3	--
275	2.4	2.9	3.9	5.9	--
300	2.6	3.2	4.3	6.4	--
325	2.8	3.5	4.6	6.9	--
350	3.0	3.7	5.0	7.5	--
375	3.2	4.0	5.3	8.0	--
400	3.4	4.3	5.7	8.6	--
425	3.6	4.5	6.1	9.1	--
450	3.8	4.8	6.4	9.6	--
475	4.1	5.1	6.8	--	--
500	4.3	5.3	7.1	--	--

Note: (a) Sodium thiosulfate may not totally dissolve except under ideal conditions.

$$\text{Solution concentration (mg/L)} = 1200 \times \frac{\text{(lbs of sodium thiosulfate per 100 gallons)}}{}$$

$$\text{Feed rate (gpm)} = \frac{\text{discharge rate (cfs)} \times 450 \times 11.4}{\text{solution concentration (mg/L)} - 11.4}$$

TABLE 1B

DECHLORINATION

FEED RATES FOR SODIUM THIOSULFATE SOLUTIONS

(assuming a chlorine residual of 1.5 mg/L)

DISCHARGE RATE (cfs)	SODIUM THIOSULFATE SOLUTION (lbs per 100 gallons of water) FEED RATE (gpm)				
	500 (a)	400	300	200	
500	4.3	5.3	7.1	--	
525	4.5	5.6	7.5	--	
550	4.7	5.9	7.8	--	
575	4.9	6.1	8.2	--	
600	5.1	6.4	8.6	--	
625	5.3	6.7	8.9	--	
650	5.6	6.9	--	--	
675	5.8	7.2	--	--	
700	6.0	7.5	--	--	
725	6.2	7.7	--	--	
750	6.4	8.0	--	--	
775	6.6	8.3	--	--	
800	6.8	8.6	--	--	
825	7.1	8.8	--	--	
850	7.3	9.1	--	--	
875	7.5	9.4	--	--	
900	7.7	--	--	--	
925	7.9	--	--	--	
950	8.1	--	--	--	
975	8.3	--	--	--	
1000	8.6	--	--	--	

Note: (a) Sodium thiosulfate may not totally dissolve exce
ideal conditions.

Solution concentration (mg/L) = 1200 x (lbs of sodium thio
per 100 gallons)

$$\text{Feed rate (gpm)} = \frac{\text{discharge rate (cfs)} \times 450 \times 11.4}{\text{solution concentration (mg/L)} - 11.4}$$

TABLE 1C

DECHLORINATION

FEED RATES FOR SODIUM THIOSULFATE SOLUTIONS

(assuming a chlorine residual of 1.5 mg/L)

DISCHARGE RATE (cfs)	SODIUM THIOSULFATE SOLUTION (lbs per 100 gallons of water)				
	50	25	10	5	2
	FEED RATE (gpm)				
1	--	--	--	--	2.1
2	--	--	--	1.7	4.3
3	--	--	1.3	2.6	6.4
4	--	--	1.7	3.4	8.6
5	--	--	2.1	4.3	--
6	--	1.0	2.6	5.1	--
7	--	1.2	3.0	6.0	--
8	--	1.4	3.4	6.9	--
9	--	1.5	3.9	7.7	--
10	--	1.7	4.3	8.6	--
11	--	1.9	4.7	9.4	--
12	1.0	2.1	5.1	--	--
13	1.1	2.2	5.6	--	--
14	1.2	2.4	6.0	--	--
15	1.3	2.6	6.4	--	--
16	1.4	2.7	6.8	--	--
17	1.5	2.9	7.3	--	--
18	1.5	3.1	7.7	--	--
19	1.6	3.3	8.1	--	--
20	1.7	3.4	8.6	--	--
21	1.8	3.6	9.0	--	--
22	1.9	3.8	9.4	--	--
23	2.0	3.9	9.8	--	--
24	2.1	4.1	--	--	--
25	2.1	4.3	--	--	--

Solution concentration (mg/L) = 1200 x (lbs of sodium thiosulfate per 100 gallons)

$$\text{Feed rate (gpm)} = \frac{\text{discharge rate (cfs)} \times 450 \times 11.4}{\text{solution concentration (mg/L)} - 11.4}$$

TABLE 1D

DECHLORINATION

FEED RATES FOR SODIUM THIOSULFATE SOLUTIONS

(assuming a chlorine residual of 1.5 mg/L)

DISCHARGE RATE (gpm)	SODIUM THIOSULFATE SOLUTION (lbs per 100 gallons of water)		
	1.0	0.5	0.1 (a)
	FEED RATE (gpm)		
25	—	—	2.6
50	—	—	5.2
75	—	—	7.9
100	—	1.9	—
125	—	2.4	—
150	—	2.9	—
175	1.7	3.4	—
200	1.9	3.9	—
225	2.2	4.4	—
250	2.4	4.8	—
275	2.6	5.3	—
300	2.9	5.8	—
325	3.1	6.3	—
350	3.4	6.8	—
375	3.6	7.3	—
400	3.8	7.7	—
425	4.1	8.2	—
450	4.3	8.7	—
475	4.6	9.2	—
500	4.8	9.7	—
525	5.0	—	—
550	5.3	—	—

Note: (a) 0.1 lb = 1.6 oz or 45.3 g

Solution concentration (mg/L) = 1200 x (lbs of sodium sulfate per 1(

$$\text{Feed rate (gpm)} = \frac{\text{discharge rate (gpm)} \times 11.4}{\text{solution concentration (mg/L)} - 11.4}$$

TABLE 2A

CHLORINATION

FEED RATES FOR CALCIUM HYPOCHLORITE SOLUTIONS

(assuming a chlorine residual of 1.5 mg/L)

FLOW RATE (cfs)	CHLORINE SOLUTION (lbs per 100 gallons of water)			
	128	64	32	3.2
	FEED RATE (gpm)			
1	--	--	--	--
2	--	--	--	--
3	--	--	--	--
4	--	--	--	1.1
5	--	--	--	1.4
6	--	--	--	1.6
7	--	--	--	1.9
8	--	--	--	2.2
9	--	--	--	2.4
10	--	--	--	2.7
20	--	--	--	5.4
30	--	--	--	8.1
40	--	--	1.1	--
50	--	--	1.4	--
60	--	--	1.6	--
70	--	--	1.9	--
80	--	1.1	2.2	--
90	--	1.2	2.4	--
100	--	1.4	2.7	--
150	1.0	2.0	4.1	--
200	1.4	2.7	5.4	--
250	1.7	3.4	6.8	--
300	2.0	4.1	8.1	--
350	2.4	4.7	9.5	--
400	2.7	5.4	--	--
450	3.0	6.1	--	--
500	3.4	6.8	--	--

$$\text{Solution concentration} = \frac{(\text{lbs. of calcium hypochlorite per 100 gal}) \times 0.65}{834}$$

$$\text{Feed rate (gpm)} = \frac{\text{flow rate (cfs)} \times 450 \times \text{dosage (mg/L)}}{\text{solution concentration} \times 1{,}000{,}000}$$

