VOLUME 1
Bidding Documents
For
Construction

Bidding & Contracting Requirements
Specifications

CWSRF #4515
Contract A

FY20 Open Cut Excavation Sewer & Drainage System Repairs

THE HONORABLE THOMAS P. KOCH MAYOR
ALFRED GRAZIOSO
COMMISSIONER OF PUBLIC WORKS
KATHRYN R. LOGAN
CHIEF PROCUREMENT OFFICER

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woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

March 2020

Project No. 0232568.00
City of Quincy MA
SECTION 00 01 07

SEALS PAGE

The engineering material and data contained in these Bidding Documents were prepared under the supervision and direction of the undersigned, whose seal as registered professional engineer is affixed below.

Date of Issue: February 25, 2020

David Moering, P.E.
Woodard & Curran, Inc. (Engineer)
SECTION 00 01 10

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INVITATION TO BID

City of Quincy, MA (Owner) invites Bidders to submit sealed Bids for FY20 Open Cut Excavation Sewer & Drainage System Repairs, which includes, but is not limited to open cut sewer pipe replacement, manhole replacement, stormwater drainage rehabilitation, backfilling and paving; and all materials and equipment, services and construction inherent to the Work.

The Work shall be substantially complete within 140 calendar days from the commencement of Contract Time, Post Substantial Completion Punchlist compete (all work except Warranty Inspection and final paving) within 170 calendar days from the commencement of Contract Time and Warranty Inspection and final paving complete (ready for final payment) within 14 calendar days prior to expiration of the Warranty Period (351 days from Substantial Completion).

The Project being bid is subject to Massachusetts General Laws, Chapter 30, Section 39M.

This Project is to be funded in part with monies made available by the Clean Water State Revolving Fund (SRF) and is to be funded in part by the Massachusetts Clean Water Trust (the “Trust”), and compliance with the following is required: Environmental Protection Agency’s (EPA) Diesel Retrofit Program; EPA/Massachusetts Department of Environmental Protection (MassDEP) Division of Municipal Services (DMS) Disadvantaged Business Enterprise Program; the American Iron and Steel requirements of P.L. 113-76 (the Consolidated Appropriations Act of 2014); Davis-Bacon Act and wage requirements; and other MassDEP/DMS provisions and policies.

A pre Bid conference will be held at 1:00 p.m. local time on Tuesday, March 31, 2020 at City of Quincy DPW, 55 Sea Street, Quincy, MA 02169. Bidders are encouraged to attend and participate in the conference.

Sealed Bids will be received until 11:00 a.m. local time on Thursday, April 16, 2020 at the offices of the Purchasing Agent, City Hall, 1305 Hancock Street, Quincy, Massachusetts 02169. Bids will then and there be publicly opened and read aloud. Bids received after the time of announced opening will not be accepted.

Sets of Bidding Documents may be examined at the Issuing Office beginning on Wednesday, March 18, 2020 8:30a.m. to 4:30 p.m., Monday through Friday.

Issuing Office:
Office of the Purchasing Agent
Quincy City Hall
1305 Hancock Street
Quincy, MA 02169
Sets of Bidding Documents may be obtained:

**electronically at no cost** by registering at:
https://www.quincyma.gov/govt/depts/purchasing/current_bids.htm

Bidders shall send a confirming email to “purchasing@quincyma.gov” to allow Owner to maintain a Bidders list. If Bidding Documents are downloaded and/or printed from Owner’s website, it is Bidder’s responsibility to check the website for any addenda before submitting a Bid. The Owner will not be responsible for any Bid that omits addenda acknowledgement. *Note: the “Standard General Conditions of the Construction Contract (CH.30-39m)” on the Owner’s website are superseded by the General Conditions included in these Bidding Documents.*

and

**in hardcopy from Issuing Office**, beginning on March 18, 2020, 8:30 a.m. to 4:30 p.m. Mondays through Friday for a refundable deposit for each set of Bidding Documents of $100 payable by check or money order to City of Quincy, which deposit will be refunded to each document holder of record who returns a complete set of Bidding Documents in unused condition within 10 days after opening of Bids.

Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents, Bidding Documents or any portion thereof provided by third parties, or for modifications to the Bidding Documents not made by official Addenda, including electronic conversion.

Bid security in the amount of 5 percent of the Bid must accompany the Bid in accordance with the Instructions to Bidders.

Prevailing wage rates as issued by the Director of the Executive Office of Labor and Workforce Development, Department of Labor Standards under the provisions of Massachusetts General Laws, Chapter 149, Sections 26 to 27D inclusive, as amended, apply to this Project. It is the responsibility of the Bidders, before Bid opening, to request if necessary, any additional information on prevailing wage rates for those trades people who may be employed for the proposed Work under the resulting Contract. Federal Minimum Wage Rates as determined by the United States Department of Labor under the Davis-Bacon Act also apply to this Project per SRF requirements.

Disadvantaged Business Enterprise (DBE) goals are applicable to the total dollars paid under the resulting construction Contract. The goals for this Project are a minimum of **4.20 percent D/MBE participation and 4.50 percent D/WBE participation** by certified DBEs. The two lowest responsive Bidders shall submit completed DBE forms (EEO-DEP-190C & EEO-DEP-191C and DBE Certification of United States Citizenship form) by close of business on the third business day after Bid opening. Failure to comply with these requirements may render a Bid non-responsive. No waiver of any provision of the D/MBE & D/WBE Requirements will be granted unless approved by the MassDEP.
Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, not to be responsible or eligible. Owner may also reject the Bid of any Bidder if Owner reasonably believes that it would not be in the best interest of the Project or the public to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

END OF SECTION
CITY OF QUINCY, MASSACHUSETTS
Department of Public Works

Thomas P. Koch, Mayor
Kathryn R. Logan, Purchasing Agent
Alfred J. Grazioso, Commissioner of Public Works

INVITATION TO BID

The Department of Public Works for the City of Quincy, Massachusetts is seeking sealed bids for FY19 Open Cut Sewer Improvements until 11:00 a.m. local time Thursday, April 16, 2020, in the offices of the Purchasing Agent, 1305 Hancock St., Quincy, Massachusetts 02169, at which time and place all bids will be publicly opened and read aloud.

The Work under this Contract includes, but is not limited to open cut sewer pipe replacement, pipe bursting, manhole replacement, water main replacement, utility structure installations, backfilling and paving and all materials, equipment, services and construction inherent to the Work.

All Work under this Contract shall be substantially completed within 140 calendar days and completed within 170 calendar days.

A non-mandatory pre-Bid conference will be held at 1:00 pm local time on March 31, 2020 at City of Quincy DPW, 55 Sea Street, Quincy, MA 02169. Bidders are encouraged to attend and participate in the conference.

Detailed specifications are available on-line at the City of Quincy’s website, www.quincyma.gov and also available at the Office of the Purchasing Agent, Quincy City Hall, 1305 Hancock Street, Quincy, Massachusetts, 02169, between the hours of 8:30 AM and 4:30 PM for a refundable printing charge of $100.00 if returned 10 days within Bid opening and in unused condition. Specifications will be available Wednesday, March 18, 2020.

Each Bid shall be accompanied by a Bid security in the amount of five percent (5%) of the total value of the Bid in the form of a Bid bond or certified/treasurer’s check.

The bidding and award of this Contract shall be in full compliance with Massachusetts General Laws, Chapter 30, Section 39M, as last revised, all Federal, State and City of Quincy regulations when applicable in relation to Minority Business Enterprise, Women's Business Enterprise, Minority Work Force, Equal Employment Opportunity, and subject to the minimum wage rates set under the Massachusetts Prevailing Wage Law Chapter 149, §26 to 27H and/or any applicable federal rates. The City reserves the right to waive any informalities in or to reject any or all Bids when such an action is deemed in the best interests of the City.

Non-responsive and/or unbalanced Bids may be rejected.

Thomas P. Koch  Kathryn R. Logan  Alfred J. Grazioso
Mayor  Purchasing Agent  Commissioner of Public Works

Advertise
The Quincy Sun  March 18, 2020
The Central Register  March 19, 2020

1305 Hancock St., Quincy MA 02169
Telephone: (617) 376-1060  Fax: (617) 376-1074
Printed on Recycled Paper
SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions, if any. Additional terms used in these Instructions to Bidders have the meanings indicated below and as may be included in the Supplementary Instructions to Bidders.

A. Issuing Office – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered identified in the Invitation to Bid.

B. Supplements – Those portions of the Bidding Requirements to be submitted with and made a condition of a Bid including required submittals.

C. Notice of Intent to Award – The written notice to the Successful Bidder indicating, conditions precedent to receiving a Notice of Award and Agreement for execution.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Sets of Bidding Documents may be examined and obtained as stated in the Invitation to Bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents, Bidding Documents or any portion thereof provided by third parties, or for modifications to the Bidding Documents not made by official Addenda, including electronic conversion.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.
ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidders’ qualifications to perform the Work, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data requested in the Bidding Documents, and within the time frames stipulated upon Owner's request.

3.02 Bidders shall meet minimum criteria regarding experience and qualifications set forth in the General Requirements and the Specifications.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.01 Subsurface and Physical Conditions

A. Section 00 73 10 of the Supplementary Conditions identifies:

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. Copies of reports and drawings referenced in Section 00 73 10, if any, are included in the Bidding Documents as indicated in Section 00 31 00. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions, has been identified and established in Section 00 73 10 of the Supplementary Conditions.

C. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.02 Underground Facilities

A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 Hazardous Environmental Condition

A. Section 00 73 10 of the Supplementary Conditions identifies any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.
B. Copies of reports and drawings referenced in Section 00 73 10, if any, are included in the Bidding Documents as indicated in Section 00 31 00. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Section 00 73 10 of the Supplementary Conditions.

C. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions and Section 00 73 10 of the Supplementary Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions and Section 0073 10 of the Supplementary Conditions.

4.05 Upon request, Owner may provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall be responsible for obtaining permission and necessary permits and insurance for access to the Site. Bidder shall clean up and restore the Site to its former condition upon completion of any such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.06 Reference is made to Article 7 of the General Conditions and Section 00 73 10 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.
4.07 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;

B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Section 00 73 10, as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Section 00 73 10, as containing reliable "technical data";

E. consider the information known to Bidder; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder’s safety precautions and programs;

F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

I. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – PRE-BID CONFERENCE

5.01 A non-mandatory pre Bid conference will be held at the time, date and location as indicated in the Invitation to Bid. Bidders are encouraged to attend and participate in the conference.

5.02 Addenda will be issued to all prospective Bidders of record considered necessary in response to questions arising at the conference by posting on the Owner’s website only. Oral statements may not be relied upon and will not be binding or legally effective. It is each Bidder’s responsibility to check the Owner’s website for Addenda per Paragraph 7.03.

ARTICLE 6 – SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the Issuing Office, attention Kathryn R. Logan, Purchasing Agent, via fax 617-376-1074 or email (klogan@quincyma.gov) with a copy to Kim Trillcott (kimtrillcott@quincyma.gov).

7.02 The deadline for questions is 12:00 p.m. on April 10, 2020. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be
without legal effect. Interpretations or clarifications considered necessary in response to such questions will be issued by Addenda.

7.03 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer, will be available for examination at the Issuing Office, will be posted on the Owner’s website as stated in the Invitation to Bid, and will not be mailed or faxed to registered Bidders. **It is each Bidder’s responsibility to check the website for Addenda.**

**ARTICLE 8 – BID SECURITY**

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder’s maximum Bid price and in the form of a certified check, treasurer's or cashier's check, or money order, or a Bid bond on or consistent with the form included in the Bidding Documents in Section 00 43 13 issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General and Supplementary Conditions, if any.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the Contract to such Bidder, and such Bidder has furnished the required Contract security, insurance documentation and met the other conditions of the Notice of Intent to Award, Notice of Award, and executed the Contract Documents, whereupon the Bid security will be released. If the Successful Bidder fails to furnish the required Contract security, insurance documentation, and meet the other conditions as stated in the Notice of Intent to Award, Notice of Award, and execute and deliver the Contract Documents, Owner may consider Bidder to be in default, annul the Notice of Intent to Award or Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner’s exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Agreement or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned. See Supplementary Instructions to Bidders (if any) for additional information.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be returned within 5 days after the Bid opening.

**ARTICLE 9 – CONTRACT TIMES**

9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

**ARTICLE 10 – LIQUIDATED DAMAGES**

10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.
ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment and construction methods or procedures specified or described in the Bidding Documents without consideration of possible substitute or “or-equal” items. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment and construction methods or procedures may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS

12.01 The Bidding Documents may require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner with the Bid.

12.02 As required in the Bidding Documents, or within 5 days after Bid opening if requested by Owner, Bidder shall submit a listing and experience statement with pertinent information regarding similar projects and other evidence of qualification for each Subcontractor, Supplier, individual, or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute without an increase in the Bid.

12.03 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest responsible Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General and Supplementary Conditions, if any.

12.04 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form and Supplements are included with the Bidding Documents.

13.02 Bids are to be submitted as indicated in the Bid Form. All blanks on the Bid Form shall be completed in ink or typewritten and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form.
13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-presidential or other corporate officer accompanied by evidence of authority to sign. 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.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a general partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member or manager and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

13.06 A Bid by an individual shall show the Bidder’s name and official address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

13.08 All names shall be printed in ink below the signatures.

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.10 Postal and e-mail addresses and telephone numbers for communications regarding the Bid shall be shown.

13.11 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form. See Supplementary Instructions to Bidders for additional requirements, if any.

13.12 Bidders are advised to carefully review those portions of the Bid Form and Supplements requiring Bidder’s representations and certifications that are to be submitted with a Bid or subsequent to the Bid opening, and made a condition of the Bid.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 Bid Pricing

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed on the Unit Prices Form in Section 00 43 22. Bid prices shall be stated in both words and figures.
B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price included on the Unit Prices Form in Section 00 43 22. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General and Supplementary Conditions, if any.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between prices written in words and prices written in figures will be resolved in favor of prices written in words.

14.02 Alternates (if any)

A. Bidders shall include a separate price for each alternate described in the Bidding Documents as provided for in the Bid Form and Supplements, if any. The price for each alternate will be considered in accordance with Article 19.

14.03 Completion Time Comparisons

A. Bid prices will be compared after adjusting for exceptions taken by Bidders for the number of days or dates set for Substantial Completion per Article 9 above if allowed in Bid Form. The adjusting amount will be determined at the rate set forth in the Agreement for liquidated damages for failing to achieve Substantial Completion.

ARTICLE 15 – SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished a copy of the Bid Form, the Bid Security Form and Supplements. An original signed hard copy of the Bid Form, the original of the Bid security, Supplements as listed in the Bid Form are to be completed and submitted to the Issuing Office.

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Invitation to Bid and shall be enclosed in a plainly marked package with the Project title, the name and address of Bidder, and shall be accompanied by the Bid security and other required documents.

15.03 If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation “BID ENCLOSED.” A Bid sent by mail or courier shall be addressed to the Issuing Office.

15.04 Bidders shall be responsible to confirm the ability of overnight mailing or courier services to deliver to the Issuing Office.
ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered in hard copy to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Such modifications and withdrawals may not be transmitted by email.

16.02 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is re-Bid, that Bidder may be disqualified from submitting a Bid on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the Invitation to Bid and, unless obviously non-responsive, read aloud publicly.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, not to be responsible or not to meet the specified qualification or quality requirements, based on poor references or otherwise. Owner may also reject the Bid of any Bidder if Owner reasonably believes that it would not be in the best interest of the Project or public to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data as may be requested in the Bid Form or prior to the Notice of Intent to Award or Notice of Award.
19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities are submitted.

A. Owner may also consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.

A. Owner may conduct reference checks for the Bidder. Poor references may be a basis for deeming Bidder as not responsible. Reference questions will include, but are not limited to, product quality and durability, overall work quality, performance, timely delivery/completion, customer service, and general customer satisfaction.

19.06 If the Contract is to be awarded, Owner may award the Contract to the responsible and eligible Bidder, offering the lowest price for the Bid and whose Bid is in the best interests of the Project or public.

19.07 The Owner will issue a Notice of Intent to Award to the Successful Bidder in the form included in Bidding Documents. Within 15 days of receipt of the Notice of Intent to Award, the Successful Bidder shall comply with the conditions set forth therein and provide requested information. After required reviews and approvals by Owner of bonds and insurance documentation, and other conditions set forth in the Notice of Intent to Award, the Owner may issue a Notice of Award in accordance with Article 21.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner’s requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

20.02 The Successful Bidder who receives the Notice of Intent to Award will be required to provide the Performance Bond and Payment Bond and required insurance documentation within 15 days from the date of receipt of the Notice of Intent to Award.
20.03 In case the bonds or insurance documentation submitted by the Successful Bidder do not meet the requirements of the Contract Documents, and changes are to be made before these documents can be accepted by the Owner, the Successful Bidder is obligated to accept an extension of the date of award of the Contract, or the date of issuance of Notice to Proceed, as the case may be, for that period of additional time required to furnish acceptable documents.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 After required reviews and approvals by Owner of bonds and insurance documentation and other conditions set forth in the Notice of Intent to Award, Owner will issue a Notice of Award to the Successful Bidder. When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement and attached thereto. Within 10 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. After required reviews and approvals, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 – RETAINAGE

22.01 Provisions regarding retainage are set forth in the Agreement.

ARTICLE 23 – CONTRACTOR’S WARRANTY AND GUARANTEES; CORRECTION PERIOD

23.01 Provisions regarding Contractor’s general warranty and guarantees and correction period are set forth in Articles 6.19, 13.06, 13.07, 13.09 and 14.03 of the General and Supplementary Conditions, if any.

ARTICLE 24 – SAFETY AND HEALTH REGULATIONS

24.01 The 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, as a minimum, and other specific requirements identified in the Supplementary Conditions.

ARTICLE 25 – EQUAL EMPLOYMENT OPPORTUNITY, ANTI-DISCRIMINATION, AND AFFIRMATIVE ACTION

25.01 Provisions regarding the requirements for equal employment opportunity, anti-discrimination, and affirmative action programs, if any, are set forth in the Supplementary Conditions.
ARTICLE 26 – WAGE RATE REQUIREMENTS

26.01 Wage rate requirements, if any, are set forth in the Supplementary Conditions.

ARTICLE 27 – SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

27.01 Supplementary Instructions to Bidders, if any, are included in Section 00 22 13 and may include certain provisions required by Laws and Regulations and funding agencies. Bidders are solely responsible to determine, obtain, review and interpret the full text of applicable Laws and Regulations.

END OF SECTION
SECTION 00 22 13

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

The following supplement or modify the Instructions to Bidders. This section includes certain provisions required by Laws and Regulations, but does not represent or reflect all applicable provisions and policies or Laws and Regulations, and may only include excerpts and portions thereof. Other required provisions and policies, and Laws and Regulations, shall be deemed to be so included and incorporated herein. Bidders are solely responsible to determine, obtain, review and interpret the full text of applicable Laws and Regulations. Representations, certifications, compliance statements and forms relating to the subject matter in this Section are included in Section 00 45 05 and must be submitted by each Bidder as part of its Bid. Failure to do so may render a Bid non-responsive.

1.01 APPLICABLE LAWS FOR BID AND AWARD; GENERAL

A. This Contract is being bid under the provisions of Massachusetts General Law (MGL) Chapter 30, Section 39M, Contracts for construction and materials; manner of awarding.

B. The time period for holding Bids, where Federal approval is not required, is 30 days (Saturdays, Sundays and legal holidays excluded) after the opening of Bids, and where Federal approval is required, the time period for holding Bids is 30 days (Saturdays, Sundays and holidays excluded) after Federal approval.

C. The Bid and Contract are subject to MGL Chapter 43, Section 27 Interest In Public Contracts By Public Employees Prohibited; Penalty and provisions of MGL Chapter 268A, Section 20 Municipal Employees; Financial Interest In Contracts; Holding One Or More Elected Positions.

1.02 ADDITIONAL DEFINED TERMS

A. Bid security – per the Instructions to Bidders. Also “bid deposit” as used in MGL Chapter 30, Section 39M.

B. Lowest Responsible and Eligible Bidder – Also the Successful Bidder. As defined in MGL Chapter 30, Section 39M,

“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.”

1.03 APPLICABLE REQUIREMENTS OF THE MGL

A. Foreign Corporations: The provisions of MGL Chapter 30, Section 39L, Public construction work by foreign corporations; restrictions and reports, requires that if a Bidder is a foreign corporation, it shall provide with its Bid, a certificate from the Commonwealth of Massachusetts Secretary of State stating that the corporation has complied with requirements of Section 15.03 of subdivision A of Part 15 of MGL 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 further, will provide such certificate for each Subcontractor that is a foreign corporation if it receives a Notice of Intent to Award. Also see Section 00 45 05 of the Bidding Requirements.

B. Taxes: Bidder shall submit with its Bid, a “Certificate of Good Standing” with respect to all returns due and taxes from the Commonwealth of Massachusetts Department of Revenue certifying Bidder has complied with all laws relating to taxes, reporting of employees and contractors, and withholding and remitting of child support. Bidder will provide such certificate for each Subcontractor if it receives a Notice of Intent to Award. Bidders are encouraged to obtain such Certificate of Good Standing online at

https://www.mass.gov/how-to/request-a-certificate-of-good-standing-tax-compliance-or-a-corporate-tax-lien-waiver

See explanation, instructions, and sample at the end of this Section.

C. Debarment: A Bidder is ineligible to bid or enter into a public contract in the Commonwealth of Massachusetts if it has been debarred from bidding on or entering into a public contract under the provisions of MGL Chapter 29, Section 29F, Debarment from bidding; definitions; lists; notice; affiliates; mitigating circumstances, or any other applicable debarment provisions of any other chapter of the MGL or any rule or regulations promulgated thereunder.
D. **Financial Statements:** The following shall be submitted prior to execution of the Agreement in accordance with MGL Chapter 30, Section 39R Definitions; contract provisions; management and financial statements; enforcement as requested in the Notice of Intent to Award issued to the Successful Bidder.

- To Owner - A statement by management on internal accounting control and a statement prepared by an independent certified public accountant regarding management’s statement (samples at the end of this section); and
- To DCAMM - An audited financial statement for the most recent completed fiscal year.

E. **Labor Preferences and Work Hours**

1. The provisions of MGL Chapter 149, Section 26, *Public works; preference to veterans and citizens; wages,* requires that employment in the construction of public works be subject to preference being given to citizens of the Commonwealth of Massachusetts, citizens of the town or city where the Project is located, veterans and service-disabled veterans, and citizens of the United States. The provisions of MGL Chapter 149, Section 179A, *Preference to citizens in awarding public work contracts, violations,* requires that award of contracts for public work be subject to preference being given to persons who are citizens of the United States.

2. The provisions of MGL Chapter 149, Sections 26, 27, and 27A through 27D, as amended, set forth requirements for prevailing wage rates as issued by the Executive Office of Labor and Workforce Development, Department of Labor Standards. It is the responsibility of the Bidders, before Bid opening, to request if necessary, any additional information on prevailing wage rates for those trades people who may be employed for the proposed Work under the resulting Contract. See Section 00 73 43.

3. The provisions of MGL Chapter 149, Section 30, *Eight hour day and six day week; emergencies; work on highways,* and Section 34, *Public contracts; stipulation as to hours and days of work; void contracts,* apply to this Project.

F. **Sales Tax Exemption:** MGL Chapter 64H, Section 6, *Exemptions,* subsection (f), exempts building materials and supplies to be used in the Project from Commonwealth of Massachusetts sales tax and Bidder shall not include any amount therefor. The words “building materials and supplies” shall include all materials and supplies consumed, employed or expended in the construction, reconstruction, alteration, remodeling or repair of any building, structure, public highway, bridge, or other such public work, as well as such materials and supplies physically incorporated therein. Said words shall also include rental charges for construction...
vehicles, equipment and machinery rented specifically for use on the Project Site, or while being used exclusively for the transportation of materials for the Project.

G. **Safety and Health:** This Project is subject to 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 Massachusetts Department of Labor and Industries, Division of Occupational Safety 454 CMR 10.00 et seq. “Construction Industry Rules and Regulations”; Massachusetts Department of Public Safety 520 CMR 14.00 et seq. “Excavation and Trench Safety”; MGL Chapter 82, The Laying Out, Alteration, Relocation and Discontinuance Of Public Ways and Specific Repairs Thereon; MGL Chapter 82A, Excavation and Trench Safety, and MGL Chapter 149 Section 129A, Shoring Trenches for local governments.

In addition, MGL Chapter 30, Section 39S, requires that all employees to be employed at the Work Site 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 documentation of successful completion of said course shall be submitted with the first certified payroll report for each employee. Any employee found on a Work Site 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.

H. **Special Licensing**

1. Work involving the removal, containment, or encapsulation of asbestos or material containing asbestos must be performed by a contractor licensed in accordance with MGL Chapter 149, Section 6B.

2. Sheet metal work must be performed by a contractor licensed in accordance with 271 CMR 1.00, et seq. governing licensing, permitting, and sheet metal work in Massachusetts.

I. **Public Records:** The Bid and Contract are subject to MGL Chapter 66 et seq, Public Records, and as such, related submittals, purchase orders, related pricing documents, and invoices will be public documents, and may be available for public and private distribution, except as specifically excluded. The Bidder agrees to provide the Owner copies of any documents requested under this law at no charge to the Owner or the requestor.
J. **Price Adjustments for Certain Materials:** As required by Chapter 150 of the Acts of 2013, the provisions of MGL Chapter 30, Section 38A, *Price adjustment clause in contracts for road, bridge, water and sewer projects awarded under Sec. 39M,* adjustments for fuel (both diesel and gasoline), liquid asphalt and Portland cement shall be made as set forth in Section 00 73 73, SC-12.01.

1.04 ENVIRONMENTAL PROTECTION AGENCY STATE REVOLVING LOAN FUND PROGRAM (SRF) AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASSDEP), DIVISION OF MUNICIPAL SERVICES (DMS) SRF PROVISIONS

A. This Project is to be funded in part with monies made available by the Clean Water State Revolving Fund (SRF) and by the Massachusetts Clean Water Trust (the “Trust”) and subject to the approval by the MassDEP. Compliance with the following is required.

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, included at the end of Section 00 45 05, as part of its Bid. See detailed requirements included in Section 00 73 76 for required certification after award.

2. *This Project is subject to the American Iron and Steel requirements of P.L. 113-76, the Consolidated Appropriations Act of 2014.* See detailed requirements included in Section 00 73 76.

3. *Federal minimum wage rates as determined by the United States Department of Labor under the Davis-Bacon Act:* See Section 00 73 43. In case of discrepancy between Federal and state wage rates, the higher wage rates shall apply.


5. applicable provisions of the Massachusetts General Laws and Regulations and/or United States Code of Federal Regulations govern the Bidding Requirements and resulting Contract, and any provision in violation of the foregoing shall be deemed null, void and of no effect. Where conflicts
between the Code of Federal Regulations and state Laws and Regulations exist, the more stringent requirement shall apply.

6. Disadvantaged Business Enterprise (DBE) goals are applicable to the total dollars paid under the resulting Contract. The goals for this Project are a minimum of 4.20 percent D/MBE participation and 4.50 percent D/WBE participation by certified DBEs. The two lowest responsive, responsible and eligible Bidders shall submit completed DBE forms (EEO-DEP-190C & EEO-DEP-191C and DBE Certification of United States Citizenship form) in accordance with Section 00 45 57 by the close of business on the third business day after notification by Owner or Engineer. Failure to comply with the requirements of this paragraph or the requirements in Section 00 45 57 may be deemed to render a Bid non-responsive. No waiver of any provision of the D/MBE & D/WBE Requirements including those in Section 00 73 38 will be granted unless approved by the MassDEP.

7. The lowest responsive, responsible, and eligible Bidder will be required to submit a projected monthly cash flow schedule and Statement of Direct Labor Cost percentages per Section 00 73 76 for MassDEP approval prior to issuance of a Notice of Award.

8. Bids shall reflect MassDEP - DMS requirements under the SRF Program including mobilization not exceeding 5 percent of the total Contract Price and other certain items included in Section 00 73 76.

9. The Contractor who enters into an agreement with the Owner shall guarantee: the Work 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 the 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.

a. This guarantee shall be for a minimum of 1 year from the date of Substantial Completion; defects in the Work will be corrected or Owner may correct; and other required warranties and guarantees will be provided as specified, all in accordance with Articles 6.19, 13.06, 13.07, 13.09 and 14.03 of the General and Supplementary Conditions, if any.

b. If at any time within the said period of guarantee any part of 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.

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

11. Whenever it is written that an equipment manufacturer must have a specified period of experience with its 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.

1.05 REQUIREMENTS OF THE CITY OF QUINCY

A. Bidders shall submit information per Section 00 45 13 regarding any labor disputes during the past 5 years.

ATTACHMENTS

A. MA Department of Revenue – Instructions for Requesting a Certificate of Good Standing-Tax Compliance or Corporate Tax Lien Waiver

B. Sample Certificate of Good Standing and/or Tax Compliance

C. Accounting Controls Letters MGLc30s39R

END OF SECTION
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Request a Certificate of Good Standing–Tax Compliance or a Corporate Tax Lien Waiver

Whether you are a business or an individual, learn how to request proof you’re in good tax standing with the Massachusetts Department of Revenue.

If filed online with MassTaxConnect, you should hear back within a day or two.

**Request for a business with MassTaxConnect**  
(https://mtc.dor.state.ma.us/mtc/?link=COGS)

**Request for an individual with MassTaxConnect**  
(https://mtc.dor.state.ma.us/mtc/?link=COGSIND)

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**THE DETAILS**

**What you need**

- Your Social Security number or Employee Identification Number (EIN)
- If you’re selling your business, a legal description of assets to be sold

There is no fee to obtain a Certificate of Good Standing–Tax Compliance or a Corporate Tax Lien Waiver.