TABLE 2B

CHLORINATION

FEED RATES FOR CALCIUM HYPOCHLORITE SOLUTIONS

(assuming a chlorine residual of 1.5 mg/L)

FLOW RATE (cfs)	CHLORINE SOLUTION (lbs per 100 gallons of water)			
	128	64	32	3.2
	FEED RATE (gpm)			
500	3.4	6.8	—	
550	3.7	7.4	—	
600	4.1	8.1	—	
650	4.4	8.8	—	
700	4.7	9.5	—	
750	5.1	—	—	
800	5.4	—	—	
850	5.8	—	—	
900	6.1	—	—	
950	6.4	—	—	
1000	6.8	—	—	
1050	7.1	—	—	
1100	7.4	—	—	
1150	7.8	—	—	
1200	8.1	—	—	
1250	8.5	—	—	
1300	8.8	—	—	
1350	9.1	—	—	
1400	9.5	—	—	
1450	9.8	—	—	
1500	10.1	—	—	

$$\text{Solution concentration} = \frac{(\text{lbs. of calcium hypochlorite per 100 gal}) \times}{834}$$

$$\text{Feed rate (gpm)} = \frac{\text{flow rate (cfs)} \times 450 \times \text{dosage (m}}{\text{solution concentration} \times 1{,}000{,}00}$$

TABLE 2C

CHLORINATION

FEED RATES FOR CALCIUM HYPOCHLORITE SOLUTIONS

(assuming a chlorine residual of 1.5 mg/L)

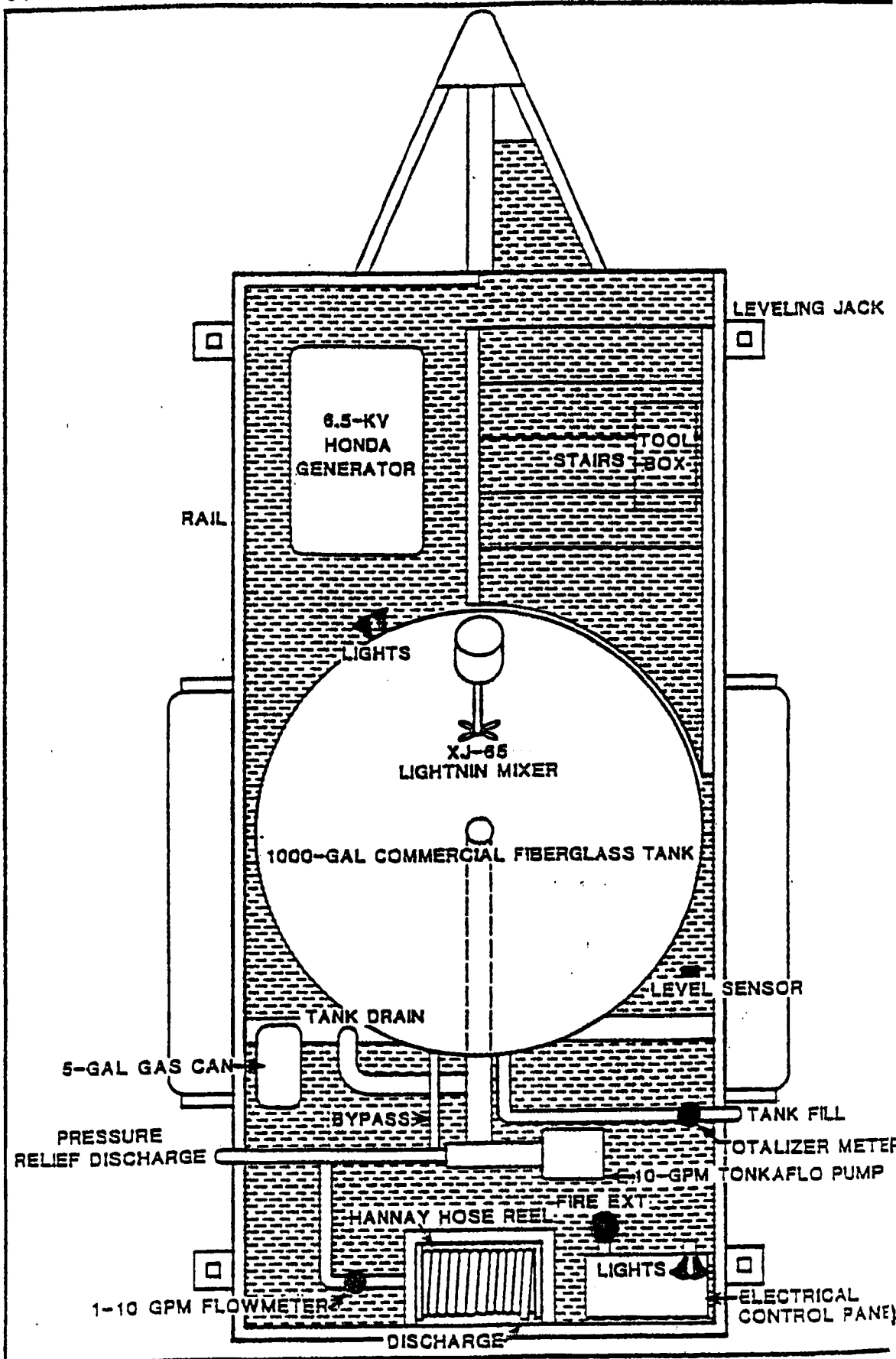
FLOW RATE (gpm)	CHLORINE SOLUTION (lbs per 100 gallons of water)			
	1.0	0.1 (a)	0.05 (b)	---
	FEED RATE (gpm)			
30	--	--	1.2	--
40	--	--	1.5	--
50	--	1.0	1.9	--
60	--	1.2	2.3	--
70	--	1.3	2.7	--
80	--	1.5	3.1	--
90	--	1.7	3.5	--
100	--	1.9	3.8	--
150	--	2.9	5.8	--
200	--	3.8	7.7	--
250	--	4.8	9.6	--
300	--	5.8	--	--
350	--	6.7	--	--
400	--	7.7	--	--
450	--	8.7	--	--
500	1.0	9.6	--	--
600	1.2	3.1	--	--
700	1.3	3.5	--	--
800	1.5	3.8	--	--
900	1.7	5.8	--	--
1000	1.9	7.7	--	--
1100	2.1	9.6	--	--
1200	2.3	--	--	--
1300	2.5	--	--	--
1400	2.7	--	--	--
1500	2.9	--	--	--
1600	3.1	--	--	--