A Certificate of Good Standing–Tax Compliance or a Corporate Tax Lien Waiver is the answer when individuals, corporations, and other organizations need proof they’ve filed their tax returns and paid tax bills in order to:

- Obtain financing
- Renew a liquor or professional license
- Enter into a business transaction

---

**CONTACT**

**Certificate of Good of Standing**

**Phone**

(617) 887-6400 (tel:6178876400)  
8:30 a.m.–4:30 p.m., Monday through Friday

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**RELATED**

**Video – How to File for a Certificate of Good Standing When you are Logged in**  
(https://www.youtube.com/watch?v=vLUzZmc8j)

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[4/3/2019]
☐ Get a job

☐ Sell a business (Corporate Tax Lien Waiver).

If requested with MassTaxConnect, authorized practitioners can obtain a Certificate within a day or two.

Before making a request, practitioners should have:

☐ The entity’s identification number and

☐ A list of tax types filed with the Department of Revenue (DOR).

How to request

Online

Apply online with MassTaxConnect:

☐ Businesses (https://mtc.dor.state.ma.us/mtc/?link=COGS)

☐ Individuals (https://mtc.dor.state.ma.us/mtc/~/?Link=COGSIND)

Video – How to File for a Certificate of Good Standing
When you are Logged in (https://www.youtube.com/watch?v=vL1UZmc87a&pbjreload=10)

By mail


Processing of a paper application can take 4 to 6 weeks.
We strongly recommend filing your request online if that option is available to you.

More info

Once you’ve submitted your request, a search will be made to identify any:
☐ Returns you need to file, or

☐ Bills you need to pay.

You will receive an email letting you know the results of this search and what you need to do.

Fully compliant taxpayers will be able to:

☐ Print a Certificate, or

☐ Request a mailed copy to the address of record.

If you need to pay a bill, you’ll be given an opportunity to pay via electronic funds withdrawal or credit card. You can file and pay most non-filed tax returns with MassTaxConnect (https://mtc.dor.state.ma.us/mtc/).

Please be aware that you have to wait at least 24 hours to reapply for a Certificate of Good Standing if you:

☐ Pay a bill through electronic funds withdrawal,

☐ Pay a bill by credit card, or

☐ File returns online.

You can also request a Professional License Renewal Certificate using MassTaxConnect by selecting:

☐ The Individual tab on MassTaxConnect (https://mtc.dor.state.ma.us/mtc/?Link=COGSIND), then

☐ Certificate of Good Standing under Individuals, then

☐ Professional License Renewal Certificate.

Contact

Certificate of Good of Standing
Phone
(617) 887-
6400 (ext: 6178876400)
8:30 a.m.–4:30 p.m., Monday
through Friday

RELATED

Video – How to File for a Certificate of Good Standing
When you are Logged in
(https://www.youtube.com/watch?v=nLt1UZ/mc87o&pbjreload=10)

Set up a payment agreement
(/info-details/dor-payment-agreement-frequently-asked-questions)

AP 613: Requesting Certification of Tax Compliance

Did you find what you were looking for on this webpage?

Yes  No

SEND FEEDBACK
CERTIFICATE OF GOOD STANDING AND/OR TAX COMPLIANCE

Why did I receive this notice?

The Commissioner of Revenue certifies that, as of the date of this certificate, COMPANY NAME is in compliance with its tax obligations under Chapter 62C of the Massachusetts General Laws.

This certificate doesn't certify that the taxpayer is compliant in taxes such as unemployment insurance administered by agencies other than the Department of Revenue, or taxes under any other provisions of law.

This is not a waiver of lien issued under Chapter 62C, section 52 of the Massachusetts General Laws.

What if I have questions?

If you have questions, call us at (617) 887-6367 or toll-free in Massachusetts at (800) 392-6089, Monday through Friday, 8:30 a.m. to 4:30 p.m.

Visit us online!

Visit mass.gov/dor to learn more about Massachusetts tax laws and DOR policies and procedures, including your Taxpayer Bill of Rights, and MassTaxConnect for easy access to your account:

- Review or update your account
- Contact us using e-message
- Sign up for c-billing to save paper
- Make payments or set up autopay

Edward W. Coyle, Jr., Chief
Collections Bureau
DATE

INSERT Owner name and address

RE: [INSERT CONTRACT #/PROJECT # AND NAME]

Dear [_____________]:

This letter is being submitted pursuant to MGL Chapter 30 §39R(c). Please be advised that our firm has a system of internal accounting controls which assure that:

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

(2) transactions are recorded as necessary, to permit preparation of financial statements in conformity with generally accepted accounting principles, and 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.

Sincerely,

_________________________________________________________________

[Name and title of authorized representative of Contractor]
DATE

INSERT Owner name and address

RE: [INSERT CONTRACT #/PROJECT # AND NAME]

Dear [______________]:

Please be advised that we have reviewed the Statement of Internal Accounting Controls prepared by [NAME OF CONTRACTOR], in connection with the above-captioned Project as required under MGL Chapter 30, § 39R. In our opinion, representations of management are consistent with our evaluations of the system of internal accounting controls and such representations are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to [NAME OF CONTRACTOR]’s financial statements.

Sincerely,

________________________, CPA

[Name]
# AVAILABLE PROJECT INFORMATION

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<td>Appendix B</td>
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<tr>
<td>MWRA Wastewater 8(m) Permit</td>
<td>Appendix C</td>
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<tr>
<td>Department of Conservation and Recreation Permit</td>
<td>Appendix D</td>
</tr>
<tr>
<td>Massachusetts Historical Commission Permit</td>
<td>Appendix E</td>
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<tr>
<td>Right of Entry Forms</td>
<td>Appendix F</td>
</tr>
</tbody>
</table>

**END OF SECTION**
SECTION 00 41 01

BID FORM

ARTICLE 1 – DEFINED TERMS

1.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions and Supplementary Conditions, if any.

ARTICLE 2 – BID RECIPIENT

2.01 This Bid is submitted to:

City of Quincy Massachusetts
Purchasing Department
Quincy City Hall
1305 Hancock Street
Quincy, MA 02169
FY20 Open Cut Excavation Sewer & Drainage System Repairs
CWSRF #4515 – Contract A

2.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 3 – BIDDER’S ACKNOWLEDGEMENTS

3.01 Bidder accepts all of the terms and conditions of the Bidding Documents including, without limitation:

A. those dealing with disposition of Bid security;

B. those included in the Supplementary Instructions to Bidders;

C. insurance and bonding requirements (Payment Bond and Performance Bond each equal to 100% of the total Contract Price) as set forth in the General Conditions and Supplementary Conditions, if any;

D. Contract Times as set forth in the Agreement (substantially complete within 140 days from commencement of Contract Times, Post Substantial Completion Punchlist shall be complete within 170 calendar days from commencement of Contract Time, and completed and ready for final payment within 14 days from commencement of Contract Times); and
E. provisions for liquidated damages as set forth in the Agreement (failure to meet Substantial Completion) $2,000 per day, failure to complete the remaining Work except for Warranty Inspection and final paving (completion of Post Substantial Completion Punchlist) $2,000, and failure to complete the Warranty Inspection and final paving [2] percent of the total Contract Price.

3.02 This Bid will remain subject to acceptance for 90 days after the Bid opening or for such longer period of time that Bidder may agree to in writing upon request of Owner.

3.03 Bidder acknowledges receipt of the following Addenda.

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<tr>
<th>Addendum No.</th>
<th>Addendum Date</th>
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</table>

3.04 Bidder acknowledges the representations and certifications included in Section 00 45 05 are made a condition of the Bid.

ARTICLE 4 – BASIS OF BID

4.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s) based on unit prices included in Section 00 43 22. The method for determining award is as set forth in Section 00 21 13.

BID PRICES SHALL EXCLUDE SALES AND USE TAX.

TOTAL BID PRICE (from Unit Prices Form)

$____________________

(Use words) $____________________

(Use figures)
4.02 Unit Prices have been computed in accordance with Paragraph 11.03.A of the General Conditions and Supplementary Conditions, if any.

4.03 Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for unit price items will be based on actual quantities determined and based on the unit prices included above, as provided in the General Conditions and Supplementary Conditions, if any.

4.04 Contract Price Adjustments

A. Owner’s Contingency for Materials Escalation Price Adjustment per MGL c30s38A and (per Paragraph 11.02 of the General Conditions). Base Prices for diesel fuel, gasoline, liquid asphalt, and portland cement in cast-in-place concrete to be used for Contract Price Adjustments are established in Section 00 73 73, SC-12.01.

ARTICLE 5 – TIME OF COMPLETION

5.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions and Supplementary Conditions, if any, on or before the dates or within the number of calendar days indicated in the Agreement.

5.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 6 – ATTACHMENTS TO THIS BID

6.01 The following documents are fully completed, submitted with and made a part of and a condition of this Bid.

☐ 00 43 13 Bid Bond

OR

☐ Required Bid security in the form of ________________________________

Supplements

☐ 00 43 22 Unit Prices Form

☐ 00 43 36 Proposed Subcontractors Form

☐ 00 43 37 Proposed Supplier Form

☐ 00 43 40 Information, Schedules and Data

☐ 00 45 05 Bidder’s Representations and Certifications including required documents and submittals specified

☐ 00 45 13 Bidder's Qualifications

☐ 00 45 19 Non-collusion Affidavit
Bidder further confirms that if it is deemed one of the lowest responsible and eligible Bidders, as notified by the Owner, it shall submit documents required by and in accordance with Section 00 45 57 by the close of business on the third business day after notification, and the documents submitted shall also be a condition of its Bid.
ARTICLE 7 – BID SUBMITTAL

7.01 This Bid is submitted by:

A Corporation
Corporation Name: ________________________________________________________________
State of incorporation: _____________________________________________________________
Type: __________________________ (General Business, Professional, Service, other)
By: ____________________________ (Signature – attach evidence of authority to sign)
Name (typed or printed): ____________________________________________________________
Title: ______________________________________________________________________________
(CORPORATE SEAL)
Attest: __________________________________________________ (Signature of Corporate Secretary)
Business Address: _________________________________________________________________
__________________________________________________________
Phone & Facsimile Nos: _____________________________________________________________
Email address: _________________________________________________________________
Date of qualification to do business as out-of-state corporation: ____________________________

A Limited Liability Company (LLC)
LLC Name: ________________________________________________________________
State in which organized: ________________________________________________________
By: ____________________________ (Signature – attach evidence of authority to sign)
Name (typed or printed): ____________________________________________________________
Title: ______________________________________________________________________________
Business Address: _________________________________________________________________
__________________________________________________________
Phone & Facsimile Nos: _____________________________________________________________
Email address: _________________________________________________________________
A Joint Venture

First Joint Venturer Name: __________________________________________________________

By: ____________________________________________________________________________

(Signature – attach evidence of authority to sign)

Name (typed or printed): ____________________________________________________________

Title: __________________________________________________________________________

Business Address: __________________________________________________________________

________________________________________________________________________________

Phone & Facsimile Nos: __________________________________________________________________

Email address: _____________________________________________________________________

Second Joint Venturer Name: ________________________________________________________

By: ____________________________________________________________________________

(Signature – attach evidence of authority to sign)

Name (typed or printed): ____________________________________________________________

Title: __________________________________________________________________________

Business Address: __________________________________________________________________

________________________________________________________________________________

Phone & Facsimile Nos: __________________________________________________________________

Email address: _____________________________________________________________________

(Each joint venturer must sign. The manner of signing for each individual, partnership, corporation and limited liability company that is a party to the joint venture should be in the manner indicated above.)
A Partnership

Partnership Name: ______________________________________________________________ (SEAL)

By: _____________________________________________________________________________

(Signature of general partner – attach evidence of authority to sign)

Name (typed or printed): ___________________________________________________________________

Business Address: _______________________________________________________________________

Phone & Facsimile Nos: __________________________________________________________________

Email address: _________________________________________________________________________

An Individual

Name (typed or printed): __________________________________________________________________

By: _________________________________________________________________________________

(Individual’s signature)

Doing business as: _____________________________________________________________________

Business Address: _____________________________________________________________________

Phone & Facsimile Nos: __________________________________________________________________

Email address: ________________________________________________________________________
Communications concerning this Bid shall be addressed to:

Name: ____________________________________________________________

Title: ____________________________________________________________

Business Address: ________________________________________________

Phone & Facsimile Nos: ____________________________________________

Email address: ____________________________________________________

END OF SECTION
BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

BID

Bid Due Date:
Description (Project Name and Include Location):

BOND

Bond Number:
Date (Not earlier than Bid due date):
Penal sum $ (Words) (Figures)

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

BIDDER (Seal)

Bidder’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

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.
1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder’s and Surety’s liability. Recovery of such penal sum under the terms of this Bond shall be Owner’s sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder’s Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety’s written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term “Bid” as used herein includes a Bid, offer, or proposal as applicable.
SECTION 00 43 22

UNIT PRICES FORM

Provide unit pricing for each Bid item in both words and figures. Provide Bid item totals in figures only.

Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between prices written in words and prices written in figures will be resolved in favor of prices written in words.

Unit Prices have been computed in accordance with Paragraph 11.03.A of the General Conditions and Supplementary Conditions, if any. Estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for unit price items will be based on actual quantities determined and based on the unit prices included below as provided in the General Conditions and Supplementary Conditions, if any.

BID PRICES SHALL EXCLUDE SALES AND USE TAX.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item Description with Unit or Lump Sum Price in Written Words</th>
<th>Estimated Quantity &amp; Unit</th>
<th>Unit Bid Price (Figures)</th>
<th>Total Bid Item Price (Figures)</th>
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<td>1,500</td>
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<td>Total Bid Item Price (Figures)</td>
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<td>4-Foot Diameter Precast Concrete Sewer Manhole Riser</td>
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<td>6c</td>
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<td>Epoxy Coating of Manhole @ _________________________________</td>
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<td>Special Pipe Bedding</td>
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<td>23</td>
<td>Special Dewatering</td>
<td>1 LS</td>
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<td>$__________ Dollars and _______ Cents LUMP SUM</td>
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<td>24</td>
<td>Test Pits</td>
<td>4 EA</td>
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<td>$__________ Dollars and _______ Cents PER EACH</td>
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<td>25</td>
<td>Catch Basin Sediment Capture Device (Temporary Inlet Protection)</td>
<td>55 EA</td>
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<td>Item No.</td>
<td>Item Description with Unit or Lump Sum Price in Written Words</td>
<td>Estimated Quantity &amp; Unit</td>
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<td>Total Bid Item Price (Figures)</td>
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<tr>
<td>26</td>
<td>15-inch PVC Drain</td>
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<td>LF</td>
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<td>Dollars and _______Cents PER LINEAR FOOT</td>
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<td>27</td>
<td>4-Foot Diameter Precast Concrete Catch Basin Complete with Frame and Grate</td>
<td>6</td>
<td>EA</td>
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<td>Dollars and _______Cents PER EACH</td>
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<tr>
<td>28a</td>
<td>4-Foot Diameter Precast Concrete Drain Manhole Complete with Frame and Cover</td>
<td>1</td>
<td>EA</td>
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<td>Dollars and _______Cents PER EACH</td>
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<tr>
<td>28b</td>
<td>4-Foot Diameter Precast Concrete Drain Manhole Complete with Frame and Cover and Extended Base</td>
<td>1</td>
<td>EA</td>
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<td>Dollars and _______Cents PER EACH</td>
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<tr>
<td>29a</td>
<td>5-Foot Square Precast Concrete Drain Manhole Complete with Frame and Cover</td>
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<td>EA</td>
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<td>Dollars and _______Cents PER EACH</td>
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<tr>
<td>29b</td>
<td>5-Foot Square Precast Concrete Drain Manhole Complete with Frame and Cover and Extended Base</td>
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<td>Dollars and _______Cents PER EACH</td>
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<tr>
<td>30a</td>
<td>4-Foot Diameter Precast Concrete Drain Manhole Riser</td>
<td>10</td>
<td>VF</td>
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<td>Dollars and _______Cents PER VERTICAL FOOT</td>
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<td>Item No.</td>
<td>Item Description with Unit or Lump Sum Price in Written Words</td>
<td>Estimated Quantity &amp; Unit</td>
<td>Unit Bid Price (Figures)</td>
<td>Total Bid Item Price (Figures)</td>
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<td>30b</td>
<td>5-Foot Square Precast Concrete Drain Manhole Riser Section @ _________________________________________________ VF</td>
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<td>Dollars and Cents PER VERTICAL FOOT</td>
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<td>31</td>
<td>Tide Gate @ _________________________________________________ EA</td>
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<td>Dollars and Cents PER EACH</td>
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<td>32</td>
<td>Assabet Road Landscaping @ _____________________________________ LS</td>
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<td>Dollars and Cents LUMP SUM</td>
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<td>33</td>
<td>Miscellaneous Reinforced Concrete @ ____________________________ CY</td>
<td>75</td>
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<td>Dollars and Cents PER CUBIC YARD</td>
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<td>34</td>
<td>Controlled Density Fill @ _____________________________________ CY</td>
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<td></td>
<td>Dollars and Cents PER CUBIC YARD</td>
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<td>35</td>
<td>Rodent Control @ _____________________________________________ LS</td>
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<td>Dollars and Cents LUMP SUM</td>
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<tr>
<td>36</td>
<td>Owner's Contingency Allowance for Material Escalation Price Adjustment (Statutory) @Twelve Thousand Dollars and Zero Cents</td>
<td>1</td>
<td>N/A</td>
<td>$12,000.00</td>
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### TOTAL BID PRICE (based on Unit Price Schedule above). INCLUDE ON BID FORM

____________________________________________________

Dollars and

___________________________________________________ Cents

$____________________ (Use figures)

**END OF SECTION**
## PROPOSED SUBCONTRACTORS FORM

The following Subcontractors, other persons and organizations are proposed to be employed to furnish portions of the Work. Attach additional sheets as necessary.

### CONSTRUCTION

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Type of Construction/Area of Responsibility</th>
<th>% of Total Contract</th>
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## DESIGN PROFESSIONALS

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<th>% of Total Contract</th>
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**END OF SECTION**
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The following Suppliers are proposed to furnish the identified products, material and equipment to be incorporated into the Work. Attach additional sheets as necessary.

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Product, Material, Equipment</th>
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<tbody>
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SECTION 00 43 40

INFORMATION, SCHEDULES AND DATA

SCHEDULE

Provide a proposed Project Schedule based on a Notice to Proceed on approximately May 25, 2020, a Substantial Completion within 140 days, Post Substantial Completion Punchlist complete (all work except final paving) within 170 days and Warranty Inspection and final paving complete within 14 calendar days prior to expiration of the Warranty Period (351 days from Substantial Completion). The schedule shall be presented in sufficient detail for the Owner to evaluate the Bidder's ability to perform the Work within the Contract Times and shall include:

- milestones related to submittal schedules, procurement, construction, and checkout & functional testing; and
- sequencing to limit impacts from construction.

WORK PLAN

Submit a narrative work plan including traffic management plans approved by the City of Quincy Traffic Management Engineer for each sewer pipe segment to be replaced describing the Bidder’s approach to the successful execution of the Work to accommodate the proposed Project Schedule and provide for special requirements. Allow for review of submittals, coordination, and development of detailed construction sequencing and coordination; and compliance with special requirements.

Describe:

- how schedule progress will be measured and tracked;
- how the Schedule of Values and cash flow will be determined and how progress for payment will be determined; and
- how documents will be controlled to assure that the appropriate revision is used in design, procurement, and construction/installation.

END OF SECTION
SECTION 00 45 05
BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

The undersigned, under the penalties of perjury, represents and certifies the following which is made a condition of the Bid.

1.01 BIDDER’S REPRESENTATIONS

A. Bidder has examined and carefully studied the Bidding Documents and other related data identified in the Bidding Documents.

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Section 00 73 10 of the Supplementary Conditions Paragraph 4.02 as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Section 00 73 10 of the Supplementary Conditions Paragraph 4.06 as containing reliable "technical data."

E. Bidder has considered the information known to Bidder; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder’s safety precautions and programs.

F. Based on the information and observations referred to in Paragraph E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of the Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which the Bid is submitted.

1.02 BIDDER’S CERTIFICATIONS

A. The Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid and has not solicited or induced any individual or entity to refrain from bidding.

C. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph:

1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish Bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

D. Bidder will comply with the requirements of the Contract Documents, and if Bidder is awarded a Contract, agrees to incorporate applicable provisions into all subcontracts and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier, including as a minimum, Statutory Requirements, safety and health regulations; and Wage Rate Requirements.
1.03 BIDDER’S CERTIFICATIONS REQUIRED BY MASSACHUSETTS GENERAL LAW (MGL)

A. The 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.

B. Bidder certifies no official or employee of the Owner has a financial interest in this Contract or in the expected profit to arise from the Contract, unless the Bidder and Owner, employee or official both have notified public authorities in writing, that the Bidder and the employee fully complied with the provisions of MGL Chapter 43, Section 27 Interest In Public Contracts By Public Employees Prohibited; Penalty and provisions of MGL Chapter 268A, Section 20 Municipal Employees; Financial Interest In Contracts; Holding One Or More Elected Positions.

C. Bidder has submitted a certificate from the Secretary of State of the Commonwealth of Massachusetts that the corporation has complied with requirements of Section 15.03 of subdivision A of Part 15 of MGL 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 if Bidder is a foreign corporation. Bidder certifies it will provide such certificate for each Subcontractor that is a foreign corporation if it receives a Notice of Intent to Award.

D. Bidder certifies, under the penalties of perjury, to the best of its knowledge and belief, that all state tax returns have been filed and all state taxes paid pursuant to MGL Chapter 62C, Section 49A, and has submitted a Certificate of Good Standing with respect to all returns due and taxes from the Commonwealth of Massachusetts Department of Revenue certifying Bidder has complied with all laws relating to taxes, reporting of employees and contractors, and withholding and remitting of child support. Bidder certifies it will provide such certificate for each Subcontractor if it receives a Notice of Intent to Award.

E. Bidder certifies that if awarded the Contract, the following will be submitted prior to execution of the Agreement in accordance with MGL Chapter 30, Section 39R Definitions; contract provisions; management and financial statements; enforcement.

- To Owner - A statement by management on internal accounting control and a statement prepared by an independent certified public accountant regarding management’s statement; and
- To DCAMM - An audited financial statement for the most recent completed fiscal year.
F. Bidder certifies that if awarded the Contract, any Work involving the removal, containment, or encapsulation of asbestos or material containing asbestos will only be performed by a licensed contractor in accordance with MGL Chapter 149, Section 6B and any sheet metal Work will be performed by a contractor licensed in accordance with 271 CMR 1.00, et seq. governing licensing, permitting, and sheet metal work in Massachusetts.

G. Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work and further certifies that all employees to be employed at the Work Site 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 if Bidder is awarded a Contract, shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

H. Bidder is not presently debarred from bidding on or entering into a public contract in the Commonwealth of Massachusetts under the provisions of MGL Chapter 29, Section 29F, or any other applicable debarment provisions of any other chapter of the MGL 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.

I. Bidder understands the Bid is subject to MGL Chapter 66 et seq, Public Records, and as such, related submittals, purchase orders, related pricing documents, and invoices will be public documents, and may be available for public and private distribution, except as specifically excluded. The Bidder agrees to provide the Owner copies of any documents requested under this law at no charge to the Owner or the requestor.

1.04 BIDDER’S CERTIFICATIONS AND REPRESENTATIONS REQUIRED BY THE EPA STATE REVOLVING FUND PROGRAM AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASSDEP), DIVISION OF MUNICIPAL SERVICES (DMS) SRF PROVISIONS

A. Diesel Retrofit Program: Bidder certifies it has submitted a signed and dated Statement of Intent to Comply form included at the end of this Section as part of its Bid and will comply with detailed requirements included in Section 00 73 76 for required certification after award.

B. American Iron and Steel requirements of P.L. 113-76 (the Consolidated Appropriations Act of 2014): Bidder acknowledges to and for the benefit of the Owner and the State that it understands the material and equipment, and services under any resulting Agreement are being funded with monies made available by the Clean Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel (AIS) Requirement” that requires
all of the iron and steel products used in the Project to be produced in the United States including iron and steel products provided for the Project. Bidder hereby represents and warrants to and for the benefit of the Owner and the State that (a) Bidder has reviewed and understands the AIS Requirement, (b) all of the iron and steel products used in the Project will be produced in the United States in a manner that complies with the AIS Requirement, unless a waiver of the requirement is approved, and (c) Bidder will provide any further verified information, certification or assurance of compliance with the AIS Requirement, or information necessary to support a waiver of the AIS Requirement, as may be requested by Owner. Guidance information is included in Section 00 73 76.

C. **EPA Disadvantaged Business Enterprise Program**: Bidder certifies it will comply with the specific affirmative action steps contained in Equal Employment Opportunity/Affirmative Action provisions of the Contract including compliance with the Disadvantaged Business Enterprise provisions in Section 00 73 38, and if Bidder is awarded a Contract, it shall incorporate these provisions into all subcontracts and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier.

1. Bidder certifies that if it is deemed one of the lowest responsive, responsible and eligible Bidders, as notified by the Owner or Engineer, it shall submit documents required by and in accordance with 00 45 57 by the close of business on the third business day after notification, and the documents submitted shall be a condition of the Bid.

D. Bidder certifies compliance with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled “Responsibilities of Participants Regarding Transactions (Doing Business with Other Persons)” in accordance with Section 00 22 13, Supplementary Instructions to Bidders (contractors, subcontractors, or suppliers that appear on the Excluded Parties List System at [http://usgovxml.com/dataservice.aspx?ds=EPLS](http://usgovxml.com/dataservice.aspx?ds=EPLS) are not eligible for award of any contracts funded by the Massachusetts State Revolving Fund.)

```
SUBMITTED ON:

By:  

Authorized person per Bid Form

END OF SECTION
```
STATEMENT OF INTENT TO COMPLY

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

Local Governmental Unit ___________________________ SRF Project No. ___________________________

Contract No. ___________ Contact Title ___________________________

Bidder ___________________________

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

1. the Bidder shall comply with the Massachusetts Department of Environmental Protection’s (“MassDEP”) Diesel Retrofit Program by ensuring that all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract are equipped or retrofitted with a pollution control device in accordance with the Diesel Retrofit Program Standard;

2. the Bidder shall require all Subcontractors to comply with MassDEP’s Diesel Retrofit Program by ensuring all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract are equipped or retrofitted with a pollution control device in accordance with the Diesel Retrofit Program Standard; and

3. The Bidder shall submit and shall require each Subcontractor to submit a Diesel Retrofit Program Contractor Certification (form attached) with a Diesel Retrofit List to MassDEP Municipal Services and the Bidder within 10 days of the bidder being notified that it has been awarded the Contract. The Bidder shall require each Subcontractor to update such Certification and List within 2 days of using additional Diesel Construction Equipment on the project under the Contract.

__________________________  ___________________________
(Signature of Bidder’s Authorized Representative)  (Date)
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SECTION 00 45 13

BIDDER’S QUALIFICATIONS

The following data, statements of experience, personnel, equipment and general qualifications are submitted as a part of the Bid and the Bidder represents and guarantees the truthfulness and accuracy thereof and its ability to meet the qualifications requirements specified in Section 01 43 05 and the Specifications. Attach additional sheets as necessary properly cross referenced.

1.01 GENERAL

A. Bidder’s organization is a ____________________________________________
   (entity type) and has been in business continuously from the year
   _____________________.

   Bidder has operated under the same business name and organization structure for
   the last 5 years on at least 5 projects ☐ yes ☐ no

   If no, indicate other business names: ________________________________

B. Bidder’s organization has had experience in construction comparable to that
   required by the Contract Documents as a prime contractor for _________ years
   and as a subcontractor for _________ years.
1.02 CONTRACTOR EXPERIENCE

A. Identify at least 5 projects with a total value in excess of $2,000,000 in the state the Project is located completed within the past 5 years which are similar in type, character and magnitude to that required by the Contract Documents.

<table>
<thead>
<tr>
<th>Client/Owner Name/Address</th>
<th>Project Name/Location</th>
<th>CURRENT Contact Name, Phone, Email</th>
<th>Contract Value</th>
<th>Time Period</th>
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B. Submit detailed information for each person or firm evidencing qualifications and experience and ability to meet the requirements specified for the following.

1. Dewatering
   a. Installer Qualifications: experienced installer that has specialized in dewatering work in similar subsurface conditions for at least 5 years.
   b. Designer Qualifications: registered professional civil/geotechnical engineer having experience in successfully designing a dewatering system in similar conditions for at least 10 years.

2. Sewage or stormwater bypass pumping: provided, operated, and maintained by a firm that has been regularly engaged in providing bypass pumping for the last 10 years and with at least 10 successful projects.

3. Surveying: registered surveyor in the state where Project is located that has been regularly and continuously engaged in surveying for the last 10 years.
C. Identify at least 10 sewer or stormwater bypass projects completed in the last 5 years that involved equipment similar to that proposed for the Project with bypass pumping capacities of not less than 2 mgd.

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<th>Client/Owner Name/Address</th>
<th>Project Name/Location</th>
<th>CURRENT Contact Name, Phone, Email</th>
<th>mgd</th>
<th>Time Period</th>
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### 1.03 PROPOSED DESIGN PROFESSIONALS AND SURVEYORS

A. The following design professionals and surveyors are to be employed or retained by the Bidder and available for assignment to the Project.

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<tr>
<th>Name</th>
<th>Address</th>
<th>Area of Responsibility</th>
<th>Years of Experience</th>
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B. Attach detailed resumes of qualifications, previous employers and experience for each design professional and surveyor listed above.
1.04 CURRENT LICENSES

A. Indicate Bidder and Subcontractor(s) current licenses including design professionals and surveyors.

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<tr>
<th>Name</th>
<th>State</th>
<th>Type</th>
<th>License number</th>
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1.05 SPECIALTY EXPERIENCE OF BIDDER OR SUBCONTRACTORS

A. Identify at least 5 projects that included a Cured-In-Place-Piping of at least 5,000 linear feet within the past 5 years.

<table>
<thead>
<tr>
<th>Client/Owner Name/Address</th>
<th>Project Name/Location</th>
<th>CURRENT Contact Name, Phone, Email</th>
<th>Bidder or Subcontractor (Name)</th>
<th>Time Period</th>
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B. Identify at least 3 projects that included a temporary bypass pumping system of at least 2 million gallons per day installed within the past 5 years.

<table>
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<tr>
<th>Client/Owner Name/Address</th>
<th>Project Name/Location</th>
<th>CURRENT Contact Name, Phone, Email</th>
<th>Bidder or Subcontractor (Name)</th>
<th>Time Period</th>
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C. Identify at least 10 projects that included either or a combination of stormwater, water and sewerage utilities within public streets within the last 5 years.

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<thead>
<tr>
<th>Client/Owner Name/Address</th>
<th>Project Name/Location</th>
<th>CURRENT Contact Name, Phone, Email</th>
<th>Bidder or Subcontractor (Name)</th>
<th>Time Period</th>
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D. Identify at least 5 projects that included pavement and street repair within public streets within the last 5 years.

<table>
<thead>
<tr>
<th>Client/Owner Name/Address</th>
<th>Project Name/Location</th>
<th>CURRENT Contact Name, Phone, Email</th>
<th>Bidder or Subcontractor (Name)</th>
<th>Time Period</th>
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BIDDER’S QUALIFICATIONS

1.06 PERSONNEL

A. Identify supervisory personnel that are currently employed by the Bidder and available for assignment to the Project (project manager, superintendents, principal foremen and engineers). Identify full-time on-Site project manager in responsible charge of the Work with at least 10 years’ experience as project manager on comparable projects.

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<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Years of Experience</th>
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<tbody>
<tr>
<td></td>
<td>Full time, on-Site Project Manager</td>
<td>Minimum 10 years</td>
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</table>

B. Attach detailed resumes of qualifications, previous employers and experience for each supervisory staff listed above.
1.07 EMERGENCY RESPONSE CAPABILITIES

A. Describe Bidder’s 24 hour/7 days per week emergency response and communication capabilities. Attach additional documentation as necessary.
1.08 EQUIPMENT

A. Identify equipment available for use on the Project. Indicate whether owned by Bidder’s organization or rented. Attach additional sheets as necessary.

<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Size or Capacity</th>
<th>Owned or Rented</th>
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1.09 **BUSINESS INTERESTS**

   A. Identify the names and addresses of the members of the Board of Directors of corporation, or the names and addresses of all persons and parties interested in this Bid as partners of a partnership or as individuals. Attach additional sheets as necessary.

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Telephone No.</th>
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   B. Identify the bank or banks representing the financial responsibility of the Bidder.

<table>
<thead>
<tr>
<th>Name of Bank</th>
<th>Address</th>
<th>Contact Name and Telephone No.</th>
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1.10 VIOLATIONS

A. Following is a list of violations Bidder and its main Subcontractors have received or been the subject of, or otherwise been involved in, regarding any state or local ethic laws, regulation, code, ordinance, policy, or standard, or offenses arising out of submission of bids or the performance of work on public works projects or contracts over the last 5 years. Attach additional sheets as necessary.

<table>
<thead>
<tr>
<th>Name and Location of the Project</th>
<th>Nature of the Violation/Offense</th>
<th>Duration and dates during which the violation/offense took place</th>
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Name and Location of the Project

Nature of the Violation/Offense

Duration and dates during which the violation/offense took place
### BIDDER’S QUALIFICATIONS

#### Name and Location of the Project

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<th>Nature of the Violation/Offense</th>
<th>Duration and dates during which the violation/offense took place</th>
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#### 1.11 LABOR DISPUTES

**A.** Identify labor disputes the Bidder has been the subject of, or otherwise been involved in, during the last 5 years. For these purposes, "labor disputes" shall include picketing or any other activity which disrupted or delayed the work. Attach additional sheets as necessary.

<table>
<thead>
<tr>
<th>Name and Location of the Project</th>
<th>Nature of the Dispute</th>
<th>Duration and dates during which the dispute took place</th>
<th>How the dispute was resolved</th>
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<th>Name and Location of the Project</th>
<th>Nature of the Dispute</th>
<th>Duration and dates during which the dispute took place</th>
<th>How the dispute was resolved</th>
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**END OF SECTION**
SECTION 00 45 19

NON-COLLUSION AFFIDAVIT

_________________________________________________________, being duly sworn, deposes and, under the penalty of perjury, say that the following is true:

1. I am the person responsible within my firm for the final decision as to the price(s) and amount of this Bid or, if not, that I have written authorization, enclosed herewith, from that person to make the statements set out below on his or her behalf and on the behalf of my firm.

2. The price(s) and amount of this Bid have been arrived at independently, without collusion, consultation, communication, or agreement for the purpose of restricting competition with any other contractor, competitor, Bidder, or potential Bidder.

3. Unless otherwise required by law, neither the price(s) nor the amount of this Bid have been disclosed to any other firm or person who is a Bidder, competitor, or potential Bidder on the Project, and will not be so disclosed either directly or indirectly prior to Bid opening.

4. No attempt has been made or will be made to solicit, cause, or induce any firm, partnership, corporation, or person to submit or not submit a Bid on this Project, or to submit a Bid higher than the Bid of this firm, or submit an intentionally high or noncompetitive Bid or other form of complementary Bid, or for the purpose of restricting competition.

5. The Bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary Bid.

6. My firm has not offered or entered into a subcontracting agreement regarding the purchase of materials or services from any firm or person, or offered, promised, or paid cash or anything of value to any firm or person, whether in connection with this or any other Project, in consideration for an agreement or promise by any firm or person to refrain from proposing or to submit a complementary Bid on the Project.

7. My firm has not accepted nor been promised any subcontract or agreement regarding the sale of materials or services to any firm or person, and has not been promised or paid cash or anything of value to any firm or person, whether in connection with this or any other project, in consideration for my firm's submitting a complementary Bid or agreeing to do so, on the Project.
8. I have made a diligent inquiry of all members, officers, employees, and agents of my firm with responsibilities relating to the preparation, approval, or submission of my firm's Bid on the Project and have been advised by each of them that he or she has not participated in any communication, consultation, discussion, agreement, collusion, act, or other conduct inconsistent with any of the statements and representations made in this affidavit.

________________________________________________________________________
Company Name

________________________________________________________________________
Signature

________________________________________________________________________
Company Position

Date: _______________________________

________________________________________________________________________
Attest: _______________________________

Date: _______________________________
SECTION 00 45 57

DISADVANTAGED BUSINESS ENTERPRISE REQUIREMENTS

This Project is subject to the following “Special Provisions for Disadvantaged Business Enterprises” of the Massachusetts Department of Environmental Protection Division of Municipal Services.

The following is a condition of all Bids. The two lowest responsible and eligible Bidders shall submit the required information. The terms used in this Section have the meanings stated in the Bidding Requirements, and General and Supplementary Conditions. See detailed requirements in Section 00 73 38. Referenced forms are included at the end of this Section.

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.

1.01 DBE PARTICIPATION

A. 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 in the Schedule of Participation, whichever is greater:

Disadvantaged MBE (D/MBE): 4.20%  Disadvantaged WBE (D/WBE): 4.50%
1.02 REQUIREMENTS FOR CONTRACT AWARD

DBE packages must be submitted by the two lowest Bidders on the Project. Following Bid opening, the LGU (also “Owner”) shall notify the two lowest Bidders to submit DBE packages to the LGU or the LGUs consultant (also “Engineer”), as directed. By the close of business on the third business day after notification, the two lowest Bidders, including a Bidder who is a D/MBE, D/WBE or DBE, shall submit the following information:

A. A Schedule of Participation (Form EEO-DEP-190C). 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-191C) 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 1.03 below).
1.03 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-190C) does not meet the minimum requirements, the Bid may be rejected by the Awarding Authority (also “Owner”) 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 1.01 above. 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 lowest responsible and eligible Bidder on the Project.

ATTACHMENTS

A. Schedule of Participation (Form EEO-DEP-190C)

B. Letter of Intent (Form EEO-DEP-191C)

C. DBE Certification of United States Citizenship

END OF SECTION
**SCHEDULE OF PARTICIPATION FOR SRF CONSTRUCTION**

**Project Title:** ___________________________  **Project Location:** ___________________________

### Disadvantaged Minority Business Enterprise Participation in the SRF Loan Work

<table>
<thead>
<tr>
<th>Name &amp; Address of D/MBE</th>
<th>Nature of Participation</th>
<th>Dollar Value of Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total D/MBE Commitment:** $ __________

**Percentage D/MBE Participation** = (Total D/MBE Commitment) / (Bid Price) = __________%

### Disadvantaged Women Business Enterprise Participation in the SRF Loan Work

<table>
<thead>
<tr>
<th>Name &amp; Address of D/WBE</th>
<th>Nature of Participation</th>
<th>Dollar Value of Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.
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LETTER OF INTENT FOR SRF CONSTRUCTION

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

Project Title: __________________________ Project Location: __________________________

TO: ____________________________________________

(Name of Bidder)

FROM: ____________________________________________

(Please Indicate Status [ ] D/MBE or [ ] D/WBE)

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

[ ] An individual   [ ] A partnership
[ ] A corporation   [ ] A joint venture with: __________________________
[ ] Other (explain): __________________________________________________

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

DBE PARTICIPATION

<table>
<thead>
<tr>
<th>Description of Activity</th>
<th>Date of Project Commencement</th>
<th>$ Amount</th>
<th>% of Bid Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$</td>
<td>%</td>
</tr>
</tbody>
</table>

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

BIDDER

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

DBE

(Authorized Original Signature)  Date
ADDRESS:
TELEPHONE #:
FEIN:
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

EEO-DEP-191C
EEO-DEP-E Page 11 of 16
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 ____________________________
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TO BE COMPLETED & ISSUED AFTER BID REVIEW ON OWNER LETTERHEAD

Date

[Bidder Contact
Bidder Company
Bidder Address]

SUBJECT: NOTICE OF INTENT TO AWARD
[PROJECT TITLE/OWNER]

You are notified that your Bid dated ___________________ for the above Contract has been considered.

You are the apparent Successful Bidder and the Owner intends that the above Contract be awarded to you. The Total Contract Price of the awarded Contract will be $___________________ [Lump Sum OR based on Unit Prices], subject to the following conditions being met and subject to required reviews and approvals [OPTIONAL and specifically, funding agency approval by [______________________].]

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Intent to Award:

1. Deliver the Contract security (Bonds) and insurance documentation as specified in the General Conditions and Supplementary Conditions (Articles 2 and 5).

2. Provide a letter from your insurance company or agent confirming types and limits of coverage as required in Paragraph 5.03 of the General Conditions.

3. Deliver the following completed and executed certifications and documents:
   a.
   b.
   c. Items to be provided by Subcontractors:
      •
4. Other conditions precedent:

- *LIST OTHERS IF ANY*

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Intent to Award, and declare your Bid security forfeited.

After confirming that you have complied with the above conditions and required approvals are obtained, Owner will deliver a Notice of Award and the conformed Contract Documents with the Agreement for execution.

**INSERT OWNER NAME (Owner)**

By: __________________________

[Name and Title]

Copy to Engineer
SAMPLE NOTICE OF AWARD (C-00 51 00)

TO BE COMPLETED & ISSUED WITH CONFORMED AGREEMENT & CONTRACT ON OWNER LETTERHEAD

Date

[Bidder Contact
Bidder Company
Bidder Address]

SUBJECT: NOTICE OF AWARD
[PROJECT TITLE/OWNER]

You are notified that your Bid dated [insert date] for the above Contract has been considered, and that you are the Successful Bidder and are awarded a Contract for [insert description].

The Total Contract Price of the awarded Contract is $___________________ [Lump Sum OR based on Unit Prices].

______ unexecuted counterparts of the Agreement and 1 copy of the Contract Documents [(except for Drawings)] accompanies this Notice of Award. [OR have been transmitted or made available electronically.] [Sets Drawings will be delivered separately from the other Contract Documents.]

You must comply with the following conditions precedent.

- Return all executed counterparts of the Agreement to Owner within 10 days of receipt of this Notice of Award.
- [Add others as necessary]

After obtaining required reviews and approvals for Contract execution, Owner shall deliver one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions and Supplementary Conditions, if any.

INSERT OWNER NAME (Owner)

By:__________________________________________

[Name and title]

Copy to Engineer
AGREEMENT

Made in Quintuplicate this day _______________ between the City of Quincy, Massachusetts, Municipal Corporation, Within the County of Norfolk, party of the first part and:

That for and in consideration of the following mutual covenants the parties agree with each other as follows:

ARTICLE I: The party of the second part agrees to sell and deliver to the party of the first part the following:

CONSTRUCTION FOR

All in accordance with the detailed specifications and considerations attached to and made a part this contract.

TERMS: As per attached

SPECIFICATIONS AND CONTRACT DOCUMENTS ARE ATTACHED TO AND MADE A PART THEREOF

ORDERED BY: Click or tap here to enter text.

ARTICLE II: The party of the first part agrees to pay to the party of the second part upon satisfactory completion of the delivery of the above mentioned.

FOR THE SUM OF: $Click or tap here to enter text.

Pursuant to MGL c44s31C, I certify that an appropriation has been made in the total amount of the Contract.

___________________________
MAYOR

___________________________
DIRECTOR OF MUNICIPAL FINANCE

___________________________
CITY DEPARTMENT HEAD

___________________________
VENDORS SIGNATURE

___________________________
CITY OF QUINCY

___________________________
CITY SOLICITOR

___________________________
PURCHASING AGENT

___________________________
CONTRACT #:

___________________________
P.O. #:

___________________________
CODE #:
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SIGNATURE AUTHORIZATION

At a duly authorized meeting of the Board of Directors of the

____________________________________________________

(NAME OF CORPORATION)

held on __________________________, at which all the Directors were present or waived notice, it was

VOTED, that:

____________________________________________________

(NAME)               (TITLE)

of this company, be and he/she hereby is authorized to execute Contracts and Bonds in the name and behalf of said Company, and affix its Corporate Seal thereto, and such execution of any Contract or obligation in this Company’s name on its behalf by such __________________________ under seal of the Company, shall be valid

(TITLE)

and binding upon this Company. It was further voted that the City of Quincy may rely on such authorization of future Contracts until notified to the contrary.

A true copy,

ATTEST: _____________________________________

(CLERK’S SIGNATURE)

PLACE OF BUSINESS: ________________________________

DATE OF THIS CONTRACT: ______________________________

I hereby certify that I am the Clerk of the:

____________________________________________________

that _______________________________________________ is the

____________________________________________________

(COMPANY)               (NAME)

duly elected __________________________ of said Company, and that the above VOTE has not been

(TITLE)

amended or rescinded and remains in full force and effect as of the date of this Contract.

____________________________________________________ CORPORATE SEAL
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SECTION 00 52 10
AGREEMENT FORM

THIS AGREEMENT is by and between City of Quincy, MA (“Owner”) and ______________________________ (“Contractor”). Owner and Contractor hereby agree as follows.

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as open cut sewer pipe replacement, manhole replacement, stormwater drainage rehabilitation, backfilling and paving; and all materials and equipment, services and construction inherent to the Work.

ARTICLE 2 – THE PROJECT

2.01 The Project under the Contract Documents is generally known as “FY20 Open Cut Excavation Sewer & Drainage System Repairs”.

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Woodard & Curran, Inc. (Engineer), which is to act as Owner’s representative, assume all duties and responsibilities and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 Time of the Essence
   A. All time limits for Milestones, if any, Substantial Completion, completion of Substantial Completion Punchlist, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Substantial Completion and Final Payment
   A. The Work shall be substantially complete within 140 calendar days from the commencement of Contract Time as provided in Paragraph 2.03 of the Standard General Conditions.

   B. The Post Substantial Completion Punchlist shall be complete in accordance with Paragraph 14.07 of the Standard General and Supplementary Conditions (all Work except Warranty Inspection and final paving) within 170 calendar days from the commencement of Contract Time.
C. The Work shall be ready for final payment in accordance with Paragraph 14.10 of the Standard General and Supplementary Conditions (Warranty Inspection and final paving complete) 14 calendar days prior to expiration of the Warranty Period (351 days from Substantial Completion).

4.03 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the Standard General and Supplementary Conditions, if any. The parties 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 as follows.

1. $2,000 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete.

2. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work except for Warranty Inspection and final paving (completion of Post Substantial Completion Punchlist) within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner $2,000 for each day that expires after the time specified in Paragraph 4.02 above.

3. If Contractor shall neglect, refuse, or fail to complete the Warranty Inspection and final paving within the Contract Time specified in Paragraph 4.02 above or any proper extension thereof granted by Owner, Contractor shall pay Owner an amount equal to 2 percent of the total Contract Price.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraph 5.01.A below based on unit pricing stated in Contractor’s Bid attached hereto:

TOTAL PRICE
[IN WORDS] Dollars and [IN WORDS] Cents

$[DOLLAR AMOUNT]

A. Unit Prices have been computed in accordance with Paragraph 11.03.A of the Standard General Conditions and Supplementary Conditions, if any.
B. The prices for Unit Price Work set forth as of the Effective Date of the Agreement are based on estimated quantities. As provided in Paragraph 11.03 of the Standard General Conditions and Supplementary Conditions, if any, estimated quantities are not guaranteed (except for those that may be estimated by the Contractor), and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 9.07 of the Standard General Conditions and Supplementary Conditions, if any. Final payment for unit price items will be based on actual quantities determined and based on the unit prices in the Unit Prices Form.

C. When the accepted quantity of any item of Unit Price Work performed by the Contractor (as measured in accordance with 9.07 of the General and Supplementary Conditions, if any) differs from the estimated quantity indicated in the attachment(s) to this Agreement for an item of Unit Price Work, no adjustment or allowance will be made for any increased expenses, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly or indirectly from such increased or decreased quantities, or from unbalanced allocation of overhead expense among the Unit Price Work items on the part of the Contractor, or subsequent loss of expected reimbursements therefor.

5.02 Adjustments to the Contract Price

A. Adjustments to the Contract Price for Owner’s Contingency Allowances will be made in accordance with the General Conditions, Paragraph 11.02.C.

1. Adjustments to the Contract Price will be made for diesel fuel, gasoline, liquid asphalt, and portland cement in cast-in-place concrete based on the Base Prices and index established for adjustments in accordance with price adjustment clauses included in Section 00 73 73, SC-12.01.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

A. Contractor shall submit Applications for Payment in accordance with Article 14 of the Standard General Conditions and Supplementary Conditions, if any. Applications for Payment will be processed by Engineer as provided in the Standard General Conditions and Supplementary Conditions, if any, and the General Requirements.
6.02 Progress Payments; Retainage

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor’s Applications for Payment on or about the 1st day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the Standard General Conditions and Supplementary Conditions, if any, (and in the case of Unit Price Work based on the number of units completed).

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the Standard General Conditions and Supplementary Conditions, if any, and additional retainage allowed by Laws and Regulations.

   a. Progress Payments of 95 percent for Work completed (with the balance of 5 percent being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there may be no additional retainage withheld at Owner’s discretion; and

   b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance of 5 percent being retainage).

2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 99 percent of the Work completed (with the balance of 1 percent being retainage), less the value of the Warranty Inspection and final paving identified by the Contractor in the Schedule of Values and less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and Supplementary Conditions, if any, and less the Engineer’s estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected (Punch List) attached to the certificate of Substantial Completion and subject to Paragraph 14.04 of the General Conditions and Supplementary Conditions, if any.

   However, retainage for items planted in the ground shall remain at 5 percent of the cost of such items until Final Payment per Massachusetts General Laws Chapter 30, Section 39G.

3. Upon completion and acceptance of the Work, except for Warranty Inspection and final paving (completion of Post Substantial Completion Punchlist), Owner shall pay remainder of the Contract Price as recommended by Engineer less the value of the Warranty Inspection and final paving identified by the Contractor in the Schedule of Values, in accordance with 14.07 of the General and Supplementary Conditions, if any.
6.03 **Final Payment**

A. Upon completion of **Warranty Inspection and final paving** and acceptance of the Work in accordance with Paragraph 14.10 of Supplementary Conditions Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.10.

**ARTICLE 7 – INTEREST**

7.01 All moneys not paid when due as provided in Article 14 of the General and Supplementary Conditions, if any, shall bear interest at the rate 3 percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston per Massachusetts General Laws Chapter 30, Section 39G. Interest shall not be accrued on retainage.

**ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS AND CERTIFICATIONS**

8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."

E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents, and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor’s safety precautions and programs.
F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

8.02 The Contractor certifies, under the penalties of perjury, that:

A. Contractor has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph:

1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract;

B. Contractor certifies no official or employee of the Owner has a financial interest in this Contract or in the expected profit to arise from the Contract, unless the Contractor and Owner, employee or official both have notified public authorities in writing, that the Contractor and the employee fully complied with the provisions of MGL Chapter 43, Section 27 Interest In Public Contracts By Public Employees Prohibited; Penalty and provisions of MGL Chapter 268A, Section 20 Municipal Employees; Financial Interest In Contracts; Holding One Or More Elected Positions.
C. Contractor has complied with all laws of the Commonwealth of Massachusetts relating to
taxes, reporting of employees and contractors, and withholding and remitting of child support
and, has provided for itself and each Subcontractor, a Certificate of Good Standing from the
Department of Revenue with respect to all returns due and taxes and further, certifies that, to
the best of its knowledge and belief, all state tax returns have been filed and all state taxes have
been paid as required by Law pursuant to Massachusetts General Laws Chapter 62C, Section
49A.

D. If a foreign corporation, Contractor has provided for itself and each Subcontractor that is a
foreign corporation, a certificate of the state secretary stating that the corporation has complied
with requirements of Massachusetts General Laws Chapter 156D, Part 15, Section 15.03 of subdivi-
sion A 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, pursuant to Massachusetts
General Laws Chapter 30, Section 39L.

E. Contractor is able to furnish labor that can work in harmony with all other elements of labor
employed or to be employed in the Work and further certifies that all employees to be
employed at the Work Site 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 shall furnish
documentation of successful completion of said course with the first certified payroll report for
each employee, all as required by Massachusetts General Laws Chapter 30, Section 39S.

F. Contractor is not presently debarred from entering into a public contract Commonwealth of
Massachusetts under the provisions of Massachusetts General Laws Chapter 29, Section 29F,
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.

G. Pursuant to Massachusetts General Laws Chapter 30, Section 39R, Contractor has provided a
statement by management on internal accounting controls, a statement prepared by an
independent certified public accountant regarding management’s statement, and an audited
financial statement to DCAMM for the most recent completed fiscal year.

H. Contractor shall not participate in or cooperate with an international boycott, as defined in
Section 999 (b)(3) and (4) of the Internal Revenue code 1986, as amended, or engage in
conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General
Laws.
Contractor agrees to comply with applicable SRF program and Federal requirements set forth in the Supplementary Conditions including D/MBE and D/WBE requirements, Diesel Retrofit Program, the Davis Bacon Act, and the following.

A. 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 this goal, and shall provide reports documenting the portion of Contract and subcontract dollars paid to DBEs, and its efforts to achieve the goals, with each invoice submitted or at such greater intervals as specified by the Owner. The Contractor shall require similar reports from its Subcontractors.

B. 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 advancements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

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 shall 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 as amended, so that such provisions shall be binding upon each Subcontractor or vendor or Supplier. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States. [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966-1970].

C. The Contractor acknowledges to and for the benefit of the City of Quincy, MA (Owner) and the Commonwealth of Massachusetts (the State) that it understands the material and equipment, and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund that has statutory requirements commonly known as “American Iron and Steel (AIS) Requirement” that requires all of the iron and steel products used in the Project to be produced in the United States including iron and steel products provided by the Contactor pursuant to this Agreement.

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

D. 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.

E. Contractor agrees to incorporate these requirements into all subcontracts regardless of tier and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier. The Contractor shall maintain reasonable records to demonstrate compliance with these requirements.

8.04 The representations and certifications Contractor submitted with its Bid remain shall valid during the period of this Agreement.

8.05 Contractor agrees to incorporate the applicable provisions of the Contract Documents into all subcontracts and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 Contents

A. The Contract Documents consist of the following:

1. This Agreement and attachments

COMPLETE LISTING AFTER AWARD

- Bid Form (submitted by XXXX and dated XXX)
- Bid Supplements and attachments
- Performance Bond
- Payment Bond
- Insurance certificates
• Diesel Retrofit Program Contractor Certification (Contractor and Subcontractors)
• D/MBE and D/WBE documentation and certifications
• Statement of Direct Labor Cost percentage(s)
• Projected monthly cash flow schedule
• List others

2. Forms listed in 00 60 00

3. Standard General Conditions in Section 00 72 05

4. Supplementary Conditions as listed in Section 00 01 10, Table of Contents

5. General Requirements and Specifications as listed in Section 00 01 10, Table of Contents

6. Drawings listed in Section 00 01 15, List of Drawing Sheets

7. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
   a. Notice to Proceed
   b. Work Change Directives
   c. Change Orders

B. The documents listed in Paragraph 9.01.A are attached to this Agreement and made a part hereof.

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the Standard General Conditions and Supplementary Conditions, if any.

ARTICLE 10 – MISCELLANEOUS

10.01 Terms

A. Terms used in this Agreement will have the meanings stated in the Standard General Conditions and Supplementary Conditions, if any.
10.02 Assignment of Contract

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 Successors and Assigns

A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 Severability

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 Contract is Public Record

A. The Contract is subject to MGL Chapter 66 et seq, Public Records, and as such, related submittals, purchase orders, related pricing documents, and invoices will be public documents, and may be available for public and private distribution, except as specifically excluded. The Contractor agrees to provide the Owner copies of any documents requested under this law at no charge to the Owner or the requestor.
IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective as indicated on the Owner’s Agreement page.

SIGNATURES ARE INCLUDED ON THE CITY OF QUINCY’S AGREEMENT FORM PAGE AND CONTRACTOR SIGNATURE AUTHORIZATION FORM PRECEDING THIS SECTION

END OF SECTION
This page intentionally left blank
PERFORMANCE BOND (Form C-006113.13)

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.
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 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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PAYMENT BOND (Form C-006113.16)

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

____________________________ (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.
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.

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:
This page intentionally left blank
SAMPLE NOTICE TO PROCEED (C-00 55 00)

TO BE COMPLETED ON OWNER LETTERHEAD

Date

[Bidder Contact
Bidder Company
Bidder Address]

SUBJECT: NOTICE TO PROCEED
[PROJECT TITLE/OWNER]

You are notified that the Contract Times under the above Contract will commence to run on _______________________. On or before that date, you are to start performing your obligations under the Contract Documents.

[OR for the following portion(s) of the Work:
[Describe the limits of the Work covered if option above chosen]

A Notice to Proceed for the remaining Work will follow. ]

In accordance with Article 4 of the Agreement, the number of days to achieve Substantial Completion is __________, and the number of days to achieve readiness for final payment is __________

OR [*the date of Substantial Completion is __________, and the date of readiness for final payment is __________]*

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions and Supplementary Conditions if any, provide that you must have delivered (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which you are required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

• Comply with Articles 2.05 and 2.06 of the General and Supplementary Conditions (if any)
• [*add other requirements*]

INSERT OWNER NAME (Owner)

By: ________________________________
[Name and title]

Copy to Engineer

Based on EJCDC C-550 Notice to Proceed
Prepared by the Engineers Joint Contract Documents Committee and endorsed by the Construction Specifications Institute.
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SECTION 00 60 00

PROJECT FORMS

The following forms are included in this Section and shall be used for the Project as specified in the General Conditions and Supplementary Conditions if any, and the General Requirements. Completed and execution versions of these forms used during the Project shall be incorporated into the Agreement and made a part thereof.