Notes: (a) 0.1 lb = 1.6 oz or 45.3 g
(b) 0.05 lb = 0.8 oz or 22.6 g

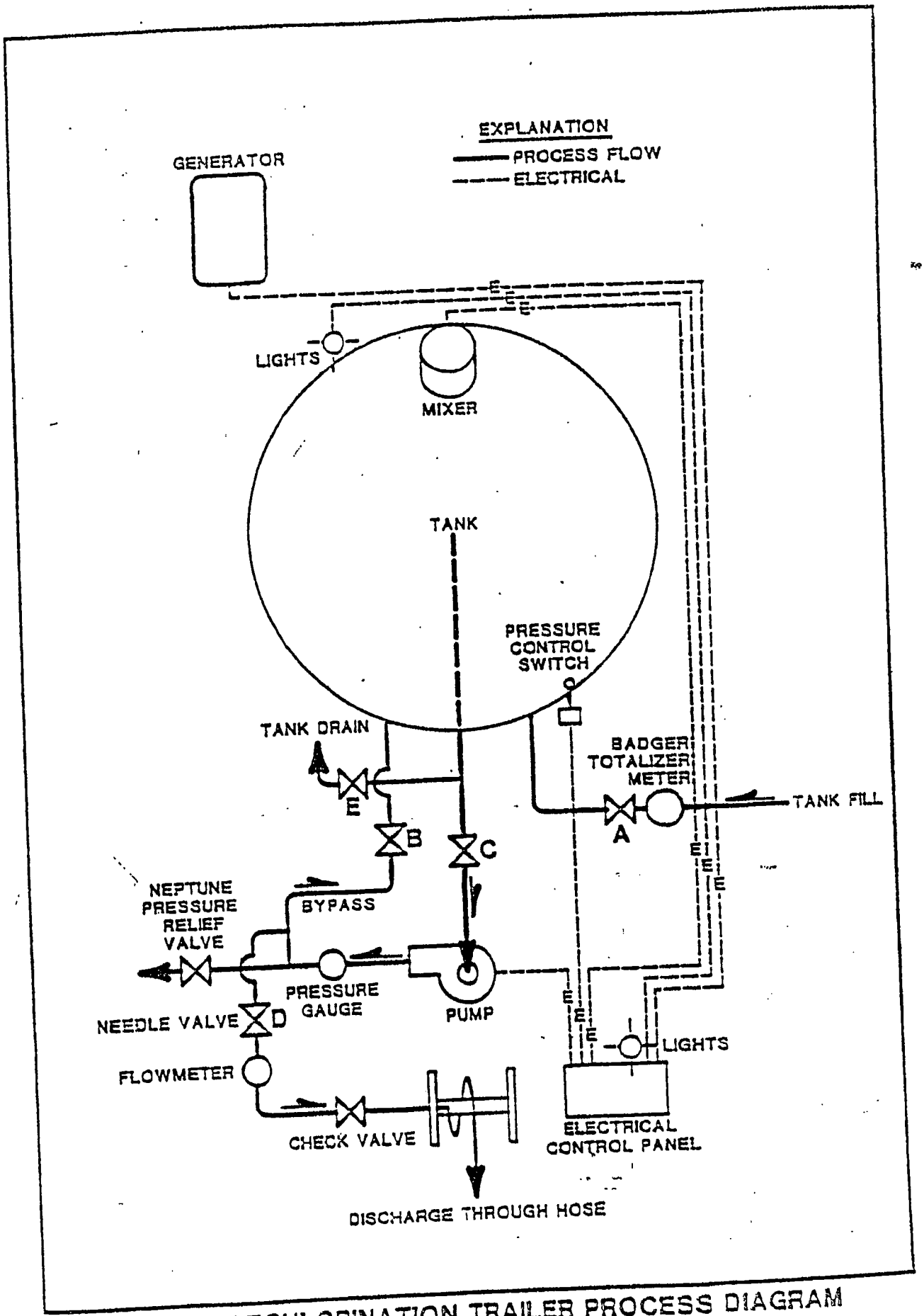
$$\text{Solution concentration} = \frac{(\text{lbs. of calcium hypochlorite per 100 gal}) \times 0.65}{834}$$

$$\text{Feed rate (gpm)} = \frac{\text{flow rate (cfs)} \times \text{dosage (mg/L)}}{\text{solution concentration} \times 1{,}000{,}000}$$

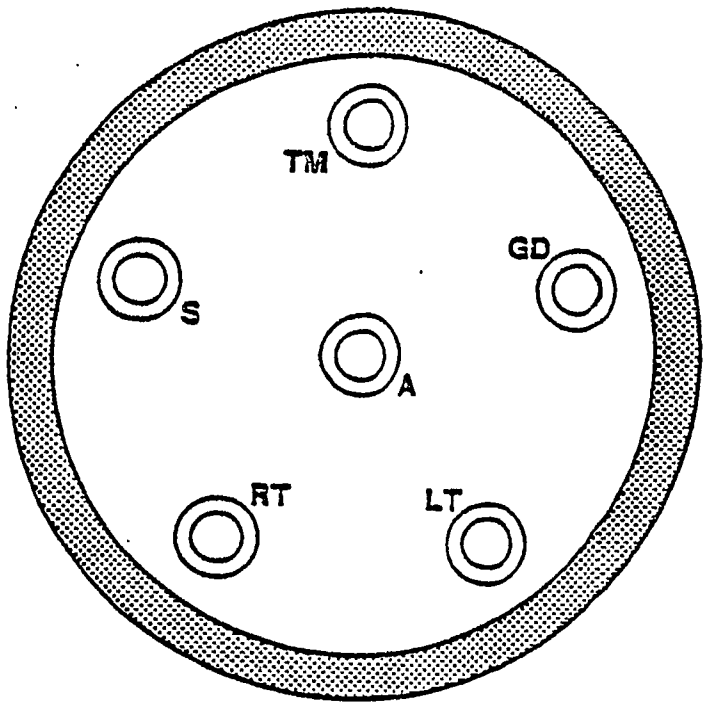
8.0 FIGURES



DECHLORINATION TRAILER
FIGURE 1



MOBILE DECHLORINATION TRAILER PROCESS DIAGRAM
FIGURE 2



NAPA ECHLIN 6-POLE TRAILER CONNECTOR SOCKET
TC 6206

EXPLANATION

A	ELECTRIC BRAKES
GD	GROUND RETURN TO TOWING VEHICLE
LT	LEFT-HAND TURN SIGNAL, BRAKE SIGNAL, AND HAZARD SIC
RT	RIGHT-HAND TURN SIGNAL, BRAKE SIGNAL, AND HAZARD S
S	BLANK
TM	CLEARANCE, SIDE MARKER, AND IDENTIFICATION LAMPS