- Submittal Transmittal (Form C-00 62 11)
- Application for Payment (Form C-00 62 76)
- Request for Interpretation/Information (Form C-00 63 15)
- Field Order (Form C-00 63 36)
- Work Change Directive (Form C-00 63 49)
- Change Request (Form C-00 63 60)
- Change Order (Form C-00 63 63 MA)
- Change Order Form (DEP-DMS)
- City of Quincy Standard Change Order Form
- Notice of Substantial Completion (Form C-00 65 15)
- Certificate of Substantial Completion (Form C-00 65 16)
- Notice of Completion (Form C-00 65 18)

END OF SECTION
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<table>
<thead>
<tr>
<th>Submittal (Item) No.</th>
<th>Revision (A B C etc.)</th>
<th>Date</th>
<th>Title/Description</th>
<th>Vendor/Manufacturer</th>
<th>Copies</th>
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</tbody>
</table>

☐ The material and equipment, and requirements for construction/installation contained in Submittal No.(s) ______________________________________ have been reviewed and we certify that they are correct and in strict conformance with the requirements specified (no exceptions or deviations)

☐ The material and equipment and requirements for construction/installation contained in Submittal No.(s) ______________________________________ have been reviewed and we certify that they are correct and in strict conformance with the requirements specified except for the following deviations (list below or attach listing):

________________________________________________________________________________ ___________________________________________

________________________________________________________________________________ ___________________________________________

CONTRACTOR’S NAME
________________________________________________________________________________

ADDRESS
________________________________________________________________________________

BY: __________________________________________ DATE: ______________________________
# Contractor's Application for Payment

**Application No.**

**Application Date:**

<table>
<thead>
<tr>
<th>To (Owner):</th>
<th>From (Contractor):</th>
<th>Via (Engineer):</th>
</tr>
</thead>
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<table>
<thead>
<tr>
<th>Project:</th>
<th>Owner's Contract No.:</th>
<th>Contractor's Project No.:</th>
<th>Engineer's Project No.:</th>
</tr>
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</table>

## Change Order Summary

<table>
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<tr>
<th>Approved Change Orders</th>
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<tbody>
<tr>
<td><strong>Number</strong></td>
<td><strong>Additions</strong></td>
</tr>
<tr>
<td>1. ORIGINAL CONTRACT PRICE</td>
<td>$</td>
</tr>
<tr>
<td>2. Net change by Change Orders</td>
<td>$</td>
</tr>
<tr>
<td>3. Current Contract Price (Line 1 ± 2)</td>
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<td>4. TOTAL COMPLETED AND STORED TO DATE</td>
<td>$</td>
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<td>5. RETAINAGE:</td>
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<tr>
<td>a. Work Completed</td>
<td>$</td>
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<td>b. Stored Material</td>
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<tr>
<td>c. Total Retainage (Line 5a + Line 5b)</td>
<td>$</td>
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<tr>
<td>6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)</td>
<td>$</td>
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<tr>
<td>7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)</td>
<td>$</td>
</tr>
<tr>
<td>8. AMOUNT DUE THIS APPLICATION</td>
<td>$</td>
</tr>
<tr>
<td>9. BALANCE TO FINISH, PLUS RETAINAGE</td>
<td>$</td>
</tr>
</tbody>
</table>

## Contractor's Certification

The undersigned Contractor certifies that to the best of its knowledge: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

| Payment of | $ | (Line 8 or other - attach explanation of the other amount) |
| Payment of | $ | (Line 8 or other - attach explanation of the other amount) |

is recommended by: ________________________________  (Engineer)  (Date)

Approved by: ________________________________  (Owner)  (Date)

Approved by: ________________________________  Funding Agency (if applicable)  (Date)
For (Contract): [Insert Contract Information]

Application Period: [Insert Application Period]

Application Number: [Insert Application Number]

Application Date: [Insert Application Date]

<table>
<thead>
<tr>
<th>Specification Section No.</th>
<th>Description</th>
<th>Scheduled Value ($)</th>
<th>From Previous Application (C + D)</th>
<th>This Period</th>
<th>Materials Presently Stored (not in C or D)</th>
<th>Total Completed Stored to Date (C + D + E)</th>
<th>% (F / B)</th>
<th>Balance to Finish (B - F)</th>
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Totals
### Progress Estimate - Unit Price Work

**Contractor's Application**

<table>
<thead>
<tr>
<th>Bid Item No.</th>
<th>Description</th>
<th>Item</th>
<th>Unit Price</th>
<th>Bid Item Quantity</th>
<th>Bid Item Value ($)</th>
<th>Estimated Quantity Installed This Month</th>
<th>Estimated Quantity Installed To Date (Include This Month)</th>
<th>Value of Work Installed to Date</th>
<th>Materials Presently Stored (not in C)</th>
<th>Total Completed and Stored to Date (D + E)</th>
<th>% (F / B)</th>
<th>Balance to Finish (B - F)</th>
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**Totals**
### Stored Material Summary

**FORM C-00 62 76**

**Contractor's Application**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
</table>
| Bid Item No. | Supplier Invoice No. | Submittal No. (with Specification Section No.) | Storage Location | Description of Materials or Equipment Stored | Stored Previously | Date Placed into Storage (Month/Year) | Amount ($)
| | | | | | Amount Stored this Month ($) | Subtotal Amount Completed and Stored to Date (D + E) |
| | | | | | | Incorporated in Work Date (Month/Year) | Amount ($)
| | | | | | | Materials Remaining in Storage ($) (D + E - F) |

**Totals**
REQUEST FOR INTERPRETATION/INFORMATION
(Form C-00 63 15)

RFI #: ___________ □ Attachment

To: ___________________________ From: ___________________________

Attn: ___________________________ Issue Date: ___________________________

Project: ___________________________ Required Reply Date: ___________________________

DISTRIBUTION:

Contractor Owner Engineer
□ ______________ □ ______________ □ ______________
□ ______________ □ ______________ □ ______________
□ ______________ □ ______________ □ ______________

REFERENCES:

• Specifications: ___________ Section: ___________ Page/Paragraph: ___________
• Drawings: ___________ Issue Date: ___________ Detail/Sections: ___________
• Work Area: ___________ Grid/Level: ___________

RFI DESCRIPTION:

From: ______________ Tel No: ______________ Fax: No: ______________

Initial: ______________ E-mail: ______________

---------------------------------------------------------------

RFI REPLY: (response may be transmitted in separate document)

Possible Cost Effect

Yes: No:

From: ______________ Reply Date: ______________ xC: ______________

Initial: ______________

---------------------------------------------------------------

Based on: CASE Form B-1999
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**Field Order (C-00 63 36)**

<table>
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<th>No. _____</th>
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**Date of Issuance:** ____________________________  **Effective Date:** ____________________________

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<tr>
<th>Project:</th>
<th>Owner:</th>
<th>Owner's Contract No.:</th>
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<th>Contract:</th>
<th>Date of Contract:</th>
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<tr>
<th>Contractor:</th>
<th>Engineer's Project No.:</th>
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</table>

**Attention:**

You are hereby directed to promptly execute this Field Order issued in accordance with General Conditions Paragraph 9.04.A, for minor changes in the Work without changes in Contract Price or Contract Times. If you consider that a change in Contract Price or Contract Times is required, please notify the Engineer immediately and before proceeding with this Work.

**Reference:**

(Specification Section(s))  (Drawing(s) / Detail(s))

**Description:**

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

**Attachments:**

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
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Engineer:

**Receipt Acknowledged by Contractor:**

<table>
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<th>Date:</th>
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Copy to Owner

---

Based on EJCDC C-942 Field Order
Prepared by the Engineers Joint Contract Documents Committee and endorsed by the Construction Specifications Institute.
Page 1 of 1
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Work Change Directive (Form C-00 63 49)

No. ____

Date of Issuance: __________________________ Effective Date: __________________________

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<tr>
<th>Project:</th>
<th>Owner:</th>
<th>Owner's Contract No.:</th>
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<th>Contract:</th>
<th>Date of Contract:</th>
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<tr>
<th>Contractor:</th>
<th>Engineer's Project No.:</th>
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</table>

**Contractor is directed to proceed promptly with the following change(s):**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
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**Attachments (list documents supporting change):**

<table>
<thead>
<tr>
<th>Attachments</th>
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</table>

**Purpose for Work Change Directive:**

Authorization for Work described herein to proceed on the basis of Cost of the Work due to:

- Nonagreement on pricing of proposed change.
- Necessity to expedite Work described herein prior to agreeing to changes on Contract Price and Contract Time.

**Estimated change in Contract Price and Contract Times:**

<table>
<thead>
<tr>
<th>Contract Price</th>
<th>$ _______ (increase/decrease)</th>
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<tr>
<th>Contract Time</th>
<th>_______ (increase/decrease) days</th>
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**Recommended for Approval by Engineer:**

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<th>Date</th>
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**Authorized for Owner by:**

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**Received for Contractor by:**

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**Received by Funding Agency (if applicable):**

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CHANGE REQUEST (FORM C-00 63 60)
(Design Changes/Deviations/Substitutions)

CR NO.   DATE

Project:

Request Initiated by:  Impact to Contract Price expected  
☐ Contractor  ☐  
☐ Owner  ☐  
☐ Engineer  Change Orders will be processed separately

Impact to Contract Time expected  

Request submitted as (format):

Description of Change (☐ documentation attached)

Reason for Change

Response:  ☐ This constitutes a Written Amendment to the Agreement.

Review of the proposed change/deviation/substitution by Engineer is for general compatibility with the design concept of the Project. This review does not extend to means, methods, sequences, or procedures of construction or to issues of safety incident thereto. This review shall not relieve the Contractor from responsibility for full compliance with the requirements specified in the Contract Documents and to determine and verify the information contained therein.

Recommended By Engineer for Acceptance (subject to above comments if any)
☐ recommended for processing and approval under a separate Change Order

NAME:

☐ Approved by Owner (no schedule or cost impact)
☐ Acknowledged by Owner – to be processed and approved under a separate Change Order

NAME:

☐  

Signature  Date

Approved by Contractor
☐ Change Order to be requested

NAME:

Signature  Date
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### CHANGE ORDER FORM

PM-10 Attachment 1       Page 1 of 2

<table>
<thead>
<tr>
<th>SRF Number</th>
<th>Public Entity</th>
<th>Contract Number</th>
<th>Change Order Number</th>
</tr>
</thead>
</table>

**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

---

DEP-DMS-PM Page 11 of 21

DEP-DMS-F Page 11 of 24

pspkg 2018-07-11
CHANGE ORDER/AMENDMENT NO.

Made in Quintuplicate this day ______________________ between the City of Quincy, Massachusetts, a Municipal Corporation, within the County of Norfolk, Party of the First Part and:

Contractor name:
Contractor address:

Party of the Second Part.

WITNESSETH: That for and in consideration of the following mutual covenants contained herein the parties agree to amend Contract (insert contract number) dated (insert Contract date) between the same parties as follows:

ARTICLE I: In the Agreement, we are (INCREASING/DECREASING) by $_________________

Because (insert justification):

ARTICLE II: In the Agreement of the Contract, for ______________________________

Between the same parties, strike out the words and figures:

(Insert Figures)
(Insert Words)

and substitute the words and figures:

(Insert Figures)
(Insert Words)

CITY OF QUINCY

________________________________________
MAYOR

Sufficient Funds are available to cover the contract in the account to be charged.

________________________________________
CITY SOLICITOR

________________________________________
DIRECTOR OF MUNICIPAL FINANCE
________________________________________
PURCHASING AGENT
VENDOR SIGNATURE

DEPT. ________________________________

P.O. #: ______________________________

DIRECTOR OF POLICY

CODE: ________________________________

PROJECT NAME:

CONTRACT NUMBER:

CHANGE ORDER NUMBER:

ORIGINAL CONTRACT AMOUNT: $ 

PREVIOUS CHANGE ORDERS (# - #): $ 

CURRENT CONTRACT AMOUNT: $ 

CHANGE IN CONTRACT PRICE (this change order): $ 

TOTAL ADJUSTED CONTRACT PRICE: $ (include all change orders): 

Reason for Change Order:

(1) Additional Work ________ (3) Change in Bid Quantities ________
(2) Field Change ________ (4) Change in Schedule ________
(5) Other: ________________________________

(a) Time to complete the work is extended by _____ calendar days.

(b) Extended completion date is ________

Reason & Description of Change:

Supporting Documents (list or attached, as necessary):

This Change Order has been requested by: _____ CONTRACTOR _____ CITY

This Change Order has been reviewed by: ____________________________ (TITLE) (Date)
**Change Order No. _____**  
(Form C-00 63 63) MA

<table>
<thead>
<tr>
<th>Date of Issuance:</th>
<th>Effective Date:</th>
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<tr>
<th>Project:</th>
<th>Owner:</th>
<th>Owner's Contract No.:</th>
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<th>Contractor:</th>
<th>Engineer's Project No.:</th>
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The Contract Documents are modified as follows upon execution of this Change Order:

Description:

----------

Attachments (list documents supporting change):

----------

<table>
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<tr>
<th>CHANGE IN CONTRACT PRICE:</th>
<th>CHANGE IN CONTRACT TIMES:</th>
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<td>Original Contract Times:</td>
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<tr>
<td>$_______________________</td>
<td>□ Working days □ Calendar days</td>
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<tr>
<td></td>
<td>Substantial completion (days or date): __________</td>
</tr>
<tr>
<td></td>
<td>Ready for final payment (days or date): __________</td>
</tr>
</tbody>
</table>

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

| $_______________________ | [Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: |
| ________________________ | Substantial completion (days): ________________________ |
| ________________________ | Ready for final payment (days): ________________________ |

Contract Price prior to this Change Order:

| $_______________________ |
| ________________________ |

Contract Price incorporating this Change Order:

| $_______________________ |
| ________________________ |

RECOMMENDED:  
By: ___________________________  
Engineer (Authorized Signature)  
Date: ___________________________  
Approved by Funding Agency (if applicable):  
Date: ___________________________

ACCEPTED:  
By: ___________________________  
Owner (Authorized Signature)  
Date: ___________________________  
Approved by Funding Agency (if applicable):  
Date: ___________________________

ACCEPTED:  
By: ___________________________  
Contractor (Authorized Signature)  
Date: ___________________________  
Approved by Funding Agency (if applicable):  
Date: ___________________________

---

Based on EJCDC C-941 Change Order  
Prepared by the Engineers Joint Contract Documents Committee and endorsed by the Construction Specifications Institute.  
Page 1 of 3
Pursuant to MGL c.44, s31C, I certify that appropriated funds are available for the total amount of this Change Order.

______________________________________________________ Date: _________________________
Owner’s Auditor/Accountant (Name)

Pursuant to MGL c.30, s39I, reasons for deviation are as stated above or attached. The specified deviation(s) does not materially injure the Project as a whole, the Work is of the same cost and quality or an equitable adjustment has been agreed upon, and the deviation is in the best interest of the Owner.

______________________________________________________ Date: _________________________
Owner
A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.
This page intentionally left blank
Notice of Substantial Completion (C-00 65 15)

<table>
<thead>
<tr>
<th>Project:</th>
<th>Owner:</th>
<th>Owner's Contract No.:</th>
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<tbody>
<tr>
<td>Contract:</td>
<td></td>
<td>Date of Contract:</td>
</tr>
<tr>
<td>Contractor:</td>
<td></td>
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</tr>
</tbody>
</table>

This NOTICE of Substantial Completion applies to:

- [ ] The following Systems, Equipment or specified portions
- [ ] All Work under the Contract Documents

Date of Substantial Completion for above

The following documents are attached to and made part of this Notice.

Submitted by Contractor

Date
Certificate of Substantial Completion (Form C-00 65 16)

Project:

Owner: Owner's Contract No.:

Contract: Engineer's Project No.:

This [tentative] [definitive] Certificate of Substantial Completion applies to:

☐ All Work under the Contract Documents: ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

☐ Amended Responsibilities ☐ Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:
The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer ___________________________ Date __________

Accepted by Contractor ___________________________ Date __________

Accepted by Owner ___________________________ Date __________
Notice of Completion (Form C-00 65 18)

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<thead>
<tr>
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<th>Owner:</th>
<th>Owner's Contract No.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract:</td>
<td>Date of Contract:</td>
<td></td>
</tr>
<tr>
<td>Contractor:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This NOTICE of Completion applies to:

- [ ] All Work under the Contract Documents:
- [ ] The following specified portions:

Date of final Completion

The Work to which this Notice applies is ready for inspection by authorized representatives of Engineer and Owner. Contractor has completed all corrections, delivered all required documentation, and the Project, or portion designated above, is complete. The Date of Completion of the Project or portion thereof designated above is hereby declared by the Contractor.

The following documents are attached to and made part of this Certificate:

- Final Punchlist
- Final Application for Payment

Only the making and acceptance of final payment will constitute:

1. A waiver of all claims by Owner against Contractor, except claims arising from any unsettled liens, from Defective Construction appearing after final inspection; 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 timely made in writing and still unsettled.

Submitted by Contractor

Date
This page intentionally left blank
See various sections of the Supplementary Conditions for additional modifications and supplements

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.

SECTION 00 72 05
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

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by

CONSTRUCTION SPECIFICATIONS INSTITUTE

REVISIONS HIGHLIGHTED WITHIN THE TEXT OF THIS SECTION
HAVE BEEN PREPARED BY WOODARD & CURRAN
See various sections of the Supplementary Conditions for additional modifications and supplements.

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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www.acec.org

American Society of Civil Engineers
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(800) 548-2723
www.asce.org

Associated General Contractors of America
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

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SECTION 00 72 05
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. May also be referred to as “Proposal” which may be used interchangeably and shall have the same meaning.

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


8. Bidding Requirements—The advertisement or invitation to bid, Instructions to Bidders, Supplementary 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.


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 performed by Contractor and complement the Specifications. Shop Drawings and other Contractor submittals are not Drawings as so defined. May also be referred to as “Plans”, which may be used interchangeably and shall have the same meaning. Notes on Drawings are directed to Contractor unless specifically noted otherwise.

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 01 of the Specifications, which govern the Work in all sections 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. May also be referred to as “Construction Schedule”, which may be used interchangeably and shall have the same meaning.

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 and which establish the standards by which such portion of the Work will be judged.
See various sections of the Supplementary Conditions for additional modifications and supplements.

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. The Specifications are based on the guidelines of the Construction Specifications Institute (CSI) Project Resource Manual, and are directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases in the Specifications.

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

B. Additional Terms

1. Final Completion—The time at which all Work is completed and ready for final payment in accordance with Paragraph 14.07 of these General Conditions.

2. Industry Practice—The written practices, methods, materials, supplies and equipment, as changed from time to time, that are commonly used in the industry applicable to the Project to design, construct and operate facilities and plants, or any practices, methods and acts, which in the exercise of reasonable judgment in light of the facts known at the time, could have been expected to accomplish the desired results consistent with good business practices, reliability, safety and expedition.

3. Installer—The entity engaged by Contractor or a Subcontractor for installation, erection, application and similar required operations of a particular portion of the Work at the Site, including who has specialty experience in the Work they are engaged to perform.

4. Punch List—A list of open items representing portions of the Work which Contractor, Engineer, Owner reasonably agree is not complete on the date of Substantial Completion but which items will not significantly interfere with the safe, reliable operation and integrity of the Project or its intended use.

5. Purchase Order—A written agreement between Contractor and a Supplier for provision of material and equipment.
6. Warranty Period—The correction period after the date of Substantial Completion per Paragraph 13.07 of these General Conditions.

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. See also Paragraph 17.02 of these General Conditions.

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: Prior to execution of the Agreement and before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional 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 Contract Documents or 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 and the lead times for equipment and materials per the listing in subparagraph 2.05.A.4;

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 which will be confirmed in writing by Contractor at the time of submission. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work; and

4. a complete listing of equipment and materials with lead times between placing orders and delivery, including normal allowances of time for processing and correcting Shop Drawings.

B. Evidence of Insurance: In accordance with Paragraph 2.01.

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 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.

4. Contractor’s listing of equipment and materials with lead times must be reflected in the Progress Schedule. All orders for long lead items shall be placed within 30 days after Effective Date of the Agreement if delivery is critical to scheduling. Failure to place orders in accordance with the Progress Schedule may result in full liability for liquidated damages if Milestones and Contract Times are not met.

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 and comprise the entire agreement between Owner and Contractor concerning the Work. If any term or provision of any of the Contract Documents, or the application thereof to any party or circumstance shall, to any extent, be determined to be invalid or unenforceable, the remaining provisions of the Contract Documents, or the application of such term or provision to parties or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term and provision of each of the Contract Documents shall be valid and shall be enforced to the fullest extent permitted by Laws and Regulations.

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 such conflict, error, ambiguity, or discrepancy in the Contract Documents unless if Contractor had actual knowledge or reasonably should have known of such conflict, error, ambiguity, or discrepancy thereof.
B. Resolving Discrepancies:

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 transmitted in portable document format (PDF), and other electronic media formats of text, data, graphics or other file types supported by any digital document exchange system implemented for the Project, all of which are understood by all parties to constitute official Project correspondence and submittals. 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 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. (Not Used) 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.

C. Possible Price and Times Adjustments:

1. The Contract Price or the Contract Times, or both, will may 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, or

   d. written notice is submitted after final payment.

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 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.
3. Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, shall not be liable to Contractor for any Claims for losses or damages incurred by Contractor related to Underground Facilities not shown or indicated (including but not limited to all fees and changes of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs).

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 unless Contractor caused or contributed to such Hazardous Environmental Condition. 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, 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 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 a letter from Contractor’s insurance company(s) and agents confirming types and limits of coverage (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;

7. claims arising out of violation of Laws or Regulations; and

8. claims for damages because of negligent acts, errors and omissions arising out of performing or providing professional services.

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.68 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) and will contain waiver provisions in accordance with Paragraph 5.07;

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.

7. In the event general liability insurance is provided on a claims-made policy, the retroactive date of such policy shall not be later than the date of the Notice to Proceed or the Effective Date of the Agreement, whichever is earlier. For construction periods extending beyond the expiration date of an initial claims-made policy, the retroactive date of all subsequent claims-made policies shall not be later than the date of the Notice to Proceed.

C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation and related coverage:

<table>
<thead>
<tr>
<th>Minimum limit of liability</th>
<th>Statutory</th>
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<tr>
<td>Applicable Federal (e.g., Longshoreman's)</td>
<td>Statutory</td>
</tr>
<tr>
<td>Employer's Liability</td>
<td>$1,000,000</td>
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2. Contractor’s General Liability:

$1,000,000 per occurrence; $2,000,000 general aggregate; including:

- Broad Form Property Damage Liability including coverage for acts of terrorism
- Completed Operations and Product Liability
- Contractual Liability
- Independent Contractors
- Explosion, Collapse & Underground Hazards
- Personal Injury Coverage, Exclusion Deleted
- Damage to Rented Premises
- Medical Expenses

Pollution Liability (covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from the Contractor's operations and completed operations maintained for no less than three years after final completion): $1,000,000

Excess or Umbrella Liability: $5,000,000 per occurrence; $5,000,000 general aggregate

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

Combined Single Limit of $1,000,000 for bodily injury & property damage covering Contractor and any vehicles owned, hired and non-owned by the Contractor
See various sections of the Supplementary Conditions for additional modifications and supplements.

4. **Professional Liability (E&O for engineers, architects or surveyors):** $1,000,000 for each claim with an annual aggregate of at least $2,000,000 if professional services are required under the Specifications.

5. **Owners Protective Liability:** as may be specified in the Supplementary Conditions.

D. Any self-insured retention (not allowed for Worker’s Compensation) and/or deductibles must be identified and cannot exceed $100,000 per occurrence without the prior approval of the Owner. Contractor must provide either an audited financial statement to confirm solvency or a letter of credit guaranteeing the $100,000 in case of loss for the duration of the Project and for the Correction Period.

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 (ongoing and completed) under the Contract Documents.

5.06 **Property Insurance**

A. **Unless otherwise provided in the Supplementary Conditions,** Owner may, in its discretion, purchase and maintain property insurance upon the Work at the Site. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. Contractor shall be responsible for any (subject to such deductible amounts or self-insured retention 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” or Special Forms 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 special form perils or causes of loss, including but not limited to: fire, lightning, flood, pollution, 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 (including but not limited to fees and charges of engineers and architects);
See various sections of the Supplementary Conditions for additional modifications and supplements.

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; and

7.8. comply with the requirements of Paragraph 5.06.C of the General Conditions.

B. (Not used) 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.

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 (Not used)

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
See various sections of the Supplementary Conditions for additional modifications and supplements.

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 Contractor in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party Owner shall so notify the other party Contractor 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 Owner such additional information in respect of insurance provided as the other may be reasonably requested. If either party Contractor does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party Contractor shall notify the other party Owner 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 Owner may elect to obtain equivalent bonds or insurance to protect such other party’s Owner’s interests at the expense of the party Contractor 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.

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.

D. Provision of any instructions:

1. will not be effective to assign to Owner, or any of Owner's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 8.09; and

2. will not be effective to assign to Engineer, or any of Engineer's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09.

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, make or catalogue number, 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 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

         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 Bidding Requirements or 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 the Contractor has submitted a list thereof in accordance with the Bidding Requirements or Supplementary Conditions (which shall be included as an attachment to the Agreement), 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, 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.

1. 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
See various sections of the Supplementary Conditions for additional modifications and supplements

such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

2. Such agreement between Contractor and the Subcontractor or Supplier shall specifically include dispute resolution provisions similar to those in Article 16 (if any) and provisions required by Laws and Regulations identified in the various Supplementary Conditions.

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, 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.

D. At the Owner’s option, Contractor shall defend claims in connection with any alleged infringement of such rights.

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 observes that the Specifications or Drawings are at variance with any Laws or Regulations, Contractor shall give Engineer prompt written notice thereof, and any necessary changes will be authorized by one of the methods set forth in Paragraph 3.04. 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, except as may be set forth in the Supplementary Conditions.

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.

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 and other closeout submittals specified 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 (if any) and other safety requirements 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 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 Emergencys

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 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. or for errors or omissions in a Shop Drawing or Sample.
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.

2. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than 3 submittals. Engineer will record Engineer’s time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer’s charges for such time.

3. In the event that Contractor requests a change of a previously approved item, Contractor shall reimburse Owner for Engineer’s charges for its review time unless the need for such change is beyond the control of Contractor.

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 in accordance with Subcontractor warranties, manufacturers and Suppliers warranties on equipment and material, and extended or special warranties and will not be defective for the correction period specified in 13.07. Owner and Engineer and its their officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor’s warranty and guarantee.

1. Contractor shall obtain and preserve for the benefit of the Owner:

   a. manufacturers’ and Suppliers’ written warranties and guarantees on equipment and material incorporated into the Work;

   b. written warranties and guarantees from each Subcontractor engaged in the performance of the Work; and

2. extended or special warranties.

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 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; or

8. any acceptance by Owner or any failure to do so.

D. Contractor shall prepare and execute a written general warranty and guarantee applicable to the Work reflecting the provisions of this Paragraph 6.19, Article 13 and other applicable provisions of the Contract Documents pertaining to warranties and guarantees, Subcontractor, manufacturers and Supplier warranties and guarantees, and extended or special warranties and guarantees. Contractor shall submit this written general warranty and guarantee in accordance with Article 14 and the General Requirements.

E. Provision of any warranties or guarantees:

1. will not be effective to assign to Owner, or any of Owner's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 8.09; and

2. will not be effective to assign to Engineer, or any of Engineer's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09.

D.F. The warranty and guarantee provisions of this Paragraph 6.19 shall be in addition to and not in limitation of any other warranties, guarantees or remedies allowed by Law or required by the Contract Documents.
6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify, defend, 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 or wrongful 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.

1. Without limiting the generality of the preceding Paragraph, the Contractor hereby specifically agrees to indemnify, defend, and hold harmless the Owner and Engineer from all such claims, losses or expenses which arise out of injuries of employees of the Contractor or any of its Subcontractors or Suppliers of any tier related to performance of the Work. It is the Owner's intention that all financial risk of injuries related to the Work be borne by the Contractor, and that the Owner have no financial responsibility, direct or indirect, for any such claims.

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, provided however, that if the claim, cost, loss or damage referred to in this Paragraph 6.20 results from failure of the Engineer to discover a condition, Underground Facilities or object which is underground or otherwise not reasonably observable by the Engineer, and if said failure to discover either was or should have been apparent to the Contractor in that the said condition or object is omitted from the Engineer’s maps, Drawings, opinions, reports, surveys, Change Orders, designs or Specifications, then the Contractor shall be liable for indemnification of the Engineer and Owner under Paragraph 6.20 for claims, costs, losses and damages resulting from said failure to discover unless Contractor shall have notified Engineer of the existence
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 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
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.

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. **However, the Owner shall have the right to direct the Contractor to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto.** 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.

**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.
See various sections of the Supplementary Conditions for additional modifications and supplements

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. However, the Engineer shall have the right to direct the Contractor to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto.

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 herein, 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.

B. The Resident Project Representative (RPR) will be Engineer's employee or agent at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall be through or with the full knowledge and approval of Contractor. The RPR shall perform the following.

1. Schedules: Review the Progress Schedule, schedule of Shop Drawing and Samples submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

2. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other Project-related meetings, and prepare and circulate copies of minutes thereof.

3. Liaison:

a. Serve as Engineer’s liaison with Contractor, working principally through Contractor’s authorized representative, to assist in providing information regarding the intent of the Contract Documents.

b. Assist Engineer in serving as Owner’s liaison with Contractor when Contractor’s operations affect Owner’s on-Site operations.

c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
4. **Interpretation of Contract Documents:** Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

5. **Shop Drawings and Samples:**
   a. Record date of receipt of Samples and approved Shop Drawings.
   b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

6. **Modifications:**
   a. Consider and evaluate Contractor’s suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR’s recommendations, to Engineer.
   b. Transmit to Contractor in writing, decisions as issued by Engineer.

7. **Review of Work and Rejection of Defective Work:**
   a. Conduct on Site observations of Contractor’s Work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
   b. Report to Engineer whenever RPR believes that any part of Contractor’s Work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of Work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

8. **Inspections, Tests, and System Startups:**
   a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner’s personnel, and that Contractor maintains adequate records thereof.
   b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
9. Records:

a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of Contractor, Subcontractors, and major Suppliers.

b. Maintain records for use in preparing Project documentation.

10. Reports:

a. Furnish periodic reports to Engineer as required of progress of the Work and of Contractor’s compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.

b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.

c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition or conditions that may impede the compliant operation of existing facilities on Site.

11. Payment Requests: Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

12. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

13. Completion:

a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of the Punch List (lists of items to be completed or corrected).

b. Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final Punch List (list of items to be completed and deficiencies to be remedied).

c. Observe whether all items on the final Punch List have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the Notice of Acceptability of the Work.
C. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment, including “or-equal” items.

2. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor’s superintendent.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor’s Work unless such advice or directions are specifically required by the Contract Documents.

5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-Site by others except as specifically authorized by Engineer.

7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part or determine operational protocol that may affect the compliant operation of existing facilities.

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 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.
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. However, the Engineer shall have the right to direct the Contractor to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto. 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.

F. Engineer will have no responsibility or authority:

1. To order changes in construction which will result in additional costs or which will require extensions of Contract Times;

2. To suspend all or any portion of Contractor's operations;

3. To terminate all or any portion of the Work;

4. To make final acceptance of all or any portion of the Work; and

5. To operate or maintain any portion of the Work.

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 30-14 days) after the start of the event giving rise thereto. Failure to comply with this notice requirement shall constitute a waiver of the Claim. 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 60-30 days after the start of such event (unless Engineer allows additional time for claimant to submit additional 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.

G. Contractor shall not have the right to stop performance of the Work pending resolution of a Claim.

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 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. Small tools and manual equipment are not allowable and considered to be included in overhead.

1) Rentals of construction equipment and machinery and the parts thereof whether rented from Contractor or others in accordance with rates published in current edition of the Rental Rate Blue Book® for construction equipment published by EquipmentWatch® (www.equipmentwatch.com). When Contractor-owned equipment is ordered by Owner or Engineer to be held at standby, equipment rental rates shall be 50% of normal rate. Rental or standby shall not include time that equipment is inoperative because of malfunction or breakdown and shall cease when the use thereof is no longer necessary for the Work. The rental rate shall be determined as follows.
   a) For equipment already on the Project: the monthly prorated rental rate by hourly use.
   b) For equipment not on the Project: most cost effective daily, weekly or monthly rate. 1 month normal use = 176 hours.
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 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.
See various sections of the Supplementary Conditions for additional modifications and supplements

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: (Not used)

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. Owner’s Contingency Allowances:

1. Contractor agrees that Owner’s a contingency allowance, if any, is for the sole use of Owner to cover unestimated anticipated costs for certain items.

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 Owner’s contingency allowances, and the Contract Price shall be correspondingly adjusted. Contractor shall not receive payment for any unused portion of the contingency allowance.

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.