CENTRAL STORES CATALOG NO. 04-247-41235

TECHNICAL ASSISTANCE:
EUGENE MAGES, EQUIPMENT MAINTENANCE, EXT. 5097

DECHLORINATION TRAILER ELECTRICAL CONNECTION SO

FIGURE 3

9.0 TOOLS AND SUPPLIES

Central Stores Stock No.	Item Description	Quantity
14-127-63531	Plastic mayonnaise can, 3 gal	4 ea
16-057-55000	Sodium thiosulfate	200 lb
17-121-60000	Calcium hyprochlorite	200 lb
18-745-10920	Oil, 30 wt	1 qt
45-043-63660	Neoprene gloves	2 pr
45-132-21800	Safety goggles	2 pr
45-755-28800	Disposable respirator	10 ea
49-193-70313	Aluminum level, 24-inch	1 ea
49-336-71060	Standard screwdriver, 6-inch	1 ea
49-564-29224	Combination wrench, 3/4-inch	1 ea
79-205-15031	Floodlight, 150 watt	2 ea
98-034-41000	Hose fitting, mender, 3/4-inch	1 ea
98-934-50806	Hose coupling, 1" MPT x 3/4" MHT	1 ea
98-934-60806	Hose reducer, 1" FPT x 3/4" MHT	1 ea
98-934-83360	Hose washers, 3/4-inch	1 pkg
98-936-30120	Adjustable hose nozzle, 3/4-inch	1 ea
N/A	Adjustable hydrant wrench	1 ea
N/A	Fire hydrant connection, 2 1/2" NSFH x 3/4" HT	1 ea
N/A	Adjustable nozzle, 3/4" HT	1 ea

10.0 MANUFACTURERS/SUPPLIERS AND DESCRIPTIONS OF EQUIPMENT

10.1 TRAILER

U-Save Trailers
3933 Mission Blvd.
Pomona, CA 91766
(714)629-4762

Size: 192"L x 78"W
Weight: 3500 lb
Type: tandem axle
Brakes: electric w/breakaway switch
Tire size: H73-15 T
Ball size: 2"

10.2 GENERATOR

American Honda
(Honda of Pomona)
1485 E. Holt Ave.
Pomona, CA 91766
(714)623-6451

Model ES6500/GX360K
6500 watts maximum
4.4 gal unleaded
1.5 qt oil 10W-40SA
4 hr operation time
2.1 qt coolant

10.3 TANK

Commercial Fiberglass
1854 No. Central
Comption, CA 90222
(213)637-7173

Size: 72"dia x 82"H
Cap: 1000 gal maximum
Type: Fiberglass filament-wound

10.4 MIXER

Lightning Mixers
(Duncan Engineering)
18102 Skypark South
Irvine, CA 91723
(213)944-6256

Model XJ-65
115/220 volts single phase
Shaft 66"L x 3/4"di
A-210 propeller

10.5 PUMP

Tonka-Flo Pumps
(Huntley Engineering Sales)
10911 E. Thienes St.
South El Monte, CA 91733
(213)622-3302

Model 1809-10120
Multi-stage centrifugal
Baldor motor
2 hp single-phase
115/230 volts
Rated 10 gpm @ 100 psi

10.6 PRESSURE RELIEF VALVE

Neptune Chemical Pump Co. (Huntley Engineering Sales) 10911 E. Thienes St. South El Monte, CA 91733 (213)622-3302	Model RV-316-1 Pressure range 30-150 psi, set at 90 psi Capacity 10.5 gpm

10.7 TOTALIZER METER (INFLUENT)

Badger Meter Inc. (Selco Sales Engineering) 7580 Stage Road Buena Park, CA 90621 (213)921-0681	Model 25SC-ER-C Recordall Meter size 3/4" Flow limits 0.5-30 gpm

10.8 FLOWMETER (EFFLUENT)

Fischer & Porter 3156 E. La Palma, Unit C Anaheim, CA 92806 (213)925-0497	Series 10A2235 Ratosight Direct reading 1-10 gpm 1" NPT connection

10.9 HOSE REEL

Hannay Hose Reels (Target Chemical Co.) 17710 Studebaker Rd. Cerritos, CA 09701 (213)773-8912	Model 1526-17-18 1/2" NPT connections Minimum 100' of 3/4" hose

10.10 PRESSURE CONTROL SWITCH

United Electric Controls (Coast Electrical Supply) Montclair, CA 91763 (714)624-9061	Type J6--basic control Model 136 Stock No. 9548 Adjustable switch differential

Resources for this Handbook include the following:

1. Chlorine Monitoring and Dechlorination Techniques Handbook
2. Generic Emergency Response Plan for Chlorinated Water

The above sources were prepared for the Greater Vancouver Regional District Water Treatment Program by ENKON Environmental Limited of Victoria B.C

3. AWWA - Optimizing Chloramine Treatment
4. Sources from the Metropolitan District of Southern California

APPENDIX C

Bid Form (2 copies)

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BID FORM
TO
CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

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 Contract Documents as prepared by CDM Smith, 260 West Exchange Street, Suite 300, Providence, Rhode Island 02903 and dated May 2018 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 done, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Bid Form is a part.

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 approved is required, the time period for holding bids is 30 days, Saturdays, Sundays and holidays excluded after Federal approval.

The Bid Security accompanying this Bid shall be in the amount of five percent of the Bid.

If a Notice of Award accompanied by at least six unsigned copies of the Agreement and all other applicable Contract Documents is delivered to the undersigned within thirty days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids, the undersigned will within five days, excluding Saturdays, Sundays, and legal holidays, after the date of receipt of such notification, execute and return all copies of the Agreement and all other applicable Contract Documents to Owner. The premiums for all Bonds required shall be paid by Contractor and shall be included in the Contract Price. The undersigned Bidder further agrees that the Bid Security accompanying this Bid shall become the property of Owner if the Bidder fails to execute the Agreement as stated above.

The Bid Security shall be sealed in a separate envelope from the Bid and then attached to the envelope containing the Bid.

The undersigned hereby agrees that the Contract Time shall commence twenty days following the Effective Date of the Agreement and to fully complete the Work within 1,095 Calendar Days and in accordance with the terms as stated in the Agreement. The undersigned further agrees to pay OWNER, as liquidated damages, $2,000 per day for each calendar day beyond the Contract Time Limit or extension thereof that the Work remains incomplete, in accordance with the terms of the Agreement.