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, provided, however, that on any subcontracted work the total maximum fee to be paid by Owner under this subparagraph shall be no greater than 27 percent of the costs incurred by the Subcontractor who actually performs the Work;
   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
   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, acts of war or terrorism, or acts of God (force majeure).

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 war or terrorism, 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.

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. (Not Used) 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. Except where responsibility for a specific inspection or test is expressly allocated to Owner in the Specifications or by Laws and Regulations, 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 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 and may be deducted from amounts otherwise due the 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, including materials, equipment and supplies or as defined in manufacturers’ and Suppliers’ warranties (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 and the terms of this Paragraph 13.07 will continue to apply.

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 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, or immediately in the case of an emergency, 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 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 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, and provides an indemnity satisfactory to Owner for all claims, costs, losses and damages arising out of such Liens;

   c. there are other items entitling Owner to a set-off against the amount recommended including liability for liquidated damages and correction of defective work by Owner or others; 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.
See various sections of the Supplementary Conditions for additional modifications and supplements

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 and final testing has been completed in accordance with the General Requirements, Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor in the Punchlist as incomplete) using the Notice of Substantial Completion form included in the Contract Documents, submit the Contractor’s written general warranty and guarantee per Paragraph 6.19.D., 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 using the Certificate of Substantial Completion included in the Contract Documents. There shall be attached to the certificate a Punch List (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 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 Punch List (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 Punch 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.

B. Owner may request in writing that Contractor permit Owner to separately operate any part of the Work although it is not substantially complete subject to the following conditions.

1. A copy of such request will be sent to Engineer and, within a reasonable time thereafter, Owner, Contractor and Engineer shall make an inspection of that part of the Work not substantially complete to determine the status of completion and will prepare a Punch List before final payment.
2. If Contractor does not indicate in writing to Owner and Engineer that such part of the Work is not ready for separate operation by Owner, Engineer will finalize the Punch List and will deliver such list to Owner and Contractor, together with a written recommendation as to the division of responsibilities between Owner and Contractor with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the Work pending final payment.

3. The Engineer’s recommendation and Punch List will become binding upon Owner and Contractor at the time the Owner takes over and separately operates such part of the Work unless otherwise agreed in writing and so informed Engineer.

4. During such separate operation by Owner and prior to Substantial Completion of such part of the Work, Owner shall allow Contractor reasonable access to complete or correct Punch List and to complete other related Work.

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.

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, warranties, updated Contractor’s written general warranty and guarantee per Paragraph 6.19.D if modified, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, and Engineer has indicated that the Work is acceptable (subject to the provisions of Paragraph 14.09), 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;

   d. Notice of Completion; and
See various sections of the Supplementary Conditions for additional modifications and supplements.

d-e 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 as detailed on the Notice of Completion. 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 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; or

5. Contractor commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if Contractor takes any equivalent or similar action by filing a petition or otherwise under any Laws and Regulations in effect at such time relating to the bankruptcy or insolvency; or
6. a petition is filed against Contractor under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against Contractor under any Laws and Regulations in effect at the time relating to bankruptcy or insolvency; or

7. Contractor makes a general assignment for the benefit of creditors; or

8. a trustee, receiver, custodian or agent of Contractor is appointed under applicable law or under contract, whose appointment or authority to take charge of property of Contractor is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of Contractor’s creditors; or

9. Contractor admits in writing its inability to pay its debts generally as they become due.

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.

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 reasonable claims, costs, losses, and damages (including but not limited to all reasonable fees and charges of engineers, architects, attorneys, and other professionals and all reasonable 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. Subject to the requirements in Paragraph 10.05, Owner and Contractor shall attempt in good faith to resolve all unsettled Claims, counterclaims, disputes and other matters in question between them arising out of or relating to the Contract Documents ("Disputes") promptly by negotiation, as follows. All negotiations pursuant to this clause are confidential and shall be treated as compromise and settlement negotiations for purposes of the Federal Rules of Evidence and state Rules of Evidence.

1. Either party may give the other party written notice of any Dispute not resolved.

2. Managers of both parties at levels at least one level above the Project personnel involved in the dispute shall meet at a mutually acceptable time and place within 5 business days after delivery of such notice, and thereafter as often as they reasonably deem necessary, to exchange relevant information and to attempt to resolve the Dispute.

3. If the matter has not been resolved within 30 days from the referral of the Dispute to the managers, or if no meeting has taken place within 10 days after such referral, either party may initiate mediation as provided hereinafter.

A.B. Subject to Paragraph 16.01.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.

B.C. 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.
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.

17.07 Professional Fees and Court Costs Included

A. In any action or proceeding to enforce or interpret any contractual provision or to resolve any conflict or dispute relating to or arising from this Contract, the prevailing party shall be entitled to recover, as part of its claim, award or judgment, reasonable attorneys’ fees and associated costs and expenses, including expenses of engineering, claims and other consultants.

END OF SECTION
See various sections of the Supplementary Conditions for additional modifications and supplements.
SECTION 00 73 10

GENERAL SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2007 Edition) included in Section 00 72 05. All provisions that are not so amended or supplemented remain in full force and effect unless amended or supplemented in another Section. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in this Section have the meanings stated below, if any, which are applicable to both the singular and plural thereof. The address system used herein is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

This Section may include certain provisions required by Laws and Regulations but does not represent or reflect all applicable provisions and policies or Laws and Regulations and may only include excerpts and portions thereof. Other required provisions and policies, and Laws and Regulations, shall be deemed to be so included and incorporated herein. Contractor is solely responsible to determine, obtain, review and interpret the full text of applicable provisions and policies, Regulations, and Laws.

SC-1.01.B Additional Terms

In the definition of *Punch List*, replace “Final Completion” with “prior to Warranty Inspection (Post Substantial Completion)”.

Add the following new definitions.

7. Warranty Inspection – the inspection Work specified to be performed during the Correction Period.

8. Completion of Post Substantial Completion Punchlist – Completion of all Work except for Warranty Inspection and final paving.

SC-2.03 Commencement of Contract Times; Notice to Proceed

Add the following after Paragraph 2.03.A.

Warranty Inspection and final paving must commence within 45 calendar days prior to expiration of the Correction Period or within 10 days of receipt of notice from Owner to commence Warranty Inspection and final paving.
SC-2.05 Before Starting Construction

Pursuant to subparagraph 2.05.A.1 regarding Progress Schedule, do not include weekends in Work hours.

Pursuant to subparagraph 2.05.A.3 regarding the Schedule of Values, the prices in the Bid Form will constitute the minimum items for the preliminary Schedule of Values for this Project.

Add the following immediately after Paragraph 2.05.B.

C. Additionally, within 10 days after the Effective Date of the Agreement, Contractor shall submit a Construction Operations Plan incorporating the schedules submitted pursuant to Paragraph 2.05.A and covering the following.

1. Construction methods and sequence of operations
2. Proposed Site access
3. Proposed erosion control measures and proposed measures to minimize impacts to existing vegetation and impacts to water quality in compliance with the General Requirements.

SC-2.07 Initial Acceptance of Schedules

Add the following immediately after subparagraph 2.07.A.4.

5. Contractor’s Construction Operations Plan submitted pursuant to Paragraph 2.05.C. will be acceptable to Engineer if it accurately and reasonably addresses all aspects of the Work.

SC 4.01 Availability of Lands

Pursuant to Paragraph 4.01.A, easements and rights-of-way exist for the Project. Documentation is on file with Owner and available upon request.

SC-4.02 Subsurface and Physical Conditions

Pursuant to Paragraph 4.02.A,

1. the following reports of explorations and tests of subsurface conditions at or contiguous to the Site are known to Owner:

   a. NONE
2. The following drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) are known to Owner:

   a. Record Drawings of various dates found in Section 00 31 00 prepared by various authors for supplemental information.

   None of the contents in such drawings is “technical data” on which Contractor may rely.

   The “technical data” shall be limited to facts, measurements, field observations, boring logs, soil type and similar data. “Technical data” shall not include opinions regarding suitability, slope stabilization methods and other opinions or professional judgments.

3. The record drawings identified above are not part of the Contract Documents, but the “technical data” contained therein upon which Contractor may rely, as expressly identified and established above, are incorporated in the Contract Documents by reference and may be reflected in the Drawings. Contractor is not entitled to rely upon any other information and data known to or identified by Owner or Engineer.

**SC-4.05 Reference Points**

Pursuant to Paragraph 4.05.A, surveys exist for the Project and are reflected on the Drawings.

**SC-4.06 Hazardous Environmental Conditions at Site**

Pursuant to Paragraph 4.06.A,

1. the following reports regarding Hazardous Environmental Conditions at the Site are known to Owner:

   a. NONE

Insert the following language at the beginning of Paragraph 4.06.D.

   Except for removal and disposal of contaminated soils and water encountered during normal excavation and dewatering activities within Contractor’s scope of Work and specified in Section 02 61 05,

Insert the following language at the beginning of Paragraph 4.06.E.

   Except for removal and disposal of contaminated soils and water encountered during normal excavation and dewatering activities within Contractor’s scope of Work and specified in Section 02 61 05,
SC-5.04 Contractor’s Insurance

Pursuant to Paragraph 5.04.A, in addition to the individuals and entities specified in subparagraph 5.04.B.1, include the following as loss payees.

NONE

Pursuant to subparagraph 5.04.C.5, also provide Owner's Protective Liability in the amount of $3,000,000 general aggregate ($1,000,000 per occurrence for bodily injury & property damage).

SC-6.02 Labor; Working Hours

Pursuant to Paragraph 6.02.B, regular working hours for this Project are 7:30 a.m. to 3:30 p.m., Monday through Friday.

SC-6.08 Permits

Pursuant to Paragraph 6.08.A, comply with permit requirements included in Quincy Code of Ordinances, in particular, Chapters 12.08 and 17.36 and Title 15, portions of which are included as attachments to this section. Owner will waive fees associated with road opening and trench permits to be obtained by Contractor.

Add the following immediately after Paragraph 6.08.A.

B. Contractor shall comply with the following licenses and permits Owner has obtained for the Project included in Section 00 31 00.

1. Massachusetts Historical Commission
2. Department of Conservation and Recreation
3. Massachusetts Water Resources Authority 8(m) Permit
   a. The discharge of wastewater from the installation of a cured-in-place pipe (CIPP) liner, as part of a sewer rehabilitation project, into the Municipal or MWRA sewerage system is prohibited, unless authorized by the MWRA. Wastewater discharged from the CIPP liner into a pipeline operation must comply with MWRA Sewer Use Regulations, 360 C.M.R. 10.021-10.024, prior to mixing with any other streams. Authorization to discharge wastewater from the CIPP liner into a pipeline operation shall be obtained from the MWRA at least thirty (30) calendar days prior to beginning the discharge. To obtain the MWRA Request To Discharge From A CIPP Liner Into A Pipeline Form, please contact Kattia Thomas, Project Manager, Permitting, Toxic Reduction and Control, MWRA, Operations, 2 Griffin Way, Chelsea, MA 02150 or kattia.thomas@mwra.state.ma.us. A sample is included at the end of this section.
4. Department of Conservation and Recreation (DCR) Construction Access Permit
SC-6.09 Laws and Regulations

Add the following immediately after Paragraph 6.09.A.

1. The Contractor shall comply with the following included as attachments to this section.

   - Applicable sections of the Quincy Code of Ordinances
   - Quincy Zoning Ordinance (Title 17 of the Code of Ordinances)

SC-6.12 Record Documents

Add the following immediately after Paragraph 6.12.A.

1. Contractor(s) shall maintain books, records, documents, and other evidence directly related to the performance on all Work receiving funding under the Owner’s executed Financial Assistance Agreement with MWRA in accordance with generally accepted professional practice and appropriate accounting procedures and practices. Contractor shall also maintain the financial information and data used in the preparation or support of Project invoices and associated progress reports.

2. The MWRA and any other duly authorized person shall have access to such books, records, documents, and other evidence for inspection, audit, and copying during normal business hours, upon ten (10) days’ notice and at MWRA’s expense. Contractor shall provide proper facilities for such access and inspection. All documents shall be kept for at least seven (7) years after the final payment or at least seven (7) years after closeout of the Project, whichever is later.

SC-6.13 Safety and Protection

Add the following immediately after Paragraph 6.13.B.

1. Contractor shall comply with the following minimum requirements and is solely responsible to determine, obtain, review and interpret the full text of applicable Laws and Regulations.

   - Code of Federal Regulations, Chapter XVII-Occupational Safety and Health Administration (OSHA), Department of Labor, Title 29, Part 1926, Safety and Health Regulations for Construction
   - Hazard Communication Standard 1910.1200 regulated by OSHA, including providing and maintaining Safety Data Sheets, labeling of hazardous substances, and providing required protective equipment and training and instruction to personnel on the Site including Owner and Engineer’s personnel
- OSHA General Industry 1910.146: Permit Required Confined Space Entry
- ANSI/ASSE A10 series of safety construction standards including the "Manual of Accident Prevention in Construction" published by The Associated General Contractors of America
- AASHTO Guide on Occupational Safety on Highway Construction Projects, Subpart N, 1926.550, relating to protection of personnel and equipment under electric lines and construction equipment clearances at overhead electric lines especially during operations using large vehicles.

**SC-7.01 Related Work at Site**

Pursuant to Paragraph 7.01, Owner has not separately contracted for other work on the Project at the Site.

**SC-8.09 Limitations on Owner’s Responsibilities**

Add the following to Paragraph 8.09.A.

B. No officer, member or employee of the City of Quincy or its designees or agents, and no member of its governing body, and no other public official of the governing body of the locality or localities in which the Project is situated or being carried out, who exercises any function or responsibilities in the review or approval or the undertaking or carrying out of this Project, shall participate in any decisions relating to this Contract which affects his personal interest or the interest of any corporation, partnership, or associations in which he is directly or indirectly interested or have any personal or pecuniary interest, direct or indirect, in this Contract or proceeds thereof.

**SC-13.02 Access to Work**

Add the following immediately after Paragraph 13.02.A.

Contractor shall make the Project Site and all Project records available to MWRA staff for review during the course of the Project. MWRA staff will periodically monitor the progress of Work for which MWRA financial assistance has been provided. The intent of these periodic inspections will be to ensure that the Project is: (1) proceeding substantially as defined in the Scope of Work / Project Schedule sections of the Owner’s executed Financial Assistance Agreement; and (2) proceeding in a manner which will produce the water system improvements which the Owner estimated would be achieved in the Owner’s executed Financial Assistance Application.
SC-14.02 Progress Payments

Add the following language at the end of subparagraph 14.02.C.1.

For the purposes of this Paragraph, “Owner” shall mean “Owner’s approving authorities”.

SC-14.04 Substantial Completion

In Paragraph 14.04. C, second sentence, replace “final payment” with “completion of all Work except for Warranty Inspection and final paving”.

SC-14.06 Final Inspection

In Paragraph 14.06.A., first sentence after “the entire Work”, insert “except for Warranty Inspection and final paving”. At the end of the first sentence, insert “(Post Substantial Completion Punchlist)”.

SC-14.07 Final Payment

Replace the Article heading with “Payment for Completion of Post Substantial Completion Punchlist”.

In the first sentence of subparagraph 14.07.A.1, after “satisfactorily completed”, insert “all Work except for Warranty Inspection, final paving and”.

In subparagraph 14.07.A.2, replace “final Application” with “Post Substantial Completion Application”.

In subparagraph 14.07.B.1, replace “final Application” with “Post Substantial Completion Application”. In Line 5, after “been fulfilled”, insert “except for Warranty Inspection and final paving”. In the third sentence, replace “final payment” with “payment for Completion of Post Substantial Completion Punchlist”.

Add the following language at the end of subparagraph 14.07.C.1

For the purposes of this Paragraph, “Owner” shall mean “Owner’s approving authorities”.
SC-14.08 Final Completion Delayed

Replace the Article heading, with “Final Completion of Post Substantial Completion Punchlist Delayed”.

In Paragraph 14.08.A, first sentence, replace “final completion of the Work” with “final completion of the Post Substantial Completion Punchlist Work”.

SC-14.09 Waiver of Claims

In Paragraph 14.09.A, first sentence, replace “final payment” with “payment for completion of Post Substantial Completion Punchlist”.

Add the following new Article.

14.10 Final Payment

A. Upon completion of the Warranty Inspection and final paving, issuance of the results of the Inspection along with the plan to repair and replace defective Work, Owner will make final payment in accordance with the Agreement.

SC-16 DISPUTE RESOLUTION

Add the following immediately after Paragraph 16.01.D.

16.02 Arbitration

A. All Claims or counterclaims, disputes, or other matters in question between Owner and Contractor arising out of or relating to the Contract Documents or the breach thereof (except for Claims which have been waived by the making or acceptance of final payment as provided by Paragraph 14.09) including but not limited to those not resolved under the provisions of Paragraphs 10.05 or 16.01, will be subject to arbitration in accordance with the rules of Construction Industry Rules of the American Arbitration Association, subject to the conditions and limitations of this Paragraph 16.02. This agreement to arbitrate, and any other agreement or consent to arbitrate entered into, will be specifically enforceable under the prevailing Laws of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to this Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the 30-day period specified in Paragraph 16.01.D, and in all other cases, within a reasonable time after the Claim or counterclaim, dispute, or other matter in question has arisen, and in no event shall any such demand be made after the
date when institution of legal or equitable proceedings based on such Claim or other dispute or matter in question would be barred by the applicable statute of limitations.

C. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer’s consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.

D. Consolidation shall be by order of the arbitrator(s) in any pending case, or if the arbitrator(s) fail to make an order, a party may apply to a court of competent jurisdiction for such order. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity shall be specifically enforceable in accordance with the Laws of any court having jurisdiction thereof.

E. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include: (i) a concise breakdown of the award; (ii) a written explanation of the award specifically citing the Contract Document provisions deemed applicable and relied on in making the award.

F. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the controlling Laws relating to vacating or modifying an arbitral award.

G. If the parties decline to arbitrate, such Claims, disputes and other matters shall be decided by a court having jurisdiction.

16.03 General

A. The Contractor will require similar dispute resolution provisions in agreements with its Subcontractors and Suppliers.

B. Contractor shall not have the right to stop performance of the Work pending resolution of a Claim or dispute.

C. Notwithstanding any provision contained in this Article or elsewhere in the Contract Documents, the Owner reserves the following rights in connection with Claims and disputes between the Owner and the Contractor:
1. The right to institute legal action against the Contractor in any court of competent jurisdiction in lieu of demanding arbitration pursuant to this Article, in which case the Claims or disputes which are the subject of such action shall be decided by such court, and not by arbitration.

2. The right to obtain from any court of competent jurisdiction a stay of any arbitration instituted by the Contractor, provided that the application for such stay is made before the appointment of the neutral arbitrator in such arbitration, in which case the Claims or disputes which are the subject of such arbitration shall be decided by such court, and not by arbitration.

3. The right to require the Contractor to join as a party in any arbitration between the Owner and the Engineer relating to the Project, in which case the Contractor agrees to be bound by the decision of the arbitrator or arbitrators in such arbitration.

ATTACHMENTS

A. Quincy Code of Ordinances, Chapters 12.08 and 17.36

B. Quincy Code of Ordinances, cover, preface, contents and Quincy Zoning Ordinance June, 2011, contents and website

C. Sample MWRA Request To Discharge From a CIPP Liner Into A Pipeline Form

END OF SECTION
12.08.010 - Streets—Defined.

Whenever the word "street" is used in this title, it shall be understood as meaning to include lanes, alleys, courts, public squares and sidewalks, unless otherwise expressed.

(Prior code Ch. 18, § 1)

12.08.020 - Permit for digging in public ways.

No entity (person, business, utility, government agency) shall dig into or break-up any public street in the city without first having obtained a permit from the commissioner of public works. The permit (hereafter known as a street opening permit) shall be in a form acceptable to the commissioner, consistent with this code and other laws. The commissioner may attach general and specific conditions under which a permit is granted. In all cases, the permit must be signed by the utility or property owner and contractor.

(Ord. 94-226 (part))

12.08.021 - Fees for street opening permits.

A. A one hundred dollar nonrefundable application fee is required.
B. A five hundred dollar, cash or certified check refundable deposit is required and will be held until the municipal contractor completes the permanent patch and payment is received. Interest on retained money is considered to be the property of the municipality. Trenches not inspected due to the failure of the permittee to properly notify the governing authority shall be subject to loss of deposit, and/or repeat of reconstruction procedures.
C. A five thousand dollar performance and payment bond is required for each street opening permit granted. The governing authority may allow a blanket bond commensurate with anticipated permit activity for routine excavators. Under no circumstances will this blanket bond be less than fifty thousand dollars.
D. The contractor must furnish the municipality with a certificate of insurance for general liability in the amount of one million five hundred thousand dollars.

(Ord. 94-226 (part))

12.08.022 - Notification.

A. The designated municipal coordinator of the governing authority shall be notified twenty-four hours before the commencement of any work.
B. Dig safe must be notified.

(Ord. 94-226 (part))

12.08.023 - Construction procedures.

A. The pavement shall be pre-cut and may only be disturbed within the area requiring excavation for repair, replacement or new installation. When the opening occurs within two feet of the curb and/or edge of the hardened surface, the paved area between the excavation and the curb and/or edge must also be removed.
B.
In the backfill process, the backfill shall be comprised of suitable material (subject to approval of the governing authority or his authorized representative). Concrete should be used around all electric and telephone conduit in trenches. Controlled density fill (CDF) may be required. Compaction, (when CDF is not in use) will be executed in six inch layers. Each layer shall be ninety-five percent compacted by mechanical means. When the total surface area of an individual opening in bituminous concrete is less than nine square feet, all backfill material(s) will be placed to within a minimum of six inches of the pavement surface, or the thickness of the original pavement structure, whichever is greater. For individual openings with surface areas of nine square feet and larger, the backfill materials will be installed to within four inches of the pavement surface or the thickness of the existing structure, whichever is greater. "Pavement structure" will incorporate all previous paving materials used above the gravel sub-base, including but not limited to bituminous concrete, cement concrete, cobblestone, macadam, etc.

C. The hardened pavement shall then be cut back and removed six to twelve inches from all sides of the initial excavation to the depth of the original pavement structure, exposing the undisturbed gravel sub-base. Edges will be cut perpendicular to the surrounding surface and have a clean vertical face, particularly in the corners. All structures shall be leveled to the adjacent surfaces. The cut back shall be in straight lines with ninety degree angles at the point(s) of intersection.

D. All surplus and/or unacceptable excavated materials shall be removed from the job site immediately. The excavation site shall be maintained in a clean and safe condition at all times. Sidewalks and streets shall be cleaned and opened to traffic at the end of each working day, unless otherwise authorized by the governing authority. Access to properties are to be maintained. The removal and disposal of materials, including pavement, is the responsibility of the permittee. This shall be achieved in such a manner to minimize interference with pedestrian and vehicular traffic.

E. The permittee shall be liable for the condition of the street and sidewalk openings and protection thereof prior to the temporary repair, and will be held responsible for all damage due to any failure of barricades, barriers, warning signs, lights or steel plates to properly protect the work from traffic, pedestrians or other causes. Other than while work is actually being performed, all open ditches shall be protected by uniform traffic control devices in conformance with the Massachusetts Highway Department Manual. All excavations must be properly secured to insure the safety of the travelling public, and immediately reported to the designated municipal coordinator.

F. Temporary patching shall be performed by a contract representative of the governing authority and shall be the financial responsibility of the permittee. All barricades and/or safety devices shall be immediately removed from the vicinity upon completion of the temporary bituminous patching application.

G. Any improperly prepared excavations, including those left with unacceptable backfill material or insufficient pavement depth, shall be temporarily paved by the municipal contract representative and charged to the refundable deposit of the permittee. The deposit shall immediately replenished to the original amount. At a later date, the trench shall be re-excavated and prepared correctly by the permittee. Under these conditions the permittee may also be subject to permit cancellation, inspection fees, fines, and loss of deposit and bond.

H. All excavations will be required to settle and/or consolidate for a period of time before the contract representative of the governing authority is directed to perform a permanent repair. This term will be defined as a minimum of thirty days when controlled density fill was used as backfill material. Compacted gravel sub-base must experience at least one seasonal
freeze/thaw cycle. The governing authority reserves the right to address any sub-base deficiency within, or adjacent to, the original excavated area with whatever measure deemed effective, during this period. These corrective procedures will be the financial responsibility of the permittee.

I. Immediately after the specified settling and/or consolidation period, all excavations shall be permanently restored by the contract representative for the governing authority. The following procedures shall be strictly adhered to:

1. The infrared process shall be utilized as the primary method of permanent restoration in bituminous concrete surfaces.

2. Temporary asphalt patches installed in cement concrete surfaces shall be re-excavated to the extremities of the square(s) in which the excavation is contained. The finished concrete shall be replaced to the depth, strength, and contour of the original structure. Any concrete surface damaged during construction shall also be replaced in a like manner.

3. All other surfaces, including but not limited to asphalt, brick, grass and wood shall be replaced consistent with the original and in strict accordance with municipal specifications.

The permittee shall also be responsible for any and all necessary appurtenant measures including, but not limited to, complete surface reconstruction, curbing, resetting utility structures, "bar holes," compatible crackfilling, tack coating and infrared integration of pavement. All the required processes shall be determined by a site inspection with an authorized representative of the governing authority. All restoration procedures shall be the financial obligation of the permittee.

J. The permittee shall be responsible for any settlement, sub-base failure and pavement cracks that develop in, or adjacent to, the original excavated area for a period of three years from the date of the final accepted permanent repair or, if controlled density fill is used, for a period of one year from the date of the final accepted permanent repair. Any surface disorder caused by settlement and/or sub-base movement within the general area containing a street or sidewalk opening, shall be addressed by the municipal contract representative, at the direction of the governing authority. All related corrective measures will be charged to the permittee, and the term of obligation will begin again.

K. Excavations opened without the permit may be subject to cancellation and refusal of existing and future permits, and associated fines.

L. Police protection, if required, shall be paid by the permittee either directly or billed by the municipal representative of the municipality and billed directly to the permittee.

M. All surface restorations, bituminous concrete replacements, and permanent repairs will be done by a contract representative of the municipality and billed directly to the permittee.

(Ord. 94-226 (part))

12.08.024 - Billing and collections.

A. The contract representative of the municipality shall bill the permittee for the above mentioned services. All invoices will be paid within thirty days. One past due invoices, a service charge of one and one-half percent per month will be allowed on accounts thirty days past due, provided the rate does not exceed that which is permitted by law, in which case the highest allowable legal rate will apply. Invoices exceeding ninety days shall be paid by the municipality from the refundable deposit and/or bond, at which point the municipality shall fine the permittee that cost plus one hundred dollars per day, and continue to accrue the
service charges on any uncollected monies together with all costs of collection including attorney's fees.

B. The governing authority reserves the right to assume the billing function, including assessment and conveyance of reasonable handling charges, as provided by Massachusetts General Laws.

On ninety days past-due invoices, the municipality will revoke existing and future permits until payment of such invoices, including all service charges and fines.

If the account is found to be uncollectible, there shall be a lien upon such real estate in the manner provided in M.G.L. Ch. 40, Sec. 42A to 42F.

(Ord. 94-226 (part))

12.08.030 - Street construction—Safeguarding—Requirements—Fencing and lighting.

During the progress of any work referred to in the preceding section, the person holding the permit shall guard the area of such work by a proper fence or railing, and by lights during the nighttime, subject to the approval of the commissioner of public works.

(Prior code Ch. 18, § 5)

12.08.040 - Street construction—Safeguarding—Police detail required—Cost liability.

A. Any person, except the commissioner of public works, his agent or servant, receiving a permit to open, occupy, obstruct, use, dig into or break up any public street of the city, or portion thereof, in accordance with the provisions of Sections 12.08.020 and 12.08.030, shall maintain at his or its expense such police officer of the city, but in no event less than one police officer at each street location designated in each permit required to be issued, as the chief of police may deem necessary, to avoid, so far as reasonably possible, danger to the safety of persons and interference with the free circulation of vehicular traffic. For the purposes of this section, no emergency or like permits shall be issued granting blanket or similar permission to open, occupy, obstruct, use, dig into or break up more than one particular or separate street location per permit.

B. Opening Manholes. A person receiving a permit to open a manhole in any public street of the city shall maintain at his or its expense such police officers of the city as the chief of police may deem necessary, to avoid, so far as reasonably possible, danger to the safety of persons and interference with vehicular traffic.

C. Failure to Comply. Failure on the part of any such person to maintain such detail shall be cause for revocation of such permit, or the closing down of the opening, obstructing, using, digging into or breaking up of any public street of the city by police officers of the city until such detail is maintained.

D. Emergency Construction. In the event of an emergency which requires the opening, obstructing, using, digging into, or breaking up of any public street of or private way in the city by a person not able to obtain a permit because of the hour, such person shall immediately notify the officer in charge of Quincy police headquarters in order that the necessary police officers, but in no event less than one police officer, as designated by said officer, at each separate street location or place of such opening, obstructing, using, digging into, or breaking up of such street shall be assigned at the expense of such person.
12.08.050 - Digging near streets—Fencing required—Time limits.

If any person shall dig a cellar, or other cavity in the ground near to or adjoining any street, he shall, so long as the commissioner of public works may require, keep a railing or fence on or near the line of such street sufficient to protect travelers from falling into the place so dug, or being injured thereby.

(Prior code Ch. 18, § 36)

12.08.060 - Obstructing—Depositing trash or debris—Permitted for collection when.

No person shall place or cause to be placed or deposited, upon any street or other public place in this city, merchandise, ashes, shavings, house dirt, filth, offal or rubbish which shall in any way obstruct and disfigure the same; nor suffer his wood and coal to remain unnecessarily on any street. And no person shall place or deposit, or cause to be placed or deposited, any newspaper, circular, card or wastepaper of any kind or description upon any street or other public place in this city. And no person shall saw or split wood, or pile the same on any sidewalk; provided, that ashes or rubbish in suitable containers may be placed in the streets for collection, in such manner and on such days as the commissioner of public works may direct. No person shall place or cause to be placed on the public sidewalk rubbish barrels or rubbish containers fifteen hours before seven a.m. on the date of collections.

(Prior code Ch. 18, § 2)

12.08.070 - Obstructing during construction—Permit required—Requirements—Indemnification of city.