The undersigned acknowledges receipt of addenda numbered:

_____

In accordance with the above understanding, the undersigned proposes to perform the Work, furnish all materials and complete the Work in its entirety in the manner and under the conditions required at the prices listed as follows:

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
1	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and install new valves for Valve Work Area No. A on Drawing C-3 (Englarged Plan "A" on Drawing C-4).		
		_____ Lump Sum	N/A	$ _____
2	1 Lump Sum	Furnish and install all work (excluding line stops but including all materials, tools, equipment, labor and all other incidentals and required work) to construct and remove and replace valves for Valve Work Area No. B on Drawing C-3 (Englarged Plan "B" on Drawing C-4).		
		_____ Lump Sum	N/A	$ _____
3	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and install the new 24-inch water main from the existing 36-inch High Hill Reservoir inlet bypass main to the existing 24-inch water main downstream of the reservoir (Drawing C-3) and to remove and replace valves for Valve Work Area No. C on Drawing C-3 (Englarged Plan "C" on Drawing C-5).		
		_____ Lump Sum	N/A	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
4	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and remove and replace valves for Valve Work Area No. D on Drawing C-3 (Englarged Plan "D" on Drawing C-5).		
		_____ Lump Sum	N/A	$ _____
5	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and remove and replace valves for Valve Work Area No. E on Drawing C-3 (Englarged Plan "E" on Drawing C-5).		
		_____ Lump Sum	N/A	$ _____
6	2 each	Furnish and install 36-inch line stops with concrete thrust blocks as shown on the Drawings to facilitate installation of new work and remove line stops at completion of new work.		
		_____ each	$ _____	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
7A	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work but exluding restoration of the Inlet Structure Floor) to construct all work and replace all valves for the High Hill Reservoir Inlet Structure Modifications as shown on Drawing M-1.		
		_____ Lump Sum	N/A	$ _____
7B	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to remove and replace existing floor of the High Hill Reservoir Inlet Structure.		
		Seventy Thousand Dollars Lump Sum	N/A	$70,000.00
8	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct all work, replace all valves, and replace the existing floor for the High Hill Reservoir Outlet Structure Modifications as shown on Drawings M-2, S-5 thru S-7.		
		_____ Lump Sum	N/A	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
9	1 Lump Sum	Dewater and drain High Hill Reservoir (both north and south basins and the outlet structure) to facilitate construction of new work, including all materials, tools, equipment, labor and all other incidentals and required work; all required dechloramination/dechlorination; and all work required for dewatering in compliance with all federal, state and local regulations, laws, ordinances, and requirements.		
		_____ Lump Sum	N/A	$ _____
10	1 Lump Sum	Clean High Hill Reservoir (north and south basins and inlet and outlet structures) as specified and as shown on the Drawings.		
		_____ Lump Sum	N/A	$ _____
11	4,000 cubic yards	Remove and dispose of accumulated sediment on the floor of High Hill Reservoir as specified and in accordance with all federal, state and local regulations, laws, ordinances, and requirements.		
		_____ Lump Sum	N/A	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
12	1 Lump Sum	Make all structural repairs and modifications to High Hill Reservoir as shown on Drawings S-1, S-2, S-3, and S-4 (Detail L) including all materials, tools, equipment, labor and all other incidentals and required work to complete all repairs and modifications as required (excluding repairs noted with unit price items).		
		_____ Lump Sum	N/A	$ _____
13A	100 square feet	Repair cracked/spalled/void/unsound concrete at reservoir wall up to 6-inches deep, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per square foot	$ _____	$ _____
13B	275 linear feet	Epoxy adhesive injection repair of concrete cracks in columns, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$ _____	$ _____

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
13C	40 square feet	Repair cracked/spalled/void/unsound concrete in columns up to 2-inches deep, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per square foot	$_____	$_____
13D	80 linear feet	Repair of exposed rebar at columns, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$_____	$_____
13E	30,000 linear feet	Repair cracks in concrete floor and wall liner using injection gel epoxy, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$_____	$_____
13F	60,000 linear feet	Remove and replace sealant at construction joints, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$_____	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
13G	2,000 linear feet	Replacement of the eave closure around the roof edge of High Hill Reservoir to completely seal the reservoir where it meets the side wall.		
		_____ per linear foot	$_____	$_____
14	1 Lump Sum	Disinfect High Hill Reservoir (both north and south basins and the inlet and outlet structures) in accordance with AWWA C652 to reactivate High Hill Reservoir following construction work.		
		_____ Lump Sum	N/A	$_____
15A	50 cubic yards	Rock excavation		
		_____ per cubic yard	$_____	$_____
15B	50 cubic yards	Boulder excavation		
		_____ per cubic yard	$_____	$_____
15C	75 cubic yards	Excavating below normal grade including gravel refill		
		_____ per cubic yard	$_____	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
16A	150 cubic yards	Controlled Density Fill (CDF)/Controlled Low Strength Material (CLSM) for miscellaneous purposes as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
16B	150 cubic yards	Screened gravel for miscellaneous purposes as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
17	150 cubic yards	Miscellaneous concrete for miscellaneous purposes as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
18	150 cubic yards	Test pits as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
19	1 Lump Sum	Miscellaneous work and clean-up		
		_____ Lump Sum	N/A	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
20	1 Lump Sum	Mobilization (no more than 5% of the Base Bid Price)		
		_____ Lump Sum	N/A	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

SUBTOTAL PAGE 00300-2:	$ _____
SUBTOTAL PAGE 00300-3:	$ _____
SUBTOTAL PAGE 00300-4:	$ _____
SUBTOTAL PAGE 00300-5:	$ _____
SUBTOTAL PAGE 00300-6:	$ _____
SUBTOTAL PAGE 00300-7:	$ _____
SUBTOTAL PAGE 00300-8:	$ _____
SUBTOTAL PAGE 00300-9:	$ _____
SUBTOTAL PAGE 00300-10:	$ _____
TOTAL BASE BID PRICE	**$** _____

The undersigned agrees that extra work, if any, will be performed in accordance with Article 10 of the Conditions of the Contract and will be paid for in accordance with Article 11 of the Conditions of the Contract.

The bidding and award of this Contract will be in accordance with M.G.L. Chapter 30, Section 39M.

The undersigned must furnish a 100 percent Performance Bond and a 100 percent Payment Bond with a surety company acceptable to Owner.

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, bailing, shoring, removal, overhead, profit, insurance and incidentals required to complete the Work.

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. In the case of a corporation, see Article 8.3 of the Instructions to Bidders, in the case of a limited liability company (LLC), see Article 8.4 of the Instructions to Bidders, in the case of a partnership, see Article 8.5 of the Instructions to Bidders.)

_____

_____

_____

The attached forms must be completed and submitted as part of the Bid Proposal:

DIESEL RETROFIT PROGRAM (MDRP) FORM (DEP-DMS-P&S-21)
SCHEDULE OF PARTICIPATION FOR SRF CONSTRUCTION (EEO-DEP-190C)
LETTER OF INTENT FOR SRF CONSTRUCTION (EEO-DEP-191C)
DBE CERTIFICATION OF UNITED STATES CITIZENSHIP
DBE SUBCONTRACTOR PARTICIPATION FORM
CITY OF NEW BEDFORD NON-COLLUSION AND TAX COMPLIANCE FORM
CITY OF NEW BEDFORD VOTE OF CORPORATION
OSHA CERTIFICATION REQUIREMENT
CONTRACTOR CERTIFICATION

Pursuant to M.G.L. Ch. 62C, sec. 49A, 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.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

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The undersigned bidder hereby certifies he/she will comply with the specific affirmative action steps contained in the Equal Employment Opportunity/Affirmative Action (EEO/AA) provisions of this Contract, including compliance with the Disadvantaged Business Enterprise provisions as required under these contract provisions. The attached DBE Forms must be completed and submitted as part of the Bid Proposal. 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.

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.epls.gov are not eligible for award of any contracts funded by the Massachusetts State Revolving Fund.

The undersigned hereby certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the word "person" shall mean any natural person, joint venture, partnership, corporation, limited liability company, or other business or legal entity. 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.

_____
Social Security Number
or Federal Identification
Number

_____
Signature of Individual or
Corporate Name

By: _____
Corporate Officer (if applicable)

Notice of acceptance should be mailed, faxed, or delivered to the following:

_____
(Name)

By: _____
(Title)

_____
(Business Address)

_____
(City and State)

Date:_____

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

APPENDIX B
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 calendars days from the date such Diesel Construction Equipment is brought on site;

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

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.

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 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 DEP'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)**

APPENDIX B (cont.)

DIESEL RETROFIT PROGRAM CONTRACTOR CERTIFICATION

Each Contractor and its Subcontractor(s) must sign and submit this form to DEP DMS project engineer, 5th Floor, MassDEP, One Winter Street, Boston, MA 02108 and the Municipality within 10 days after the Contractor is notified that it is awarded the Contract.

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.

APPENDIX B (cont.)

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: _____

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 corporation
[ ] Other (explain): _____
[ ] A partnership
[ ] A joint venture with: _____

° 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 ADDRESS:	(Authorized Original Signature) Date 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

CITY OF NEW BEDFORD
MASSACHUSETTS

NON-COLLUSION AND TAX COMPLIANCE FORM

CERTIFICATE OF NON-COLLUSION

The undersigned certified under penalties of perjury that this bid has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity or group of individuals.

_____
Signature of individual submitting bid

_____
Name of business/organization

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, §49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes reporting of employees and contractor, and withholding and remitting child support.

_____
Signature of person submitting bid

_____
Name of business

CITY OF NEW BEDFORD
MASSACHUSETTS

VOTE OF CORPORATION AUTHORIZING
EXECUTION OF CORPORATE AGREEMENTS

At a meeting of the Board of Directors of _____duly called and held on _____, 20_____ at which a quorum was present and acting throughout, the following vote was duly adopted.

VOTED: That _____, the_____ of the corporation, be and hereby is authorized to affix the Corporate Seal, sign and deliver in the name and behalf of the corporation contract documents with the City of New Bedford, the above mentioned documents to include but not be limited to Bids, Proposals, Deeds, Purchase and Sales Agreements, Agreements, Contracts, Leases, Licenses, Releases and Indemnifications; and also to seal and execute, as above, surety company bonds to secure bids and proposals and the performance of said contract and payment for labor and materials, all in such form and on such terms and conditions as he/she, by the execution thereof, shall deem proper. A true copy

ATTEST:

_____
Name (printed)

_____ (Affix Corporate Seal)
Signature

_____ _____
Title Date

OSHA CERTIFICATION REQUIREMENT

Effective **July 1, 2006**, all employees of a contractor to be employed on **public building and public works** worksites must have successfully completed at least a 10 hour course in construction safety and health approved by OSHA at the time the employee begins work.

I, _____, as _____, of the
(Print Name) (Position with the entity submitting bid)

joint venture/corporation/partnership or other legal entity submitting this bid for a public works project falling under §39M of Chapter 30 of the Massachusetts General Laws and Chapter 149 of the same, do hereby certify that any and all employees found on my worksite for this project have, or will have by the start of their work on the project, successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that was at least 10 hours in duration.

A copy of the OSHA completion cards for each employee must be submitted to the City of New Bedford before work on this project is to begin and must be supplemented as new employees are hired or contracted to work on this project.

_____, as
Signature

_____, of
Position

_____, on
Company/Corporation/Joint Venture/Partnership/Etc.

_____
Date

CONTRACTOR CERTIFICATION

As evidenced by the signature of the Contractor's Authorized signatory below, the Contractor certifies under the pains and penalties of perjury that the Contractor shall not knowingly use undocumented workers in connection with the performance of any City contract; that pursuant to federal and state requirements, the Contractor shall verify the immigration status of all workers assigned to such contracts without engaging in unlawful discrimination; and that the Contractor shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker(s). The Contractor understands and agrees that breach of any of these terms during the period of each contract may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.

_____
Contractor Authorized Signature

_____
Printed Name

_____
Date

Title: _____ Telephone: _____

Fax: _____ Email: _____

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BID FORM
TO
CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

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 Contract Documents as prepared by CDM Smith, 260 West Exchange Street, Suite 300, Providence, Rhode Island 02903 and dated May 2018 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 done, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Bid Form is a part.

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 approved is required, the time period for holding bids is 30 days, Saturdays, Sundays and holidays excluded after Federal approval.

The Bid Security accompanying this Bid shall be in the amount of five percent of the Bid.

If a Notice of Award accompanied by at least six unsigned copies of the Agreement and all other applicable Contract Documents is delivered to the undersigned within thirty days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids, the undersigned will within five days, excluding Saturdays, Sundays, and legal holidays, after the date of receipt of such notification, execute and return all copies of the Agreement and all other applicable Contract Documents to Owner. The premiums for all Bonds required shall be paid by Contractor and shall be included in the Contract Price. The undersigned Bidder further agrees that the Bid Security accompanying this Bid shall become the property of Owner if the Bidder fails to execute the Agreement as stated above.