No person, unless authorized by law, shall erect on any street any staging for building, or place thereon any lumber, brick or other building materials, without a written permit from the commissioner of public works. Any person intending to erect or repair any building upon land abutting on a street shall give notice to the commissioner of public works, who may, at the owner's request, set apart such portion of the street as he shall deem expedient for such use. Such person shall, before the expiration of his permit, remove all rubbish, and restore such street, square or park to its former condition, to the satisfaction of the commissioner of public works. Every person so permitted shall, in writing, agree to indemnify the city against all damage or loss to the city, accruing from the doing of any act or thing under such permit, and sureties may be required by the commissioner of public works, and every person who, when so permitted, shall obstruct or render unsafe any public street, shall guard the same by a proper fence or railing, and by lights during the nighttime, subject to the approval of the commissioner of public works. Such permit may be revoked at any time by the commissioner of public works or by the city council.

(Prior code Ch. 18, § 3)

12.08.080 - Obstructing—Signs and awnings—Permission required—Requirements.

No person shall place or maintain over any street any sign, awning, shade or other obstruction, unless permission shall have first been obtained in writing from the commissioner of
All such signs, awnings, shades or other obstructions shall be safely and securely supported. No awning shall be less than seven feet from the ground at its lowest point. All signs, awnings, shades and other obstructions, if built over a sidewalk, shall be of such width as shall be determined by the commissioner of public works.

(Prior code Ch. 18, § 7)

12.08.090 - Obstructing free passage.

No person shall stand, or remain alone, or with or near others, in any street of this city, in such a manner as to obstruct a free passage for passengers therein, or over any footway or sidewalk.

(Prior code Ch. 18, § 8)

12.08.100 - Placing obstructions on flagstones, stepping stones or footwalks.

No person shall place any obstruction of any kind upon any flagstone or stepping stone or other footwalks across any street in this city.

(Prior code Ch. 18, § 9)
Chapter 17.36 - ENVIRONMENTAL CONTROLS

Sections:
17.36.010 - Illumination—Residence districts.
17.36.020 - Earth removal—Permit required.
17.36.030 - Earth removal—Permit—Application—Procedures—Contents.
17.36.040 - Earth removal—Permit—Conditions and restrictions.
17.36.050 - Earth removal—Permit—Duration—Renewal—Bond required when.
17.36.060 - Earth removal—Permit—Exceptions.
17.36.070 - Fencing and screening—Industrial and Business districts—Requirements.
17.36.080 - Traffic visibility across corners.
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17.36.100 - Blasting—Pre-blasting survey—Disposition of survey data.
17.36.110 - Blasting—Pre-blasting survey—Not required when.
17.36.120 - Blasting—Posting of bond—Required when—Amount.
17.36.130 - Blasting—Fire department supervision—Required—Costs.
17.36.140 - Blasting—Violations—Penalties.

17.36.010 - Illumination—Residence districts.
A. In a Residence district, no outdoor decorative or floodlighting shall be permitted except lighting primarily designed to illuminate walks, driveways, parking areas, doorways, outdoor living areas or outdoor recreational facilities, and except temporary holiday lighting, and except decorative floodlighting of institutions, public or historic buildings. Any permanent lighting permitted by the preceding sentence shall be continuous indirect light installed in such a manner that will prevent direct light from shining onto any street or adjacent property. No neon type or exposed illuminated gas tube type light shall be allowed.

(Prior code Ch. 24, § 82)

17.36.020 - Earth removal—Permit required.

No soil, loam, sand, gravel or stone shall be removed from any lot not in public use in the city without first obtaining a special permit from the board of appeals except as exempted in Section 17.36.060.

(Prior code Ch. 24, § 83 (part))

17.36.030 - Earth removal—Permit—Application—Procedures—Contents.
A. Each application for a special permit for earth removal shall be accompanied by a plan, submitted in triplicate, prepared at the expense of the applicant by a registered land surveyor or civil engineer, showing:
1. The existing contours of the land;
2. The contours after completion of the operation;
3. All public roads and private means of vehicular access;
4. Proposed drainage;
5. Any other information as may be required by the board of appeals.

(Prior code Ch. 24, § 83 (part))

17.36.040 - Earth removal—Permit—Conditions and restrictions.

A. In granting a permit hereunder, the board of appeals may impose reasonable conditions and restrictions as it deems to be in the public interest, including, but not limited to:
   1. Method of removal;
   2. Type and location of temporary structures;
   3. Hours of operation;
   4. Operations of removal trucks;
   5. Area, depth and contours of excavations;
   6. Distance of excavation to street and lot lines;
   7. Reestablishment of ground lands and grades;
   8. Provisions for temporary and permanent drainage;
   9. Disposition of boulders and tree stumps;
   10. Replacement of loam over the area of removal;
   11. Planting of the area to suitable cover;
   12. Cleaning, repair and/or resurfacing of streets used in removal activities which have been adversely affected by the removal activity.

(Prior code Ch. 24, § 83 (part))

17.36.050 - Earth removal—Permit—Duration—Renewal—Bond required when.

No permit for removal shall be issued for a period of more than three years, although such a permit may be renewed for additional periods in the same manner. The board of appeals shall require a cash bond or surety company bond to insure compliance with its conditions of authorization unless in a particular case it specifically finds that such security is not warranted and so states in its decision, giving the reason for its finding.

(Prior code Ch. 24, § 83 (part))

17.36.060 - Earth removal—Permit—Exceptions.

Sections 17.36.020 through 17.36.050 shall not apply to the following:

A. The removal of less than ten cubic yards of material in the aggregate in any year from one premise;
B. The transfer of material from one part of a premise to another part of the same premise for immediate use in such other part of the premise;
C. The removal of material necessarily excavated in connection with the lawful construction of a building or structure, driveway, parking area, sidewalk or path incidental to any such building or structure, as indicated on plans and profiles prepared by a registered engineer and approved by the director of inspections;
D.
The removal of material necessarily excavated in connection with the lawful construction of public or private ways as indicated on plans and profiles prepared by a registered engineer and approved by the planning board.

(Ord. 97-337 § 6 (part); prior code Ch. 24, § 83 (part))

17.36.070 - Fencing and screening—Industrial and Business districts—Requirements.

A. Required when — Permitted Types. In an Industrial or Business district, the outdoor storage of goods, products, materials or equipment shall, if visible at normal eye level from any point beyond the boundaries of the premises and less than five hundred feet distant, be screened from such view. Screening, as defined herein, shall be an ornamental lattice, opaque fence, plantings or sight-obscuring screening which shall not be less than six nor more than ten feet high and not less than fifty percent opaque. Plantings shall be at least ten feet in width and contain at least two rows of alternate live deciduous and evergreen trees. Said trees shall not be more than five feet apart, shall have an original planting height of at least six feet, shall be able to attain a height of at least ten feet, and shall be maintained in a healthy growing condition by the property owner. Any existing open storage in any district shall within one year of the effective date of the ordinance codified in this title be properly screened or removed.

B. Adjacent to Residential Districts. Where an Industrial district is located adjacent to a Residence district or a public park or playground and is not separated therefrom by a public way, a compact planting screen as defined in subsection A of this section along the property or lot line adjoining said district boundary shall be provided and maintained by the owners of said premises. Said screening area shall contain no structures or parking or be devoted to any other use or purpose, and shall be maintained in a healthy growing condition by the property owner.

(Prior code Ch. 24, § 84)

17.36.080 - Traffic visibility across corners.

In any district, no structure, fence or sign shall be constructed and no vegetation shall be planted or maintained between a plane two and one-half feet above curb level and a plane ten feet above curb level, so as to interfere with traffic visibility across a corner within that part of the lot which is within a triangle formed by the street lines and a third line joining points on the street lot lines twenty-five feet from their intersection.

(Ord. 1988-6: prior code Ch. 24, § 85)

17.36.090 - Blasting—Permits—Pre-blasting survey—Required—Requirements.

A. Permitted Surveyors. For all permits issued for blasting (rock excavation) in the city, a pre-blast survey must be made by the contractor or by an approved firm in this kind of work and satisfactory to the contractor's insurance company.

B. Requirements.

1. Approval. The pre-blast survey will include a survey of the interior and exterior of existing buildings and stone walls adjacent to the project as specified herein, before any excavation or blasting is done. Written approval must be secured from the fire chief, city engineer and director of inspections serving as the committee on blasting.

2.
Adjacent Area. The adjacent area requiring the pre-blast survey is specified as all buildings and stone walls within a radius of three hundred fifty feet from said blast.

3. Structural Defects. The survey shall record all visible structural defects such as cracks, settlement and lines out of plumb.

(Ord. 97-337 § 6 (part); Ord. 1988-236 (part); prior code Ch. 24, § 87 (part))

17.36.100 - Blasting—Pre-blasting survey—Disposition of survey data.

The survey data shall be recorded in a permanent manner in approved hardbound notebooks. The survey data shall include polaroid photographs showing the building constructions surveyed referenced to the notebook pages. Also a tape recording of all data pertinent to the survey shall be made. The scope and format of the record survey data shall be satisfactory to the committee on blasting. Before commencing any blasting or ledge excavation, copies of the survey must be on file at the offices of the Quincy city engineer and the Quincy city clerk, City Hall, Quincy, MA.

(Ord. 1988-236 (part); prior code Ch. 24, § 87 (part))

17.36.110 - Blasting—Pre-blasting survey—Not required when.

No pre-blasting survey shall be required if blasting is within the following limits: The total charge weight per blast does not exceed five pounds and the maximum weight per delay does not exceed two pounds per delay.

(Ord. 1988-236 (part); prior code Ch. 24, § 87 (part))

17.36.120 - Blasting—Posting of bond—Required when—Amount.

If blasting is designed to excavate more than a ten-cubic-yard area, the contractor must post a bond with the city. The amount of said bond shall be determined by the committee on blasting. The committee on blasting will not release the bond until it is convinced that all judgments and claims have been reasonably dealt with by the contractor.

(Ord. 1988-236 (part); prior code Ch. 24, § 87 (part))

17.36.130 - Blasting—Fire department supervision—Required—Costs.

All blasting is to be supervised on site by an authorized member of the fire department, assigned by the chief, and the cost of said supervision shall be the sole responsibility of the contractor.

(Ord. 1988-236 (part); prior code Ch. 24, § 87 (part))

17.36.140 - Blasting—Violations—Penalties.

Any person who shall violate any of the provisions of Sections 17.36.090 through 17.36.130, as determined by the committee on blasting, or who fails to comply therewith, shall severally, for each and every violation and noncompliance respectively, be liable to a penalty of two hundred dollars for each offense.

(Ord. 1988-236 (part); prior code Ch. 24, § 87 (part))
The Quincy, Massachusetts Municipal Code, originally published by Book Publishing Company in 1992, has been kept current by regular supplementation by Matthew Bender & Company, Inc., its successor in interest.

Beginning in September 2009, Municipal Code Corporation will be keeping this code current by regular supplementation.

During original codification, the ordinances were compiled, edited and indexed by the editorial staff of Book Publishing Company under the direction of Stephen J. McGrath, city solicitor, Joseph P. Shea, city clerk, and John M. Gillis, former city clerk.

The code is organized by subject matter under an expandable three-factor decimal numbering system which is designed to facilitate supplementation without disturbing the numbering.
of existing provisions. Each section number designates, in sequence, the numbers of the Title, chapter, and section. Thus, Section 2.12.040 is Section .040, located in Chapter 2.12 of Title 2. In most instances, sections are numbered by tens (.010, .020, .030, etc.), leaving nine vacant positions between original sections to accommodate future provisions. Similarly, chapters and titles are numbered to provide for internal expansion.

In parentheses following each section is a legislative history identifying the specific sources for the provisions of that section. This legislative history is complemented by an ordinance disposition table, following the text of the code, listing by number all ordinances, their subjects, and where they appear in the codification; and beginning in September 2009, legislation can be tracked using the "Code Comparative Table and Disposition List."

A subject-matter index, with complete cross-referencing, locates specific code provisions by individual section numbers.

This supplement brings the Code up to date through Ordinance ___, passed ___ (Month, Date, Year)___.

Municipal Code Corporation
1700 Capital Circle SW
Tallahassee, FL 32310
800-262-2633

HOW TO USE YOUR CODE

This code is organized to make the laws of the city as accessible as possible to city officials, city employees and private citizens. Please take a moment to familiarize yourself with some of the important elements of this code.

Numbering System.

The numbering system is the backbone of a Code of Ordinances; Municipal Code Corporation uses a unique and versatile numbering structure that allows for easy expansion and amendment of this Code. It is based on three tiers, beginning with title, then chapter, and ending with section. Each part is represented in the code section number. For example, Section 2.04.010 is Section .010, in Chapter 2.04 of Title 2.

Title.

A title is a broad category under which ordinances on a related subject are compiled. This code contains about 15 to 20 titles. For example, the first title is Title 1, General Provisions, which may contain ordinances about the general penalty, code adoption and definitions. The titles in this code are separated by tabbed divider pages for quick reference. Some titles are Reserved for later use.

Chapter.

Chapters deal with more specific subjects, and are often derived from one ordinance. All of the chapters on a related subject are grouped in one title. The chapters are numbered so that new chapters which should logically be placed near certain existing chapters can be added at a later
time without renumbering existing material. For example, Chapter 2.06, City Manager, can be added between 2.04, City Council, and Chapter 2.08, City Attorney.

Section.

Each section of the code contains substantive ordinance material. The sections are numbered by "tens" to allow for expansion of the code without renumbering.

Tables of Contents.

There are many tables of contents in this code to assist in locating specific information. At the beginning of the code is the main table of contents listing each title. In addition, each title and chapter has its own table of contents listing the chapters and sections, respectively.

Ordinance History Note.

At the end of each code section, you will find an "ordinance history note," which lists the underlying ordinances for that section. The ordinances are listed by number, section (if applicable) and year. (Example: (Ord. 272 § 1, 1992).)

Beginning in September 2009, a secondary ordinance history note will be appended to affected sections. Ordinance history notes will be amended with the most recent ordinance added to the end. These history notes can be cross referenced to the code comparative table and disposition list appearing at the back of the volume preceding the index.

Statutory References.

The statutory references direct the code user to those portions of the state statutes that are applicable to the laws of the municipality. As the statutes are revised, these references will be updated.

Cross-Reference Table.

When a code is based on an earlier codification, the cross-reference table will help users find older or "prior" code references in the new code. The cross-reference table is located near the end of the code, under the tabbed divider "Tables." This table lists the prior code section in the column labeled "Prior Code Section" and the new code section in the column labeled "Herein."

As of September 2009, this table will no longer be updated.

Ordinance List and Disposition Table.

To find a specific ordinance in the code, turn to the section called "Tables" for the Ordinance List and Disposition Table. This very useful table tells you the status of every ordinance reviewed for inclusion in the code. The table is organized by ordinance number and provides a brief description and the disposition of the ordinance. If the ordinance is codified, the chapter (or chapters) will be indicated. (Example: (2.04, 6.12, 9.04).) If the ordinance is of a temporary nature or deals with subjects not normally codified, such as budgets, taxes, annexations or rezones, the disposition will be "(Special)." If the ordinance is for some reason omitted from the code, usually at the direction of the municipality, the disposition will be "(Not codified)." Other dispositions sometimes used are "(Tabled)," "(Pending)," "(Number Not Used)" or "(Missing)."

Beginning in September 2009, this table will be replaced with the "Code Comparative Table and Disposition List."
**Code Comparative Table and Disposition List.**

Beginning in September 2009, a Code Comparative Table and Disposition List has been added for use in tracking legislative history. Located in the back of this volume, this table is a chronological listing of each ordinance considered for codification. The Code Comparative Table and Disposition List specifies the ordinance number, adoption date, description of the ordinance and the disposition within the code of each ordinance. By use of the Code Comparative Table and Disposition List, the reader can locate any section of the code as supplemented, and any subsequent ordinance included herein.

**Index.**

If you are not certain where to look for a particular subject in this code, start with the index. This is an alphabetical multi-tier subject index which uses section numbers as the reference, and cross-references where necessary. Look for the main heading of the subject you need, then the appropriate subheadings:

**BUSINESS LICENSE**
- See also BUSINESS TAX
- Fee [5.04.030](#)
- Required when [5.04.010](#)

The index will be updated as necessary when the code text is amended.

**Instruction Sheet.**

Each supplement to the new code will be accompanied by an Instruction Sheet. The Instruction Sheet will tell the code user the date of the most recent supplement and the last ordinance contained in that supplement. It will then list the pages that must be pulled from the code and the new pages that must be inserted. Following these instructions carefully will assure that the code is kept accurate and current. Removed pages should be kept for future reference.

**Page Numbers.**

When originally published, the pages of this code were consecutively numbered. As of September 2009, when new pages are inserted with amendments, the pages will follow a "Point Numbering System". (Example: 32, 32.1, 32.2, 32.2.1, 32.2.2., 33). Backs of pages that are blank (in codes that are printed double-sided) will be left unnumbered but the number will be "reserved" for later use.

**Electronic Submission.**

In the interests of accuracy and speed, we encourage you to submit your ordinances electronically if at all possible. We can accept most any file format, including Word, WordPerfect or text files. If you have a choice, we prefer Word, any version. You can send files to us as an e-mail attachment, by FTP, on a diskette or CD-ROM. Electronic files enable us not only to get you your code more quickly but also ensure that it is error-free. Our e-mail address is: ords@municode.com.

For hard copy, send two copies of all ordinances passed to:
Municipal Code Corporation
P.O. Box 2235
Tallahassee, FL 32316
Customer Service.

If you have any questions about this code or our services, please contact Municipal Code Corporation at 1-800-262-2633 or:

Municipal Code Corporation
1700 Capital Circle SW
Tallahassee, FL 32310
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Zoning Ordinances

Thank you for visiting the City of Quincy Zoning Ordinance Page. Mayor Koch commissioned the biggest overhaul of the City's Zoning Code in a generation, and the process was completed in the summer of 2011.

We have divided the zoning code into sections, with links below and on the left sidebar. To access the full .pdf Zoning Ordinance document, click here.

If you have any questions about zoning, please contact Jay Duca, Director of Inspectonal Services, at 617-376-1456, or email him at jduca@quincyma.gov.

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QUINCY ZONING ORDINANCE
June 14, 2011

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Submit for approval this MWRA Questionnaire for a One-Time-Only Discharge Request to discharge wastewater from a sewer pipe lining/curing project into the Authority sewer system. Submit the completed form to:

Massachusetts Water Resources Authority  
Toxic Reduction and Control  
2 Griffin Way, Chelsea, MA 02150-3334  
Attention: Kattia Thomas, Project Manager, Permitting

If you have any questions regarding the approval process, you may contact Kattia Thomas, at 617-305-5667.

Submit an additional copy of the completed form to the Engineer at the time of submittal.
One-Time-Only Discharge Request
To discharge from a Cured-in-Place Pipe (CIPP) Lining process as part of a sewer rehabilitation project into the Municipality or Authority sewerage system

Please, allow three weeks for processing this request

Name of Municipality: _____________________________________________________

Project Name: ___________________________________________________________

Name of the person from the Municipality to contact concerning the information provided herein. (Please, sign the signature page of this questionnaire, without a signature from the Municipality the MWRA will not be able to process this request.)

Name: _______________________________________________________________________

Title: _______________________________________________________________________

Address: _____________________________________________________________________

Telephone No.: ___________ Facsimile No.: _________________________

E Mail:  _____________________________________________________________________

Contractor designated by the Municipality to conduct the project.

Name: _______________________________________________________________________

Title: _______________________________________________________________________

Company: _________________________________________________________________

Address: _____________________________________________________________________

Telephone No.: ______________ Facsimile No.: _________________________

E Mail: _____________________________________________________________________

MWRA Permit Number: _________________________
Person designated by the Municipality to receive correspondence from the MWRA regarding this project.

Name: ________________________________________________________________

Title: ________________________________________________________________

Company: ____________________________________________________________

Address: _____________________________________________________________

Telephone No.:_________________________ Facsimile No.: _______________________

GENERAL INFORMATION:

Please answer all of the questions
(If more space is needed, attach additional pages).

a) Cured-in-Place Pipe (CIPP) Liner is defined as a woven or non-woven or combination of woven and non-woven material surrounded or impregnated with resin which when installed and processed, forms to the shape and size of the interior walls of the host conduit as defined in ASTM Standard F1216.

b) Host Conduit is defined as the existing pipeline to be rehabilitated by CIPP Lining. The host conduit for this project must be indicated on the Contract Drawings.

1. Indicate the project scope. Provide pipe location and pipe length and diameter of each pipe to be treated. Use a pipe identification naming scheme that references the drawings and that will be recognizable by all parties. Identify all of the connection (using the name provide in Attachment A of the MWRA Municipal Discharge Permit) of the receiving MWRA interceptor and submit a diagram and drawing that will trace the flow from the project pipe to the MWRA interceptor.

Project scope and location: __________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

<table>
<thead>
<tr>
<th>Pipe Location</th>
<th>Sewer Connection of the receiving MWRA interceptor (Provide name in Attachment A of the MWRA Municipal Discharge Permit)</th>
<th>Pipe Length (Feet)</th>
<th>Pipe Diameter (Inches)</th>
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<tbody>
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</table>
2. Indicate how you will conduct the pipe cleaning process prior to the lining process.

3. Indicate the proposed installation method that you will employ for the CIPP liner into the existing pipe.

4. Indicate all of the appropriate Federal, state, and local permits and approvals obtained for this CIPP project.

   MassDEP BRP 10, Army Corps of Engineers Category 2 Wetlands permit, MWRA 8(m) permit, and Quincy Conservation Commission Order of Conditions (for access to sewer structures located in the salt marsh resource area adjacent to East Squantum St.)

5. Submit the Materials Safety Data Sheet(s) for the CIPP lining materials.
6. Indicate all source(s) of wastewater curing/lining process wastewater, cooling water, rinse water, pre-clean water, post-clean water, and, etc to be discharged into MWRA sewer system from this project.

<table>
<thead>
<tr>
<th>Wastewater Type(s)</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curing water</td>
<td></td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>Cooling water</td>
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<tr>
<td>Rinsing water</td>
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<tr>
<td>Pre-cleaning water</td>
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<tr>
<td>Post-cleaning water</td>
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<tr>
<td>Other <em>(Describe)</em></td>
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<tr>
<td>Other <em>(Describe)</em></td>
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</tr>
</tbody>
</table>

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6
7. Describe the proposed pretreatment for the wastewater curing/lining process wastewater, cooling water, rinse water, pre-clean water, post-clean water, and, etc and provide equipment/flow diagram(s).
8. Indicate the storage method for treated and/or untreated curing\lining process wastewater, cooling water, rinse water, pre-clean water, post-clean water, etc, and provide its capacity in gallons prior to discharge into the MWRA sanitary sewer system.

<table>
<thead>
<tr>
<th>Wastewater Type(s)</th>
<th>Storage method prior to discharge into MWRA sanitary sewer system.</th>
<th>Storage capacity (gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curing\lining process water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rinsing water</td>
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<tr>
<td>Pre-cleaning water</td>
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<td></td>
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<tr>
<td>Post-cleaning water</td>
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<td></td>
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<tr>
<td>Other (Describe)</td>
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<td></td>
<td>___________________________</td>
<td>___________________________</td>
</tr>
</tbody>
</table>


9. Indicate proposed volume of wastewater (curing\lining process wastewater, cooling water, rinse water, pre-clean water, post-clean water, and, etc..) flow into the MWRA sewer system per day gallons per day (GPD).

<table>
<thead>
<tr>
<th>Wastewater Type(s)</th>
<th>Volume(GPD) Discharge into MWRA sanitary sewer system</th>
<th>Pretreatment Yes/No</th>
<th>Pretreatment Type(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curing\lining process water</td>
<td></td>
<td>Yes □</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>No □</td>
<td></td>
</tr>
<tr>
<td>Cooling water</td>
<td></td>
<td>Yes □</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>No □</td>
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<tr>
<td>Rinsing water</td>
<td></td>
<td>Yes □</td>
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<td></td>
<td></td>
<td>No □</td>
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<tr>
<td>Pre-cleaning water</td>
<td></td>
<td>Yes □</td>
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<td></td>
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<td>No □</td>
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<tr>
<td>Post-cleaning water</td>
<td></td>
<td>Yes □</td>
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<td></td>
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<td>No □</td>
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<tr>
<td>Other (Describe)</td>
<td></td>
<td>Yes □</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>No □</td>
<td></td>
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</tbody>
</table>
10. Describe other method(s) for the collection and disposal for the curing\lining process wastewater, cooling water, and/or rinse water if pretreatment is not viable, and the discharge to the MWRA sanitary sewer system is not authorized.

11. Indicate if solids will be generated from the treatment process, including solidified styrene and other solid byproducts. All solids must be removed from the cure water and subsequent cooling and rinsing operations, prior to discharge into MWRA sewer system, pursuant 360 C.M.R. 10.023(8).
12. Indicate proposed date(s) of discharge into the MWRA sewer system.

Anticipated first day of discharge: ________________________________

Anticipated last day of discharge: ________________________________

Proposed hours of discharge into MWRA sewer system: ______________

13. Provide the construction schedule for the project including specific proposed date(s) and start and end times. If specific dates are not known, please use Day 1 (one) for taking the pipe out of service and count forward from there. If individual operating time will take less than twenty-four hours, specify start and end times in military time.

<table>
<thead>
<tr>
<th>Action(s)</th>
<th>Date (mm/dd/yyyy)</th>
<th>Operating Time (hrs:min:sec)</th>
<th>Comments(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking pipe out of service</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pre-cleaning of pipe (Start)</td>
<td></td>
<td></td>
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<tr>
<td>Pre-cleaning of pipe (End)</td>
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<tr>
<td>Line installation (Start)</td>
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<td>Line installation (End)</td>
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<tr>
<td>Curing process (Start)</td>
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<tr>
<td>Curing process (End)</td>
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<tr>
<td>Cooling process (Start)</td>
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<td>Cooling process (End)</td>
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<td>Rinsing (Start)</td>
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<tr>
<td>Rinsing (End)</td>
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<tr>
<td>Return pipe to service</td>
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<tr>
<td>Other (Describe)</td>
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</table>
14. Indicate how you will ensure that sufficient capacity (gallons) at the construction zone in the event of a storm event. Describe how flow through the pipe will be diverted around the construction zone and provide rerouting plans, and pipe blockage techniques that you will employ. Specify materials that will be used and storage measures that will be employed.
15. **CERTIFICATION STATEMENT AND SIGNATURE:**
The questionnaire for a One-Time-Only Discharge Request must be signed and dated by an authorized representative. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the sewer system, a new authorization satisfying the requirements of this section must be submitted to the MWRA prior to or together with any reports to be signed by an authorized representative.

An authorized representative of a municipality includes:

a) a responsible public official, including a Mayor, City Manager, Town Administrator, Chair of the Board of Selectman, District Manager, or any other person who performs similar policy or decision-making functions for the municipality, or the director, manager, or superintendent of the department responsible for operating or overseeing the operation of the sewer system, if authority to sign documents has been assigned or delegated to the individual in accordance with the municipality’s procedures.

b) the duly authorized representative of the individual designated in (a) of this section if:

   i) the authorization is made in writing by the individual described in (a);

   ii) the authorization specifies either an individual or a position having responsibility for the overall operation of the sewer system from which the discharge originates, such as the position of superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the municipality;

   iii) the written authorization is submitted to the MWRA.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the sewer system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____________________________________
Signature of Authorized Representative

_____________________________________
Please Print Name of Authorized Representative

_____________________________________
Title

_____________________________________
Date

**PLEASE, ALLOW THREE WEEKS FOR PROCESSING THIS REQUEST**

*Do not alter this form*
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SECTION 00 73 38

D/MBE & D/WBE REQUIREMENTS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2007 Edition) included in Section 00 72 05. All provisions that are not so amended or supplemented remain in full force and effect unless amended or supplemented in another Section. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated within the Sections listed below, if any, which are applicable to both the singular and plural thereof.

1.01 SRF REQUIREMENTS

A. This Project is subject to the “Special Provisions for Disadvantaged Business Enterprises” of the Massachusetts Department of Environmental Protection Division of Municipal Services, January 2018 (issued July 2018).

B. Comply with requirements included in attachments to this section.

END OF SECTION
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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 partnership
[ ] A corporation
[ ] Other (explain): ___________________________

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

DBE PARTICIPATION

<table>
<thead>
<tr>
<th>Description of Activity</th>
<th>Date of Project Commencement</th>
<th>$ Amount</th>
<th>% Bid Price</th>
</tr>
</thead>
<tbody>
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<td>$</td>
<td>%</td>
</tr>
</tbody>
</table>

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

BIDDER

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

DBE

(Authorized Original Signature) Date
ADDRESS:
TELEPHONE #: FEIN:
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

EEO-DEP-191C

EEO-DEP-E Page 11 of 16
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.

<table>
<thead>
<tr>
<th>NAME OF SUBCONTRACTOR</th>
<th>PROJECT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDRESS</td>
<td>CONTRACT NO.</td>
</tr>
<tr>
<td>TELEPHONE NO.</td>
<td>E-MAIL ADDRESS</td>
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</tbody>
</table>

**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.).

<table>
<thead>
<tr>
<th>CONTRACT ITEM NO.</th>
<th>ITEM OF WORK OR DESCRIPTION OF SERVICES RECEIVED FROM THE PRIME CONTRACTOR</th>
<th>AMOUNT SUBCONTRACTOR WAS PAID BY PRIME CONTRACTOR</th>
</tr>
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</table>

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
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.

<table>
<thead>
<tr>
<th>Subcontractor</th>
<th>Point of Contact</th>
<th>Mailing Address</th>
<th>Telephone Number</th>
<th>E-Mail Address</th>
<th>MBE</th>
<th>WBE</th>
<th>DBE</th>
<th>Subcontract Value</th>
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SECTION 00 73 43

WAGE RATE REQUIREMENTS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2007 Edition) included in Section 00 72 05. All provisions that are not so amended or supplemented remain in full force and effect unless amended or supplemented in another Section. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated within the Sections listed below, if any, which are applicable to both the singular and plural thereof.