The Bid Security shall be sealed in a separate envelope from the Bid and then attached to the envelope containing the Bid.

The undersigned hereby agrees that the Contract Time shall commence twenty days following the Effective Date of the Agreement and to fully complete the Work within 1,095 Calendar Days and in accordance with the terms as stated in the Agreement. The undersigned further agrees to pay OWNER, as liquidated damages, $2,000 per day for each calendar day beyond the Contract Time Limit or extension thereof that the Work remains incomplete, in accordance with the terms of the Agreement.

The undersigned acknowledges receipt of addenda numbered:

_____

In accordance with the above understanding, the undersigned proposes to perform the Work, furnish all materials and complete the Work in its entirety in the manner and under the conditions required at the prices listed as follows:

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
1	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and install new valves for Valve Work Area No. A on Drawing C-3 (Englarged Plan "A" on Drawing C-4).		
		_____ Lump Sum	N/A	$ _____
2	1 Lump Sum	Furnish and install all work (excluding line stops but including all materials, tools, equipment, labor and all other incidentals and required work) to construct and remove and replace valves for Valve Work Area No. B on Drawing C-3 (Englarged Plan "B" on Drawing C-4).		
		_____ Lump Sum	N/A	$ _____
3	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and install the new 24-inch water main from the existing 36-inch High Hill Reservoir inlet bypass main to the existing 24-inch water main downstream of the reservoir (Drawing C-3) and to remove and replace valves for Valve Work Area No. C on Drawing C-3 (Englarged Plan "C" on Drawing C-5).		
		_____ Lump Sum	N/A	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
4	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and remove and replace valves for Valve Work Area No. D on Drawing C-3 (Englarged Plan "D" on Drawing C-5).		
		_____ Lump Sum	N/A	$ _____
5	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct and remove and replace valves for Valve Work Area No. E on Drawing C-3 (Englarged Plan "E" on Drawing C-5).		
		_____ Lump Sum	N/A	$ _____
6	2 each	Furnish and install 36-inch line stops with concrete thrust blocks as shown on the Drawings to facilitate installation of new work and remove line stops at completion of new work.		
		_____ each	$ _____	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
7A	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work but exluding restoration of the Inlet Structure Floor) to construct all work and replace all valves for the High Hill Reservoir Inlet Structure Modifications as shown on Drawing M-1.		
		_____ Lump Sum	N/A	$ _____
7B	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to remove and replace existing floor of the High Hill Reservoir Inlet Structure.		
		Seventy Thousand Dollars Lump Sum	N/A	$70,000.00
8	1 Lump Sum	Furnish and install all work (including all materials, tools, equipment, labor and all other incidentals and required work) to construct all work, replace all valves, and replace the existing floor for the High Hill Reservoir Outlet Structure Modifications as shown on Drawings M-2, S-5 thru S-7.		
		_____ Lump Sum	N/A	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
9	1 Lump Sum	Dewater and drain High Hill Reservoir (both north and south basins and the outlet structure) to facilitate construction of new work, including all materials, tools, equipment, labor and all other incidentals and required work; all required dechloramination/dechlorination; and all work required for dewatering in compliance with all federal, state and local regulations, laws, ordinances, and requirements.		
		_____ Lump Sum	N/A	$ _____
10	1 Lump Sum	Clean High Hill Reservoir (north and south basins and inlet and outlet structures) as specified and as shown on the Drawings.		
		_____ Lump Sum	N/A	$ _____
11	4,000 cubic yards	Remove and dispose of accumulated sediment on the floor of High Hill Reservoir as specified and in accordance with all federal, state and local regulations, laws, ordinances, and requirements.		
		_____ Lump Sum	N/A	$ _____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
12	1 Lump Sum	Make all structural repairs and modifications to High Hill Reservoir as shown on Drawings S-1, S-2, S-3, and S-4 (Detail L) including all materials, tools, equipment, labor and all other incidentals and required work to complete all repairs and modifications as required (excluding repairs noted with unit price items).		
		_____ Lump Sum	N/A	$ _____
13A	100 square feet	Repair cracked/spalled/void/unsound concrete at reservoir wall up to 6-inches deep, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per square foot	$ _____	$ _____
13B	275 linear feet	Epoxy adhesive injection repair of concrete cracks in columns, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$ _____	$ _____

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
13C	40 square feet	Repair cracked/spalled/void/unsound concrete in columns up to 2-inches deep, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per square foot	$_____	$_____
13D	80 linear feet	Repair of exposed rebar at columns, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$_____	$_____
13E	30,000 linear feet	Repair cracks in concrete floor and wall liner using injection gel epoxy, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$_____	$_____
13F	60,000 linear feet	Remove and replace sealant at construction joints, as directed by Engineer following Engineer's in-the-dry structural inspections.		
		_____ per linear foot	$_____	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
13G	2,000 linear feet	Replacement of the eave closure around the roof edge of High Hill Reservoir to completely seal the reservoir where it meets the side wall.		
		_____ per linear foot	$_____	$_____
14	1 Lump Sum	Disinfect High Hill Reservoir (both north and south basins and the inlet and outlet structures) in accordance with AWWA C652 to reactivate High Hill Reservoir following construction work.		
		_____ Lump Sum	N/A	$_____
15A	50 cubic yards	Rock excavation		
		_____ per cubic yard	$_____	$_____
15B	50 cubic yards	Boulder excavation		
		_____ per cubic yard	$_____	$_____
15C	75 cubic yards	Excavating below normal grade including gravel refill		
		_____ per cubic yard	$_____	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
16A	150 cubic yards	Controlled Density Fill (CDF)/Controlled Low Strength Material (CLSM) for miscellaneous purposes as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
16B	150 cubic yards	Screened gravel for miscellaneous purposes as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
17	150 cubic yards	Miscellaneous concrete for miscellaneous purposes as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
18	150 cubic yards	Test pits as directed by Engineer.		
		_____ per cubic yard	$_____	$_____
19	1 Lump Sum	Miscellaneous work and clean-up		
		_____ Lump Sum	N/A	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

ITEM NO.	ESTIMATED QUANTITY	BRIEF DESCRIPTION OF ITEMS WITH UNIT BID PRICE IN WORDS	UNIT BID PRICE IN FIGURES	AMOUNT IN FIGURES
20	1 Lump Sum	Mobilization (no more than 5% of the Base Bid Price)		
		_____ Lump Sum	N/A	$_____

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS
HIGH HILL RESERVOIR REHABILITATION
PROJECT NO. DWSRF-4214
BID NO. 18450518

BID FORM

SUBTOTAL PAGE 00300-2:	$ _____
SUBTOTAL PAGE 00300-3:	$ _____
SUBTOTAL PAGE 00300-4:	$ _____
SUBTOTAL PAGE 00300-5:	$ _____
SUBTOTAL PAGE 00300-6:	$ _____
SUBTOTAL PAGE 00300-7:	$ _____
SUBTOTAL PAGE 00300-8:	$ _____
SUBTOTAL PAGE 00300-9:	$ _____
SUBTOTAL PAGE 00300-10:	$ _____
TOTAL BASE BID PRICE	**$** _____

The undersigned agrees that extra work, if any, will be performed in accordance with Article 10 of the Conditions of the Contract and will be paid for in accordance with Article 11 of the Conditions of the Contract.

The bidding and award of this Contract will be in accordance with M.G.L. Chapter 30, Section 39M.

The undersigned must furnish a 100 percent Performance Bond and a 100 percent Payment Bond with a surety company acceptable to Owner.

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, bailing, shoring, removal, overhead, profit, insurance and incidentals required to complete the Work.

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. In the case of a corporation, see Article 8.3 of the Instructions to Bidders, in the case of a limited liability company (LLC), see Article 8.4 of the Instructions to Bidders, in the case of a partnership, see Article 8.5 of the Instructions to Bidders.)

_____

_____

_____

The attached forms must be completed and submitted as part of the Bid Proposal:

DIESEL RETROFIT PROGRAM (MDRP) FORM (DEP-DMS-P&S-21)
SCHEDULE OF PARTICIPATION FOR SRF CONSTRUCTION (EEO-DEP-190C)
LETTER OF INTENT FOR SRF CONSTRUCTION (EEO-DEP-191C)
DBE CERTIFICATION OF UNITED STATES CITIZENSHIP
DBE SUBCONTRACTOR PARTICIPATION FORM
CITY OF NEW BEDFORD NON-COLLUSION AND TAX COMPLIANCE FORM
CITY OF NEW BEDFORD VOTE OF CORPORATION
OSHA CERTIFICATION REQUIREMENT
CONTRACTOR CERTIFICATION

Pursuant to M.G.L. Ch. 62C, sec. 49A, 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.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

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The undersigned bidder hereby certifies he/she will comply with the specific affirmative action steps contained in the Equal Employment Opportunity/Affirmative Action (EEO/AA) provisions of this Contract, including compliance with the Disadvantaged Business Enterprise provisions as required under these contract provisions. The attached DBE Forms must be completed and submitted as part of the Bid Proposal. 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.

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.epls.gov are not eligible for award of any contracts funded by the Massachusetts State Revolving Fund.

The undersigned hereby certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the word "person" shall mean any natural person, joint venture, partnership, corporation, limited liability company, or other business or legal entity. 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.

_____
Social Security Number
or Federal Identification
Number

_____
Signature of Individual or
Corporate Name

By: _____
Corporate Officer (if applicable)

Notice of acceptance should be mailed, faxed, or delivered to the following:

_____
(Name)

By: _____
(Title)

_____
(Business Address)

_____
(City and State)

Date:_____

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

APPENDIX B
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 calendars days from the date such Diesel Construction Equipment is brought on site;

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

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.

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 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 DEP'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)**

APPENDIX B (cont.)

DIESEL RETROFIT PROGRAM CONTRACTOR CERTIFICATION

Each Contractor and its Subcontractor(s) must sign and submit this form to DEP DMS project engineer, 5th Floor, MassDEP, One Winter Street, Boston, MA 02108 and the Municipality within 10 days after the Contractor is notified that it is awarded the Contract.

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.

APPENDIX B (cont.)

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: _____

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 corporation
[ ] Other (explain): _____
[ ] A partnership
[ ] A joint venture with: _____

° 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 ADDRESS:	(Authorized Original Signature) Date 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

CITY OF NEW BEDFORD
MASSACHUSETTS

NON-COLLUSION AND TAX COMPLIANCE FORM

CERTIFICATE OF NON-COLLUSION

The undersigned certified under penalties of perjury that this bid has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity or group of individuals.

_____
Signature of individual submitting bid

_____
Name of business/organization

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, §49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes reporting of employees and contractor, and withholding and remitting child support.

_____
Signature of person submitting bid

_____
Name of business

CITY OF NEW BEDFORD
MASSACHUSETTS

VOTE OF CORPORATION AUTHORIZING
EXECUTION OF CORPORATE AGREEMENTS

At a meeting of the Board of Directors of _____duly called and held on _____, 20_____ at which a quorum was present and acting throughout, the following vote was duly adopted.

VOTED: That _____, the_____ of the corporation, be and hereby is authorized to affix the Corporate Seal, sign and deliver in the name and behalf of the corporation contract documents with the City of New Bedford, the above mentioned documents to include but not be limited to Bids, Proposals, Deeds, Purchase and Sales Agreements, Agreements, Contracts, Leases, Licenses, Releases and Indemnifications; and also to seal and execute, as above, surety company bonds to secure bids and proposals and the performance of said contract and payment for labor and materials, all in such form and on such terms and conditions as he/she, by the execution thereof, shall deem proper. A true copy

ATTEST:

_____
Name (printed)

_____ (Affix Corporate Seal)
Signature

_____ _____
Title Date

OSHA CERTIFICATION REQUIREMENT

Effective **July 1, 2006**, all employees of a contractor to be employed on **public building and public works** worksites must have successfully completed at least a 10 hour course in construction safety and health approved by OSHA at the time the employee begins work.

I, _____, as _____, of the
(Print Name) (Position with the entity submitting bid)

joint venture/corporation/partnership or other legal entity submitting this bid for a public works project falling under §39M of Chapter 30 of the Massachusetts General Laws and Chapter 149 of the same, do hereby certify that any and all employees found on my worksite for this project have, or will have by the start of their work on the project, successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that was at least 10 hours in duration.

A copy of the OSHA completion cards for each employee must be submitted to the City of New Bedford before work on this project is to begin and must be supplemented as new employees are hired or contracted to work on this project.

_____, as
Signature

_____, of
Position

_____, on
Company/Corporation/Joint Venture/Partnership/Etc.

_____
Date

CONTRACTOR CERTIFICATION

As evidenced by the signature of the Contractor's Authorized signatory below, the Contractor certifies under the pains and penalties of perjury that the Contractor shall not knowingly use undocumented workers in connection with the performance of any City contract; that pursuant to federal and state requirements, the Contractor shall verify the immigration status of all workers assigned to such contracts without engaging in unlawful discrimination; and that the Contractor shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker(s). The Contractor understands and agrees that breach of any of these terms during the period of each contract may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.

_____
Contractor Authorized Signature

_____
Printed Name

_____
Date

Title: _____ Telephone: _____

Fax: _____ Email: _____