The content of this Section does not represent or reflect all applicable Laws and Regulations and may only include excerpts and portions of certain Laws and Regulations. Other provisions and policies, and Laws and Regulations, shall be deemed to be so included and incorporated herein. Contractor is solely responsible to determine, obtain, review and interpret the full text of applicable Laws and Regulations.

The Project is subject to prevailing wage rates as issued by the Director of the Executive Office of Labor and Workforce Development (EOLWD), Department of Labor Standards (DLS) and the requirements of MGL Chapter 149, Sections 26, 27 and 27A to 27H. Pursuant to MGL Chapter 149, Section 34B, wages paid to reserve police officers shall be the same prevailing rate of wage paid to regular police officers at the location of the Project.

Comply with requirements available on the Executive Office of Labor and Workforce Development website at https://www.mass.gov/prevailing-wage-program

Submit required records and statements of compliance in accordance with MGL Chapter 149, Section 27B using the latest Weekly Payroll and Compliance forms available on the EOLWD website. Copies included in this section are for information only.

This Project is also subject to Federal Minimum Wage Rates determined by the United States Department of Labor under the Davis-Bacon Act (40 USC 3141 et seq.). Comply with the latest requirements available on the U.S. Department of Labor Wage and Hour Division website at www.dol.gov/whd/govcontracts/dbra.htm.

Wage determination schedules are included at the end of this section. In case of discrepancy between state wage rates and Federal wage rates, if any, the higher wage rates shall apply.

ATTACHMENTS

A. Massachusetts Prevailing Wage Law guidance and forms
B. Davis Bacon Act Requirements
C. Wage Determination Schedules

END OF SECTION
Massachusetts Prevailing Wage Law for Contractors

Prevailing Wage Law for public works projects

Massachusetts Prevailing Wage Law for contractors

Massachusetts Prevailing Wage Guide for contractors

(\!/files/2017-07/dls-pw-bro-for-contractors-6-12.pdf)

What is the Prevailing Wage Law?

The Massachusetts Prevailing Wage Law for public works projects G.L. c. 149, §§ 26 - 27 ("The Prevailing Wage Law") establishes minimum wage rates for workers on public construction projects. The Massachusetts Executive Office of Labor and Workforce Development, Department of
Labor Standards (DLS) is the agency responsible for issuing prevailing wage rate sheets and administering the Prevailing Wage Law. The Massachusetts Attorney General’s Fair Labor Division is responsible for enforcing the law. If contractors fail to comply with any provision of the Prevailing Wage Law or if you believe a contractor is not paying prevailing wages, you should contact the Attorney General’s Fair Labor Division at (617) 727-3465.

Before soliciting bids for any public construction project an awarding authority must obtain a prevailing wage rate sheet from DLS. Each prevailing wage rate sheet applies only to the public construction project for which it is issued. The prevailing wage rates for each construction project are in effect for 90 days from the date of issue. Projects not bid within 90 days of the issued rates will require the awarding authority to request new prevailing wage rates. Once a project has been awarded, the prevailing wage rate schedule will apply for the duration of any contracts which result from that bid, except in the case of multi-year projects. For projects lasting more than one year, the awarding authority must request annual updates to the wage schedules (see FAQs below for more information on annual updates). All wage increases listed on the schedule, if any, must be paid on the dates indicated.

During the project, it is the contractor’s responsibility to submit certified weekly payroll records to the awarding authority by first class mail or by electronic mail. Weekly payroll report forms and required statements of compliance are available on DLS’ website. All information set forth on the form must be provided. **Failure to submit certified weekly payroll records**
and statements of compliance may result in fines of up to $10,000 per occurrence.

Q. How can I determine the Prevailing Wage rates for bidding on a project?

A. Under the law, the awarding authority is required to include the rate sheet in the bid documents. In addition, for bidding purposes, you may request an "Example Rate Sheet" by accessing the DLS website. If you have questions or problems obtaining an Example Rate Sheet, you may call (617) 626-6953. **Notwithstanding information contained on an Example Rate sheet, the wage rates which a contractor must pay to its workers if awarded the contract are those contained on the official rate sheet obtained by the awarding authority.**

Q. Which benefits are included in the Prevailing Wage rate?

A. Payments by employers to health and welfare plans, pension plans and supplemental unemployment benefit plans under collective bargaining agreements or understandings between organized labor and employers are included in the wage rates. G.L. c. 149, §§ 26 and 27. Only those amounts contributed by an employer to a bonafide health and welfare, pension or supplemental unemployment plan may be deducted from the wage rate.

Q. Why does the Rate Sheet contain both percentages and dollar figures for the apprentice rates?
A. Effective March 18, 2010, DLS began to publish on the prevailing wage rate sheets, the actual apprentice wage rates including the enumerated benefits described above. To the extent that the employer actually contributes, on behalf of the employee, to a health and welfare, pension or supplementary unemployment plan, the employer may deduct the amount contributed from the apprentice wage rate published on the rate sheet, just as they may for journeyman. Although for a period of time the percentages may still appear on the rate sheets, for projects that include wage schedules issued from this date forward, contractors should no longer calculate the apprentice rate based upon the percentage, but instead shall pay no less than the wage rate listed on the rate sheet.

Q. What if I have a question about a classification on the Rate Sheet?

A. The DLS website contains a Topical Index that contains details regarding classifications, among other information. In addition, the website contains DLS Opinion Letters from 2000 onward which contain detailed information about many of the classifications. If you cannot find an answer or have further questions, you must call the DLS at (617) 626-6952.

Q. Is preventative maintenance work covered by the Prevailing Wage Law?

A. Maintenance or repair which involve any "additions or alterations" to a public work is covered under the prevailing wage law.

Q. What is an annual update?
A. On August 8, 2008, the prevailing wage law was amended to require annual updates to prevailing wage rate sheets for all public construction projects lasting longer than one year. This law applies to all public construction contracts bid on or after August 8, 2008. This law does not affect contracts bid prior to August 8, 2008.

Q. What if the Awarding Authority estimates that the project will last less than one tear, but the work extends into a second contract year?

A. The awarding authority must request an annual update, and the contractor must obtain and pay those rates.

Q. What are my obligations as a contractor for annual updates?

A. General Contractors must obtain these updated schedules from awarding authorities, and general and sub-contractors must pay no less than these rates to covered workers. Updated schedules must also be posted in a conspicuous place at the worksite during the life of the contract. Failure to comply with the prevailing wage law may result in civil or criminal penalties and/or sanctions under M.G.L. c. 149, §27C.
WEEKLY PAYROLL RECORDS REPORT & STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form is available from the Department of Labor Standards (DLS) at www.mass.gov/dols/pw and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

On a weekly basis, every contractor and subcontractor is required to submit a certified copy of their weekly payroll records to the awarding authority; this includes the payroll forms and the Statement of Compliance form. The certified payroll records must be submitted either by regular mail or by e-mail to the awarding authority. Once collected, the awarding authority is required to preserve those records for three years from the date of completion of the project.

Each such contractor and subcontractor shall furnish weekly and within 15 days after completion of its portion of the work, to the awarding authority directly by first-class mail or e-mail, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form, accompanied by their payroll:

STATEMENT OF COMPLIANCE

______________________, 20_____

I, ________________________________, (Name of signatory party) _____________________________ (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by

______________________________, (Contractor, subcontractor or public body) _____________________________

on the ______________________________ (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature ___________________________
Title _______________________________
**MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM**

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<th>Company’s Name:</th>
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<th>Subcontractor’s Name:</th>
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<th>Hourly Base Wage (B)</th>
<th>Health &amp; Welfare Insurance (C)</th>
<th>ERISA Pension Plan (D)</th>
<th>Supp. Unemp. (E)</th>
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<th>Total Gross Wages (G)</th>
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Are all apprentice employees identified above currently registered with the MA DLS’s Division of Apprentice Standards?  
For all apprentices performing work during the reporting period, attach a copy of the apprentice identification card issued by the Massachusetts Department of Labor Standards / Division of Apprentice Standards.

**NOTE:** Pursuant to MGL c. 149, s. 27B, every contractor and subcontractor is required to submit a true and accurate copy of their certified weekly payroll records to the awarding authority by first-class mail or e-mail. In addition, each weekly payroll must be accompanied by a statement of compliance signed by the employer. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

Date Received by Awarding Authority: / / 

Page ____ of _____
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.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.4. Contract Provisions for Contracts in Excess of $100,000 (if applicable)
II.5. Compliance Verification

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

Preamble

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

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

I. Requirements For Subrecipients That Are Governmental Entities:

The following terms and conditions specify how recipients will assist EPA in meeting its Davis-Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance with respect to State recipients and subrecipients that are governmental entities. If a subrecipient has
questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. If a State recipient needs guidance, the recipient may contact Valerie Marshall at EPA Region 1 (617-918-1674) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL’s web site at https://www.dol.gov/whd/govcontracts/dbra.htm

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

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

2. Obtaining Wage Determinations.

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

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

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

(b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.
(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

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


(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 5.12.
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).


(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other
Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

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

5. Compliance Verification

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

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

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

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

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

II. Requirements For Subrecipients That Are Not Governmental Entities

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

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

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

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

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

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

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

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

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

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

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

(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 laborors or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is
available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/whd/forms/wh347.pdf or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.
(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of
fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).


(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.
### Awarding Authority:
City of Quincy, Ma

### Contract Number:
0232568.00

### City/Town:
QUINCY

### Description of Work:
Open cut sewer pipe replacement, manhole replacement, stormwater drainage rehabilitation, backfilling and paving; and all materials and equipment, services and construction inherent to the Work.

### Job Location:
Citywide

#### Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the “Wage Request Number” on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule from the Department of Labor Standards (“DLS”) if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c. 149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F “rental of equipment” contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
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### Apprentice - **BOILERMAKER - Local 29**

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### Notes:
- Apprentice to Journeyworker Ratio: 1:4

**BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)**

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**BOILERMAKERS LOCAL 29**

**BRICKLAYERS LOCAL 3 (QUINCY)**
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**Notes:**

Apprentice to Journeyworker Ratio: 1:5

**BULLDOZER/GRADER/SCRAPER OPERATING ENGINEERS LOCAL 4**

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

**CAISSON & UNDERPINNING BOTTOM MAN LABORERS - FOUNDATION AND MARINE**

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For apprentice rates see "Apprentice- LABORER"

**CAISSON & UNDERPINNING LABORER LABORERS - FOUNDATION AND MARINE**

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For apprentice rates see "Apprentice- LABORER"

**CAISSON & UNDERPINNING TOP MAN LABORERS - FOUNDATION AND MARINE**

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For apprentice rates see "Apprentice- LABORER"
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For apprentice rates see "Apprentice- LABORER"

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### Apprentice - CARPENTER - Zone 2 Eastern MA

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### Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80

Step 1&2 $29.99/ 3&4 $35.85/ 5&6 $54.22/ 7&8 $60.14

Apprentice to Journeyworker Ratio: 1:5

CARPENTER WOOD FRAME

CARPENTERS -ZONE 2 (Wood Frame)

All Aspects of New Wood Frame Work
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**Notes:**
- % Indentured After 10/1/17; 45/45/55/55/70/70/80/80
- Step 1&2 $19.65/ 3&4 $27.19/ 5&6 $34.50/ 7&8 $37.29
- Apprentice to Journeyworker Ratio: 1:5

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**Notes:**
- Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.
- Apprentice to Journeyworker Ratio: 1:3

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For apprentice rates see "Apprentice- LABORER"

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**Issue Date:** 02/25/2020  **Wage Request Number:** 20200225-054  **Page 6 of 38**
### COMPRESSOR OPERATOR
**OPERATING ENGINEERS LOCAL 4**

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

### DELEADER (BRIDGE)
**PAINTERS LOCAL 35 - ZONE 2**

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### Apprentice - **PAINTER Local 35 - BRIDGES/TANKS**

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**Notes:**
- Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:** 1:1

### DEMO: ADZEMAN
**LABORERS - ZONE 1**

For apprentice rates see "Apprentice- LABORER"

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### DEMO: BACKHOE/LOADER/HAMMER OPERATOR
**LABORERS - ZONE 1**

For apprentice rates see "Apprentice- LABORER"

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### DEMO: BURNERS
**LABORERS - ZONE 1**

For apprentice rates see "Apprentice- LABORER"

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**Notes:** App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

Apprentice to Journeyworker Ratio: 2:3***

### ELEVATOR CONSTRUCTOR

**ELEVATOR CONSTRUCTORS LOCAL 4**

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### Elevator Constructor - Local 4

#### Apprentice - ELEVATOR CONSTRUCTOR - Local 4

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**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**

- **01/01/2020:** $42.99, Health: $15.73, Pension: $18.41, Total: $77.13
- **01/01/2021:** $44.43, Health: $15.88, Pension: $19.31, Total: $79.62
- **01/01/2022:** $45.93, Health: $16.03, Pension: $20.21, Total: $82.17

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

### Fence & Guard Rail Erector

**LABORERS - ZONE 1**

- **12/01/2019:** $39.40, Health: $8.10, Pension: $16.60, Total: $64.10
- **06/01/2020:** $40.39, Health: $8.10, Pension: $16.60, Total: $65.09
- **12/01/2020:** $41.37, Health: $8.10, Pension: $16.60, Total: $66.07
- **06/01/2021:** $42.39, Health: $8.10, Pension: $16.60, Total: $67.09
- **12/01/2021:** $43.40, Health: $8.10, Pension: $16.60, Total: $68.10

For apprentice rates see "Apprentice - LABORER"

### Field Eng. Inst. Person-Bldg, Site, HvY/HwY

**OPERATING ENGINEERS LOCAL 4**

- **11/01/2019:** $44.18, Health: $12.00, Pension: $15.60, Total: $71.78
- **05/01/2020:** $45.33, Health: $12.00, Pension: $15.60, Total: $72.93
- **11/01/2020:** $46.33, Health: $12.00, Pension: $15.60, Total: $73.93
- **05/01/2021:** $47.48, Health: $12.00, Pension: $15.60, Total: $75.08
- **11/01/2021:** $48.48, Health: $12.00, Pension: $15.60, Total: $76.08
- **05/01/2022:** $49.63, Health: $12.00, Pension: $15.60, Total: $77.23

For apprentice rates see "Apprentice - OPERATING ENGINEERS"

### Field Eng. Party Chief-Bldg, Site, HvY/HwY

**OPERATING ENGINEERS LOCAL 4**

- **11/01/2019:** $45.68, Health: $12.00, Pension: $15.60, Total: $73.28
- **05/01/2020:** $46.83, Health: $12.00, Pension: $15.60, Total: $74.43
- **11/01/2020:** $47.84, Health: $12.00, Pension: $15.60, Total: $75.44
- **05/01/2021:** $49.00, Health: $12.00, Pension: $15.60, Total: $76.60
- **11/01/2021:** $50.01, Health: $12.00, Pension: $15.60, Total: $77.61
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For apprentice rates see "Apprentice - OPERATING ENGINEERS"
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**Notes:** Steps are 750 hrs. % After 09/1/17; 45/45/55/70/80/80 (1500hr Steps) Step 1&2 $32.00/ 3&4 $38.36/ 5&6 $57.45/ 7&8 $63.86

Apprentice to Journeyworker Ratio:1:1

### FORK LIFT/CHERRY PICKER

**OPERATING ENGINEERS LOCAL 4**

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

### GENERATOR/LIGHTING PLANT/HEATERS

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

### GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

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**Effective Date -** 01/01/2020

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**Notes:**

- Steps are 750 hrs.

**Apprentice to Journeyworker Ratio: 1:1**

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### HOISTING ENGINEER/CRANES/GRADALLS

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### Notes:

Apprentice to Journeyworker Ratio: 1:6

**HVAC (Ductwork) - Sheetmetal Workers Local 17 - A**

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For apprentice rates see "Apprentice - Sheetmetal Worker"

**HVAC (Electrical Controls) - Electricians Local 103**

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<th>Base Wage</th>
<th>Health</th>
<th>Pension</th>
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For apprentice rates see "Apprentice- SHEET METAL WORKER"

| HVAC (TESTING AND BALANCING -WATER)                | 09/01/2019     | $54.69    | $10.95 | $19.74  | $0.00        | $85.38       |
| **PIPEFITTERS LOCAL 537**                          | 03/01/2020     | $56.19    | $10.95 | $19.74  | $0.00        | $86.88       |
|                                                     | 09/01/2020     | $57.69    | $10.95 | $19.74  | $0.00        | $88.38       |
|                                                     | 03/01/2021     | $59.19    | $10.95 | $19.74  | $0.00        | $89.88       |

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

| HVAC MECHANIC                                      | 09/01/2019     | $54.69    | $10.95 | $19.74  | $0.00        | $85.38       |
| **PIPEFITTERS LOCAL 537**                          | 03/01/2020     | $56.19    | $10.95 | $19.74  | $0.00        | $86.88       |
|                                                     | 09/01/2020     | $57.69    | $10.95 | $19.74  | $0.00        | $88.38       |
|                                                     | 03/01/2021     | $59.19    | $10.95 | $19.74  | $0.00        | $89.88       |

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

| HYDRAULIC DRILLS                                   | 12/01/2019     | $39.90    | $8.10  | $16.60  | $0.00        | $64.60       |
| **LABORERS - ZONE 1**                              | 06/01/2020     | $40.89    | $8.10  | $16.60  | $0.00        | $65.59       |
|                                                     | 12/01/2020     | $41.87    | $8.10  | $16.60  | $0.00        | $66.57       |
|                                                     | 06/01/2021     | $42.89    | $8.10  | $16.60  | $0.00        | $67.59       |
|                                                     | 12/01/2021     | $43.90    | $8.10  | $16.60  | $0.00        | $68.60       |

For apprentice rates see "Apprentice- LABORER"

| INSULATOR (PIPES & TANKS)                          | 09/01/2019     | $48.44    | $12.80 | $16.40  | $0.00        | $77.64       |

**APPRENTICE - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston**

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<tr>
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**Notes:**
Steps are 1 year

**Apprentice to Journeyworker Ratio:1:4**

| IRONWORKER/WELDER                                   | 03/16/2019     | $46.66    | $8.00   | $23.50  | $0.00        | $78.16       |

**IRONWORKERS LOCAL 7 (BOSTON AREA)**
### Apprentice - IRONWORKER - Local 7 Boston

**Effective Date:** 03/16/2019

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**Notes:**
**Structural 1:6; Ornamental 1:4**

### Apprentice to Journeyworker Ratio:**

### JACKHAMMER & PAVING BREAKER OPERATOR

**LABORERS - ZONE 1**

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For apprentice rates see "Apprentice- LABORER"

### LABORER

**LABORERS - ZONE 1**

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### Apprentice - LABORER - Zone 1

**Effective Date:** 12/01/2019

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**Notes:**

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### Notes:

Apprentice to Journeyworker Ratio: 1:3

### MARBLE MASON, TILELAYERS & TERRAZZO MECH

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**Notes:**

Apprentice to Journeyworker Ratio: 1:5

**MECH. SWEEPER OPERATOR (ON CONST. SITES)**
*OPERATING ENGINEERS LOCAL 4*

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

**MECHANICS MAINTENANCE**
*OPERATING ENGINEERS LOCAL 4*

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

**MILLWRIGHT (Zone 1)**
*MILLWRIGHTS LOCAL 1121 - Zone 1*

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### Notes:
- Steps are 2,000 hours
- Apprentice to Journeyworker Ratio: 1:5

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**For apprentice rates see "Apprentice- LABORER"**

### MORTAR MIXER
**LABORERS - ZONE 1**

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**For apprentice rates see "Apprentice- OPERATING ENGINEERS"**

### OILER (OTHER THAN TRUCK CRANES, GRADALLS)
**OPERATING ENGINEERS LOCAL 4**

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### OTHER POWER DRIVEN EQUIPMENT - CLASS II
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**For apprentice rates see "Apprentice- OPERATING ENGINEERS"**

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**Effective Date:** 07/01/2020

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**Notes:**
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:** 1:1

---

PAINTER (SIGN, PICTORIAL & DISPLAY)

06/01/2013  $25.81  $7.07  $7.05  $0.00  $39.93
### Apprentice - PAINTER SIGN - Local 35 Zone 2

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**Notes:**
- Steps are 4 mos.

**Apprentice to Journeyworker Ratio:** 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *

* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.

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**PAINTER Local 35 Zone 2 - Spray/Sandblast - New**

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### Notes:
- Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

**PAINTER (SPRAY OR SANDBLAST, REPAINT)**

- **PAINTERS LOCAL 35 - ZONE 2**

**Issue Date:** 02/25/2020  
**Wage Request Number:** 20200225-054  
**Page 23 of 38**
### Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint

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#### Notes:
- Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

**PAINTER (TRAFFIC MARKINGS)**

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**LABORERS - ZONE 1**

**PAINTER / TAPER (BRUSH, NEW)**

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* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.
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**Notes:**
- Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:** 1:1

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PAINTER / TAPER (BRUSH, REPAINT)

**PAINTERS LOCAL 35 - ZONE 2**

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### Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

**Effective Date:** 01/01/2020

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**Effective Date:** 07/01/2020

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**Notes:**
- Steps are 750 hrs.
- Apprentice to Journeyworker Ratio: 1:1

### PANEL & PICKUP TRUCKS DRIVER

*TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*

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### PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)

*PILE DRIVER LOCAL 56 (ZONE 1)*

For apprentice rates see "Apprentice - PILE DRIVER"

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### PILE DRIVER

*PILE DRIVER LOCAL 56 (ZONE 1)*

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Notes:

Apprentice to Journeyworker Ratio: 1:5

PIPEFITTER & STEAMFITTER
PIPEFITTERS LOCAL 537

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Effective Date - 03/01/2020

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Notes:

** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.
Refrig/AC Mechanic **1:1;1:2;1:4;2:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**
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For apprentice rates see "Apprentice- LABORER".

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**Apprentice - PLUMBER/GASFITTER - Local 12**

**Effective Date - 09/01/2019**

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**Effective Date - 03/01/2020**

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**Notes:**

**1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr**

Step 4 with lic $64.20, Step 5 with lic $71.67

**Apprentice to Journeyworker Ratio:**

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For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER".

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For apprentice rates see "Apprentice- LABORER*"
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**Apprentice - ROOFER - Local 33**

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**Effective Date | 03/01/2020 | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
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**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:**

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For apprentice rates see "Apprentice- ROOFER"

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**Notes:**

Steps are 6 mos.

Apprentice to Journeyworker Ratio: 1:4

**SPECIALIZED EARTH MOVING EQUIP < 35 TONS**

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**Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1**

**Effective Date -** 01/01/2020

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**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**

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

**TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN**

**OPERATING ENGINEERS LOCAL 4**

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"
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### Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

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### Notes:

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Apprentice to Journeyworker Ratio: 1:1

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Issue Date: 02/25/2020

Wage Request Number: 20200225-054
### Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

**Effective Date:** 02/01/2020

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**Effective Date:** 08/01/2020

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**Notes:**

Apprentice to Journeyworker Ratio: 1:3

**TEST BORING DRILLER**

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For apprentice rates see "Apprentice- LABORER"

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For apprentice rates see "Apprentice- LABORER"

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For apprentice rates see "Apprentice- LABORER"

**TRACTORS/PORTABLE STEAM GENERATORS**

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Notes:

- Apprentice to Journeyworker Ratio: 1:2
- TELEDATA CABLE SPLICER
  OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104
  02/04/2019 $30.73 $4.70 $3.17 $0.00 $38.60
- TELEDATA LINEMAN/EQUIPMENT OPERATOR
  OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104
  02/04/2019 $28.93 $4.70 $3.14 $0.00 $36.77
- TELEDATA WIREMAN/INSTALLER/TECHNICIAN
  OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104
  02/04/2019 $28.93 $4.70 $3.14 $0.00 $36.77
- TREE TRIMMER
  OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104
  01/31/2016 $18.51 $3.55 $0.00 $0.00 $22.06
  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.
- TREE TRIMMER GROUNDMAN
  OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104
  01/31/2016 $16.32 $3.55 $0.00 $0.00 $19.87
  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.
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, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.
General Decision Number: MA20200008 01/03/2020

Superseded General Decision Number: MA20190008

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 CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.80 for calendar year 2020 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 $10.80 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 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date
0 01/03/2020

BOIL0029-001 01/01/2017

Rates Fringes
BRMA0001-011 02/01/2019

FOXBORO CHAPTER

BRISTOL (Attleboro, Berkley, Dighton, Mansfield, North Attleboro, Norton, Raynham, Rehoboth, Seekonk, Taunton); NORFOLK, (Bellingham, Canton, Dedham, Foxboro, Franklin, Norfolk, Norwood, Plainville, Sharon, Walpole, Westwood, Wrentham); and PLYMOUTH (Lakeville)

Rates Fringes

Bricklayer/Cement Mason...........$ 51.41 31.09

BRMA0001-012 02/01/2019

LOWELL CHAPTER

MIDDLESEX (Acton, Ashby, Ayer, Bedford, Billerica, Boxboro, Carlisle, Chelmsford, Dracut, Dunstablale, Ft Devens, Groton, Littleton, Lowell, North Acton, Pepperell, Shirley, South Acton, Tewksbury, Townsend, Tyngsboro, West Acton, Westford, Wilmington)

Rates Fringes

BRICKLAYER.......................$ 51.41 31.09

BRMA0001-013 02/01/2019

LOWELL CHAPTER

MIDDLESEX (Ashland, Framingham, Holliston, Hopkinton, Hudson, Maynard, Natick, Sherborn, Stow); and NORFOLK (Medfield, Medway, Millis)

Rates Fringes

BRICKLAYER.......................$ 51.41 31.09

BRMA0003-001 08/01/2018

Marble & Tile Finisher.........$ 40.40 31.52

Marble, Tile & Terrazzo
Workers.......................... $ 52.95  33.55
TERRAZZO FINISHER.............. $ 51.85  33.39

----------------------------------------------------------------

BRMA0003-003 02/01/2019

BOSTON CHAPTER
MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Somerville); NORFOLK (Brookline, Milton); and SUFFOLK

Rates Fringes

BRICKLAYER....................... $ 53.55  31.88

----------------------------------------------------------------

BRMA0003-011 08/01/2018

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........... $ 52.91  33.60

----------------------------------------------------------------

BRMA0003-012 08/01/2018

Rates Fringes

BRICKLAYER

WALTHAM CHAPTER -
MIDDLESEX (Belmont, Burlington, Concord, Lexington, Lincoln, Stoneham, Sudbury, Waltham, Watertown, Wayland, Weston, Winchester, Woburn)........... $ 52.91  33.60

----------------------------------------------------------------

BRMA0003-014 02/01/2019

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)

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NEW BEDFORD CHAPTER

BARNSTABLE; BRISTOL (Acushnet, Dartmouth, Fairhaven, Fall River, Freetown, New Bedford, Somerset, Swansea, Westport); DUKES; NANTUCKET; PLYMOUTH (Marion, Mattapoisett, Rochester, Wareham)

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NEWTON CHAPTER

MIDDLESEX (Newton); NORFOLK (Dover, Needham, Wellesley)

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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

<table>
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The areas of BARNSTABLE, BRISTOL, PLYMOUTH, and NORFOLK COUNTIES situated OUTSIDE Boston Beltway (I-495) and South of Cape Cod Canal
Rates    Fringes
PILEDRIVERMAN....................$ 46.07  32.25

CARP0056-003 08/01/2018

Those areas of ESSEX and MIDDLESEX COUNTIES situated OUTSIDE
Boston Beltway (I-495)

Rates    Fringes
PILEDRIVERMAN....................$ 46.07  32.25

CARP0056-004 08/01/2018

Rates    Fringes
DIVER TENDER......................$ 46.07  32.25
DIVER.............................$ 64.50  32.25

CARP0327-002 09/01/2019

MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford,
Somerville); NORFOLK (Brookline, Dedham, Milton); AND SUFFOLK
COUNTIES

Rates    Fringes
CARPENTER........................$ 49.79  29.30

CARP0339-002 09/01/2019

BRISTOL (Attleborough, North Attleborough); ESSEX; MIDDLESEX
(Except Belmont, Cambridge, Everett, Malden, Medford,
Somerville); AND NORFOLK (Bellingham, Braintree, Canton,
Cohasset, Foxboro, Franklin, Medfield, Medway, Millis,
Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole,
Wellesley, Westwood, Weymouth, Wrentham) COUNTIES

Rates    Fringes
CARPENTER........................$ 41.90  29.00

CARP0346-001 09/01/2019

NORFOLK (Braintree, Quincy, Cohasset, Weymouth, etc.) PLYMOUTH
(Duxbury, Hanover, Hull, Hingham, Marshfield, Norwell, Pembroke Rockland, Scituate)

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CARP0624-002 09/01/2017

DUKES; NANTUCKET

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<tr>
<td>CARPENTER</td>
<td>$ 46.43</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARPENTER</td>
<td>$ 39.28</td>
</tr>
</tbody>
</table>

CARP1121-001 10/01/2017

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILLWRIGHT</td>
<td>$ 39.52</td>
</tr>
</tbody>
</table>

ELEC0096-001 07/01/2019

MIDDLESEX (Ashby, Ashland, Ayer, Ft. Devens, Groton, Hopkinton, Hudson, Marlboro, Pepperell, Shirley, Stow, Townsend)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTRICIAN</td>
<td>$ 44.07</td>
</tr>
<tr>
<td>Teledata System Installer</td>
<td>$ 30.10</td>
</tr>
</tbody>
</table>

ELEC0099-001 06/01/2019

BRISTOL (Attleboro, North Attleboro, Seekonk)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
</table>
| }
ELECTRICIAN.................... $40.40 57.24%
Teledata System Installer...... $28.56 13.1%+13.76

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)

ELEC0103-002 03/01/2019

Rates Fringes
ELECTRICIAN.................... $51.10 32.65

ESSEX (Beverly, Danvers, Essex, Gloucester, Hamilton, Ipswich, Manchester, Marblehead, Middleton, Peabody, Rockport, Salem, Topsfield, Wenham)

ELEC0103-004 03/01/2019

Rates Fringes
ELECTRICIAN.................... $51.10 32.65

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, Franklin, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); PLYMOUTH (Hingham and Hull); SUFFOLK

ELEC0103-005 03/01/2019

Rates Fringes
ELECTRICIAN.................... $51.10 32.65

ELEC0104-001 09/03/2017

Rates Fringes
ELECTRICIAN.................... $51.10 32.65
Line Construction:
- Cableman: $38.45 18.42+A
- Equipment Operator: $38.45 22.50+A
- Groundman: $24.88 10.24+A
- Lineman: $45.23 25.71+A

A. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Day and Columbus Day, provided the employee has been employed 5 working days prior to any one of the listed holidays.

ELEC0223-002 09/01/2019

BARNSTABLE, BRISTOL (Except Attleboro, North Attleboro, Seekonk); DUKES; NANTUCKET; PLYMOUTH (Except Hingham and Hull Twp); NORFOLK (Avon, Halbrook, Randolph, Sloughton)

Rates Fringes
ELECTRICIAN.........................$ 42.26 30.65%+11.90

* ENGI0004-009 12/01/2019

Rates Fringes

Power equipment operators:
- Group 1: $48.73 29.25+a
- Group 2: $48.23 29.25+a
- Group 3: $32.47 29.25+a
- Group 4: $39.89 29.25+a
- Group 5: $23.08 29.25+a
- Group 6: $27.64 29.25+a

HOURLY PREMIUM FOR BOOM LENGTHS (Including Jib):
- Over 150 ft. +2.18
- Over 185 ft. +3.84
- Over 210 ft. +5.39
- Over 250 ft. +8.16
- Over 295 ft. +11.29
- Over 350 ft. +13.14

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:
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: Assistant 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, Brookton, 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)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRONWORKER</td>
<td></td>
</tr>
<tr>
<td>AREA 1......................$ 44.71</td>
<td>30.56</td>
</tr>
<tr>
<td>AREA 2......................$ 40.30</td>
<td>30.56</td>
</tr>
</tbody>
</table>

IRON0007-010 03/16/2019

MIDDLESEX (Ashby, Ashland, Ayer, Boxboro, Holliston, Hopkinton, Hudson, Marlboro, Shirley, Stow, Townsend); NORFOLK (Medway)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRONWORKER.......................$ 46.36</td>
<td>36.90</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRONWORKER.......................$ 34.89</td>
<td>26.87</td>
</tr>
</tbody>
</table>

LAB00022-006 06/01/2018

SUFFOLK COUNTY (Boston, Chelsea, Revere, Winthrop, Deer & Nut Islands); MIDDLESEX COUNTY (Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn only); NORFOLK COUNTY (Brookline, Dedham, and Milton only)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laborers:</td>
<td></td>
</tr>
<tr>
<td>GROUP 1.......................$ 38.00</td>
<td>24.10</td>
</tr>
</tbody>
</table>
GROUP 2.....................$ 38.25  24.10  
GROUP 3.....................$ 38.75  24.10  
GROUP 4.....................$ 39.00  24.10  
GROUP 5.....................$ 21.50  24.10  
GROUP 6.....................$ 39.00  24.10  

LABORERS CLASSIFICATIONS  

GROUP 1: Laborers; carpenter tenders; cement finisher tenders  

GROUP 2: Asphalt raker; fence and guard rail erector; laser beam operator; mason tender; pipelayer; pneumatic drill operator; pneumatic tool operator; wagon drill operator  

GROUP 3: Air track operator; block paver; rammer; curb setter  

GROUP 4: Blaster; powderman  

GROUP 5: Flagger  

GROUP 6: Asbestos Abatement; Toxic and Hazardous Waste Laborers  

Rates Fringes  

Laborers:  

GROUP 1.....................$ 33.25  22.92  
GROUP 2.....................$ 33.50  22.92  
GROUP 3.....................$ 34.00  22.92  
GROUP 4.....................$ 34.25  22.92  
GROUP 5.....................$ 21.50  22.92  
GROUP 6.....................$ 34.25  22.92  

LABORERS CLASSIFICATIONS  

GROUP 1: Laborers; carpenter tenders; cement finisher tenders
GROUP 2: Asphalt raker; fence and guard rail erector; laser beam operator; mason tender; pipelayer; pneumatic drill operator; pneumatic tool operator; wagon drill operator

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

LAB00022-013 06/01/2018

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laborers:</td>
<td></td>
</tr>
<tr>
<td>(FREE AIR OPERATION):</td>
<td></td>
</tr>
<tr>
<td>SHIELD DRIVEN AND LINER PLATE IN FREE AIR)</td>
<td></td>
</tr>
<tr>
<td>GROUP 1....................$ 39.40 21.80+a</td>
<td></td>
</tr>
<tr>
<td>GROUP 2....................$ 39.40 21.80+a</td>
<td></td>
</tr>
<tr>
<td>(OPEN AIR CASSONS, UNDERPINNING AND TEST BORING INDUSTRIES):</td>
<td></td>
</tr>
<tr>
<td>TEST BORING &amp; WELL DRILLING</td>
<td></td>
</tr>
<tr>
<td>Driller....................$ 39.35 24.30+a</td>
<td></td>
</tr>
<tr>
<td>Laborer....................$ 37.95 24.30+a</td>
<td></td>
</tr>
<tr>
<td>(OPEN AIR CASSONS, UNDERPINNING AND TEST BORING INDUSTRIES):</td>
<td></td>
</tr>
<tr>
<td>OPEN AIR CASSON, UNDERPINNING WORK &amp; BORING CREW</td>
<td></td>
</tr>
<tr>
<td>Bottom man....................$ 39.10 24.30+a</td>
<td></td>
</tr>
<tr>
<td>Laborers; Top man............$ 37.95 24.30+a</td>
<td></td>
</tr>
</tbody>
</table>
GROUP 2.................... $ 42.30 24.70+a
GROUP 3.................... $ 42.30 24.70+a
GROUP 4.................... $ 42.30 24.70+a
GROUP 5.................... $ 42.30 24.70+a
GROUP 6.................... $ 44.30 24.70+a

CLEANING CONCRETE AND
CAULKING TUNNEL (Both New
& Existing)
GROUP 1.................... $ 39.40 21.80+a
GROUP 2.................... $ 39.40 21.80+a

ROCK SHAFT, CONCRETE
LINING OF SAME AND TUNNEL
IN FREE AIR
GROUP 1.................... $ 36.85 21.80+a
GROUP 2.................... $ 39.40 21.80+a
GROUP 3.................... $ 39.40 21.80+a
GROUP 4.................... $ 39.40 21.80+a
GROUP 5.................... $ 41.40 21.80+a

LABORERS CLASSIFICATIONS for TUNNELS, CAISSON & CYLINDER WORK
IN COMPRESSED AIR

GROUP 1: Powder watchman; Top man on iron bolt; change house attendant

GROUP 2: Brakeman; trackman; groutman; tunnel laborer; outside lock tender; lock tender; gauge 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 TUNNEL 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:


LABO1421-001 06/01/2018

WRECKING LABORERS:

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laborers: (Wrecking)</td>
<td></td>
</tr>
<tr>
<td>Group 1.....................$ 38.15</td>
<td>24.10</td>
</tr>
<tr>
<td>Group 2.....................$ 38.90</td>
<td>24.10</td>
</tr>
<tr>
<td>Group 3.....................$ 39.15</td>
<td>24.10</td>
</tr>
<tr>
<td>Group 4.....................$ 34.15</td>
<td>24.10</td>
</tr>
<tr>
<td>Group 5.....................$ 37.25</td>
<td>24.10</td>
</tr>
</tbody>
</table>

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.

----------------------------------------------------------------

**PAIN0035-001 07/01/2019**

**BARNSTABLE BRISTOL; DUKES; ESSEX; NANTUCKET; PLYMOUTH**
(remainder of NORFOLK; MIDDLESEX AND SUFFOLK COUNTIES)

**PAINTER**

**NEW CONSTRUCTION:**
- Bridge: $50.36 30.25
- Brush, Taper: $39.86 30.25
- Spray, Sandblast: $41.26 30.25

**REPAINT:**
- Bridge: $50.66 30.90
- Brush, Taper: $37.92 30.25
- Spray, Sandblast: $39.32 30.25

----------------------------------------------------------------

**PAIN0035-015 07/01/2019**

**MIDDLESEX (Cambridge, Everett, Malden, Medford, Sommerville)**
**SUFFOLK COUNTY (Boston, Chelsea) NORFOLK COUNTY (Brookline)**

**PAINTER**

**NEW CONSTRUCTION:**
- Brush, Taper: $45.65 30.25
- Spray, Sandblast: $47.05 30.25

**REPAINT:**
- Bridge: $50.66 30.90
- Brush, Taper: $43.71 30.25
- Spray, Sandblast: $45.11 30.25

----------------------------------------------------------------

**PLAS0534-001 01/01/2019**

**ESSEX; MIDDLESEX; NORFOLK AND SUFFOLK COUNTY**
<table>
<thead>
<tr>
<th>Rates Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CEMENT MASON/CONCRETE FINISHER</strong>...$ 42.00 36.21</td>
</tr>
<tr>
<td>PLUM0004-001 09/01/2019</td>
</tr>
<tr>
<td>MIDDLESEX (Ashby, Ayer-West of Greenville branch of Boston and Maine Railroad, Ft. Devens, Groton, Shirley, Townsend)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rates Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumbers and Pipefitters........$ 45.41 26.56</td>
</tr>
<tr>
<td>PLUM0012-001 03/01/2019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rates Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLUMBER.........................$ 52.61 29.93</td>
</tr>
<tr>
<td>PLUM0012-003 03/01/2019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rates Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumber, Pipefitter, Steamfitter.........................$ 52.61 29.93</td>
</tr>
<tr>
<td>PLUM0012-006 03/01/2019</td>
</tr>
<tr>
<td>ESSEX (Lynn, Lynnfield, Nahant, Saugus, and Swampscott); MIDDLESEX (Acton, Arlington, Ashland, Ayer - except W. of Greenville Branch of Boston &amp; Maine RR, Bedford, Belmont, Billerica, Boxboro, Burlington, Cambridge, Carlisle,</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Rates Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLUMBER......</td>
</tr>
<tr>
<td>PLUM0051-005 09/01/2018</td>
</tr>
</tbody>
</table>

BARNSTABLE; BRISTOL; DUKES; NANTUCKET; NORFOLK (Avon, Holbrook, Randolph, Stoughton) PLYMOUTH (Remainder of County)

<table>
<thead>
<tr>
<th>Rates Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumbers and Pipefitters......</td>
</tr>
<tr>
<td>PLUM0537-001 09/01/2018</td>
</tr>
</tbody>
</table>

MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Wakefield, Winchester and Woburn); NORFOLK (Bellingham, Braintree, Brookline, Canton Cashasset, Dedham, Foxboro, Franklin, Millis, Milton, Sharon, Walpole, Westwood, and Wrentham); PLYMOUTH (Hingham, Hull, Scituate); ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Lynn, Lynnfield, Manchester, Marblehead, Merrimac, Methuen, Middleton, Nahant, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Saugus, Swampscott, Topsfield, Wenham, West Newbury)

<table>
<thead>
<tr>
<th>Rates Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPEFITTER......</td>
</tr>
<tr>
<td>TEAM0379-001 06/01/2019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rates Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>----------------</td>
</tr>
</tbody>
</table>
Truck drivers:

<table>
<thead>
<tr>
<th>Group</th>
<th>Rate</th>
<th>Differential by Axle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$34.08</td>
<td>25.1125+A+B</td>
</tr>
<tr>
<td>2</td>
<td>$34.25</td>
<td>25.1125+A+B</td>
</tr>
<tr>
<td>3</td>
<td>$34.32</td>
<td>25.1125+A+B</td>
</tr>
<tr>
<td>4</td>
<td>$34.44</td>
<td>25.1125+A+B</td>
</tr>
<tr>
<td>5</td>
<td>$34.54</td>
<td>25.1125+A+B</td>
</tr>
<tr>
<td>6</td>
<td>$34.83</td>
<td>25.1125+A+B</td>
</tr>
<tr>
<td>7</td>
<td>$35.12</td>
<td>25.1125+A+B</td>
</tr>
</tbody>
</table>

POWER TRUCKS $.25 DIFFERENTIAL BY AXLE
TUNNEL WORK (UNDERGROUND ONLY) $.40 DIFFERENTIAL BY AXLE
HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM

TRUCK DRIVERS CLASSIFICATIONS

Group 1: Station wagons; panel trucks; and pickup trucks

Group 2: Two axle equipment; & forklift operator

Group 3: Three axle equipment and tireman

Group 4: Four and Five Axle equipment

  Group 5: Specialized earth moving equipment under 35 tons
  other than conventional type trucks; low bed; vachual;
  mechanics, paving restoration equipment

Group 6: Specialized earth moving equipment over 35 tons

  Group 7: Trailers for earth moving equipment (double hookup)

FOOTNOTES:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday,
   Memorial Day, Independence Day, Labor Day, Patriot's Day,
   Columbus Day, Veteran's Day, Thanksgiving Day and Christmas
   Day

B. PAID VACATION: Employees with 4 months to 1 year of
   service receive 1/2 day's pay per month; 1 week vacation
   for 1 - 5 years of service; 2 weeks vacation for 5 - 10
   years of service; and 3 weeks vacation for more than 10
   years of service

----------------------------------------------------------------

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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
4.) All decisions by the Administrative Review Board are final.

================================================================

END OF GENERAL DECISION

"
General Decision Number: MA20200021 01/03/2020

Superseded General Decision Number: MA20190021

State: Massachusetts

Construction Type: Highway

County: Middlesex County in Massachusetts.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.80 for calendar year 2020 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 $10.80 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 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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ELEC0103-007 03/01/2019

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<td>Group 2: Bulldozer; Grader/Blade; Milling Machine; Roller</td>
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<td>------------------------------------------------</td>
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<td>TRUCK DRIVER: Flatbed Truck</td>
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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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----------------------------------------------------------------

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================================================================
END OF GENERAL DECISION
SECTION 00 73 73

STATUTORY REQUIREMENTS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2007 Edition) included in Section 00 72 05. Provisions not so amended or supplemented remain in full force and effect unless amended or supplemented in another section. The terms used in this section have the meanings stated in the General Conditions. Additional terms used in this section, if any, have the meanings stated below which are applicable to both the singular and plural thereof. The address system used herein is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

This section includes certain provisions required by Laws and Regulations but does not represent or reflect all applicable provisions and policies or Laws and Regulations and may only include excerpts and portions thereof. Other required provisions and policies, and Laws and Regulations, shall be deemed to be so included and incorporated herein. Contractor is solely responsible to determine, obtain, review and interpret the full text of applicable provisions and policies, Regulations, and Laws.

The Project is specifically subject to the provisions of the Massachusetts General Laws ("MGL").

SC-1.01.A.15 Contractor

Add the following language at the end of the definition.

Also referred to as “general Contractor” in applicable statutory provisions which may be used interchangeably and shall have the same meaning.

SC-1.01.A.29 Owner

Add the following language at the end of the definition.

Also referred to as “Awarding Authority” or “contracting authority” in applicable statutory provisions which may be used interchangeably and shall have the same meaning.
SC-1.01.A.44 Substantial Completion

Add the following language at the end of the definition.

For the purposes of MGL Chapter 30, Section 39G, *Completion of public works; semi-final and final estimates; payments; extra work; disputed items*, Substantial Completion shall also mean either that the Work has been completed except for Work having a value at less than 1 percent 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 as required by the Contract.

SC-1.01.B Additional Terms

Add the following new definition.

7. *material or Material* -- As used in MGL Chapter 30, Section 39M, *Contracts for construction and materials; manner of awarding*, regarding items equal to those specified, the word “material” shall mean and include any article, assembly, system, included in the Work, or any component part thereof.

SC-3 CONTRACT DOCUMENTS: INTENT, AMEND, REUSE

Add the following immediately after Paragraph 3.06.

3.07 Public Records

B. Pursuant to MGL Chapter 66 et seq, *Public Records*, related submittals, purchase orders, related pricing documents, and invoices will be public documents, and may be available for public and private distribution, except as specifically excluded. The Contractor will provide the Owner copies of any documents requested under this Law at no charge to the Owner or the requestor.

SC-4.03 Differing Subsurface or Physical Conditions

Delete Paragraph 4.03.B in its entirety and insert the following in its place.

B. Pursuant to MGL Chapter 30, Section 39N, *Construction contracts; equitable adjustment in contract price for differing subsurface or latent physical conditions*:

“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.”

SC-5.01 Performance, Payment, and Other Bonds

Add the following immediately after Paragraph 5.01.A.

1. Pursuant to MGL Chapter 30, Section 39A, Construction contracts for
   public ways, airports or public works; truck rentals; security for payment,
   and MGL Chapter 149, Section 29, Bonds for payment for labor, materials,
   rentals or transportation charges (et al), the required payment bond shall
   also cover payment by the Contractor and Subcontractors for the rental or
   hire of dump trucks and “. . . the rental or hire of vehicles, steam shovels,
   rollers propelled by steam or other power, concrete mixers, tools and other
   appliances and equipment employed in such construction, . . .” and “. . . for
   payment of transportation charges directly related to such rental or hire. . .”
   Such security for payment of transportation charges shall be incorporated
   by appropriate reference thereto as an additional obligation or condition in
   the required bonds.

2. In addition, such bonds shall cover “. . . payment by Contractor and
   Subcontractors of any sums due trustees or other persons authorized to
   collect such payments from the Contractor or Subcontractors, for health and
   welfare plans, supplementary unemployment benefit plans and other fringe
   benefits which are payable in cash and provided for in collective bargaining
   agreements between organized labor and the Contractor or Subcontractors.
   . . .”
SC-5.02 Licensed Sureties and Insurers

Add the following immediately after Paragraph 5.02.A.

1. Pursuant to MGL Chapter 149, Section 29D, Surety company; bonds:

   “Every bid bond, every performance bond and every payment bond issued for any construction work in the commonwealth shall be the bond of a surety company organized pursuant to section 105 of chapter 175 or of a surety company authorized to do business in the commonwealth under the provisions of section 106 of said chapter 175 and be approved by the U.S. Department of Treasury and are acceptable as sureties and reinsurers on federal bonds under Title 31 of the United States Code, sections 9304 to 9308. “

2. If there is more than one surety company, the surety companies shall be jointly and severally liable.

SC-5.04 Contractor’s Insurance:

Add the following language at the end of subparagraph 5.04.A.1.

, pursuant to MGL Chapter 149, Section 34A, Contracts for public works; workers’ compensation insurance; breach of contract; enforcement and violation of statute:

   “Every Contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or other public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the Contractor shall, before commencing performance of such Contract, provide by insurance for the payment of compensation and the furnishing of other benefits under chapter one hundred and fifty-two to all persons to be employed under the Contract, and that the Contractor shall continue such insurance in full force and effect during the term of the Contract. No officer or agent contracting in behalf of the commonwealth or any political subdivision thereof shall award such a Contract until he has been furnished with sufficient proof of compliance with the aforesaid stipulations. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the Contract and shall operate as an immediate termination thereof. No cancellation of such insurance, whether by the insurer or by the insured, shall be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the officer or agent who awarded the Contract at least fifteen days prior to the intended effective date thereof, which date shall be expressed in said notice. Notice of cancellation sent by the party proposing cancellation by registered mail, postage prepaid, with a return receipt of the addressee requested, shall be a sufficient notice. An affidavit of any officer, agent or employee of the insurer or of the insured, as the case may be, duly authorized for the purpose, that he has so sent such notice addressed as aforesaid
shall be prima facie evidence of the sending thereof as aforesaid. This section shall apply to the legal representative, trustee in bankruptcy, receiver, assignee, trustee and the successor in interest of any such Contractor. The superior court shall have jurisdiction in equity to enforce this section.

“Whoever violates any provision of this section shall be punished by a fine of not more than one hundred dollars or by imprisonment for six months, or both; and, in addition, any contractor who violates any provision of this section shall be prohibited from contracting, directly or indirectly, with the commonwealth or any political subdivision thereof, for the construction, alteration, demolition, maintenance or repair of, or addition to, any public works or public building for a period of two years from the date of conviction of said violation.”

Delete the words “materially changed” per Massachusetts insurance Laws in subparagraph 5.04.B.4. line 2.

Add the following language at the end of subparagraph 5.04.C.1, in compliance with MGL Chapter 152

SC-5.06 Property Insurance

Delete the words “or materially changed” per Massachusetts insurance Laws in Paragraph 5.04.C. line 3.

SC-6.02 Labor; Working Hours

Add the following immediately after Paragraph 6.02.A.

1. Pursuant to MGL Chapter 30, Section 39S, Contracts for construction; requirements, Contractor shall furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work.

2. Pursuant to MGL Chapter 149, Section 26, Public works; preference to veterans and citizens; wages, preference shall be given to citizens of the Commonwealth of Massachusetts, citizens of the town or city where the Project is located, veterans and service-disabled veterans, and citizens of the United States.

3. The Contractor shall comply with the provisions of MGL Chapter 151B, Unlawful Discrimination Because of Race, Color, Religious Creed, National Origin, Ancestry or Sex.

4. 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 as amended, or engage in conduct declared to be unlawful by MGL
Chapter 151E, *Prohibition Of Certain Discrimination By Businesses, Section 2.*

Add the following immediately after Paragraph 6.02.B.

1. Pursuant to MGL Chapter 149, Section 30, *Eight hour day and six day week; emergencies; work on highways,* and Section 34, *Public contracts; stipulation as to hours and days of work; void contracts:*

   “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.”

**SC-6.05 Substitutes and “Or-Equals”**

Add the following language at the end of Paragraph 6.05.A.

The provisions of MGL Chapter 30, Section 39M, subsection (b) also apply to this Paragraph.

**SC-6.09 Laws and Regulations**

Add the following immediately after Paragraph 6.09.A

1. MGL Chapter 260, Section 2B *Tort Actions Arising from Improvements to Real Property* shall apply.
SC-6.10 Taxes

Add the following immediately after Paragraph 6.10.A.

1. MGL Chapter 64H, Section 6, Exemptions, subsection (f), exempts from Massachusetts sales tax, building materials and supplies to be used in the Project, and Contractor shall not include any amount therefor. The words “building materials and supplies” shall include all materials and supplies consumed, employed or expended in the construction, reconstruction, alteration, remodeling or repair of any building, structure, public highway, bridge, or other such public work, as well as such materials and supplies physically incorporated therein. Said words shall also include rental charges for construction vehicles, equipment and machinery rented specifically for use on the Project Site, or while being used exclusively for the transportation of materials for the Project.

SC-6.12 Record Documents

Add the following immediately after Paragraph 6.12.A.

B. Subject to the provisions of MGL Chapter 266, Section 67C, Capital facility construction projects, etc.; false entries in records; penalties, and pursuant to MGL Chapter 30, Section 39R, Definitions; contract provisions; management and financial statements; enforcement:

“(b) . . .(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) . . . 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).”

**SC-6.13 Safety and Protection**

Add the following immediately after subparagraph 6.13.B.1. (added in Section 00 73 10).

2. Pursuant to *MGL Chapter 30, Section 39S*, all employees to be employed at the Work Site 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. Any employee found on a Work Site 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.

3. This Project is also subject to the following.

- *MGL Chapter 82, The Laying Out, Alteration, Relocation and Discontinuance Of Public Ways, And Specific Repairs Thereon*, Section 40
  - Section 40 Definitions
  - Section 40A Excavations; notice
  - Section 40B Designation of location of underground facilities
  - Section 40C Excavator’s responsibility to maintain designation markings; damage caused by excavator
  - Section 40D Local laws requiring excavation permits; public ways

- *MGL Chapter 82A, Excavation and Trench Safety*
  - Section 1 Unattended open trenches; safety hazards; rules and regulations; fines
  - Section 2 Trench excavating permits; permits issued by board or officer; certificate of insurance; fees
  - Section 3 Form of trench excavation permits; required statements
  - Section 4 Definitions
  - Section 5 Additional requirements
• MGL Chapter 149  
  Section 6C Health and safety of general public and asbestos workers; rules and regulations  
  Section 129A Shoring Trenches for local governments  
• Massachusetts Department of Labor and Industries, Division of Occupational Safety (Chapter 454 CMR 10.00 et seq.)  
• Massachusetts Department of Public Safety “Excavation and Trench Safety” (Chapter 520 CMR 14.00 et seq.)

SC-6.20 Indemnification

Add the following immediately after subparagraph 6.20.C.3.

D. The provisions of MGL Chapter 258, Claims and Indemnity Procedure for the Commonwealth, its Municipalities, Counties and Districts and the Officers and Employees Thereof shall apply.

SC-8.09 Limitations on Owner’s Responsibilities

Add the following immediately after Paragraph 8.09.A.

1. Pursuant to MGL Chapter 30, Section 39J Public construction contracts; effect of decisions of contracting body or administrative board, a decision on a dispute 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.

SC-9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

Replace “with reasonable promptness” with “within 30 days pursuant to MGL Chapter 30, Section 39P, Contracts for construction and materials; awarding authority’s decisions on interpretation of specifications, etc.; time limit; notice in Paragraph 9.08.B.

Add the following new paragraph immediately after Paragraph 9.08.D.

E. Pursuant to MGL Chapter 30, Section 39J Public construction contracts; effect of decisions of contracting body or administrative board, a decision on a dispute 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.
SC-10.01 Authorized Changes in the Work

Add the following immediately after Paragraph 10.01.A.

1. Changes to the Work are subject to the requirements of MGL Chapter 30, Section 39I, Deviations from plans and specifications.

SC-10.05 Claims

Add the following immediately after Paragraph 10.05.G.

H. Presentation of false, fictitious, or fraudulent Claims is subject to the provisions of MGL Chapter 266, Section 67B, Presentation of false claims.

SC-11.01. Cost of the Work

Add the following immediately after subparagraph 11.01.A.1.

a. Comply with prevailing wage requirements included in Section 00 73 43.

Add the following immediately after subparagraph 11.01.A.4.

a. Pursuant to MGL Chapter 149, Section 34B, Contracts for public works; wages for reserve police officer, the Contractor shall pay to any reserve police officer employed by him in any city or town, the prevailing rate of wage paid to regular police officers in such city or town.

Add the following immediately after subparagraph 11.01.A.5.d.

1) The Project is exempt from sales tax as set forth in SC-6.10.
SC-12.01 Change of Contract Price

Add the following immediately after subparagraph 12.01.B.3. as required by MGL Chapter 30, Section 38A Price adjustment clause in contracts for road, bridge, water and sewer projects awarded.

4. **Monthly Price Adjustments for Certain Materials:** As required by Massachusetts Chapter 150 of the Acts of 2013, the following price adjustment clauses for fuel (both diesel and gasoline), liquid asphalt and Portland cement contained in cast-in-place concrete shall be applicable to the Project. The following Base Prices are established for the Project, based on period prices shown below as published by the Massachusetts Department of Transportation - Highway Division at


<table>
<thead>
<tr>
<th>Material</th>
<th>Base Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid Asphalt</td>
<td>$552.50 per TON</td>
</tr>
<tr>
<td>Diesel</td>
<td>$2.346 per GALLON</td>
</tr>
<tr>
<td>Gasoline</td>
<td>$2.009 per GALLON</td>
</tr>
<tr>
<td>Portland Cement</td>
<td>$130.26 per TON</td>
</tr>
</tbody>
</table>

b. **Monthly Price Adjustment for Hot Mix Asphalt (HMA) Mixtures:** This adjustment will provide for either additional compensation to the Contractor or repayment to the Owner, depending on an increase or decrease in the Period Price of Liquid Asphalt.

1) **Base Price:** The Base Price of liquid asphalt listed above is the fixed price determined at the time of Bid by the Owner by using the same method as for the determination of the Period Price detailed below.

2) **Price Adjustment:** 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.

3) **Period Price:** The Period Price for this Contract shall be the Liquid Asphalt Period Price, per Ton.

4) **Applicability:** The Price Adjustment applies only to the actual virgin liquid asphalt content in the mixture placed on the Project in accordance with the Contract Documents.

5) **Payment/Credit of Price Adjustment:** The Contract Price of the hot mix asphalt mixture will be paid under the respective items 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 will be a separate payment item and processed by Change Order. It will be determined by multiplying the number of tons of hot mix asphalt mixtures placed within pay limits during each monthly period as shown on submitted certified weigh slips 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 or credited if the variance from the Base Price is 5 percent or more for a monthly period. No further Price Adjustments will be processed after the Contract is finally complete, unless an extension of Contract Time is approved by the Owner.

b. **Monthly Price Adjustment for Diesel Fuel and Gasoline:** This adjustment will provide for either additional compensation to the Contractor or repayment to the Owner, depending on an increase or decrease in the Period Price of Diesel Fuel or Gasoline.

1) **Base Price:** The Base Price of Diesel Fuel and Gasoline listed above is the fixed price determined at the time of Bid by the Owner by using the same method as for the determination of the Period Price detailed below.

2) **Price Adjustment:** The Price Adjustment will be based on fuel usage factors for various items of Work included. These factors will be multiplied by the quantities of Work completed in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.

3) **Period Price:** The Period Price for this Contract shall be the current Diesel Period Price and Gasoline Period Price per Gallon.

4) **Applicability:** The fuel Price Adjustment will apply only to the following items of Work listed at the fuel factors shown.
5) Payment/Credit of Price Adjustment: The price Adjustment will be a separate payment item and process by Change Order. 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.

a) The Price adjustment will be a separate payment item. For all items the Price Adjustment will be determined by multiplying the number of units of each item of Work times the fuel factor for each item of Work times the variance in price between Base Price and Period Price of diesel or gasoline.

b) This Price Adjustment will be paid or credited if the variance from the Base Price is 5 percent or more for a monthly period. No further Price Adjustments will be processed after the Contract is finally complete, unless an extension of Contract Time is approved by the Owner.
c. **Monthly Price Adjustment for Portland Cement Concrete Mixes:** This adjustment will provide for either additional compensation to the Contractor or repayment to the Owner, depending on an increase or decrease in the Period Price of Portland cement.

1) **Base Price:** The Base Price of Portland cement listed above is the fixed price determined at the time of Bid by the Owner by using the same method as for the determination of the Period Price detailed below.

2) **Price Adjustment:** 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. This Price Adjustment will occur on a monthly basis.

3) **Period Price:** The Period Price for this Contract shall be the current Portland cement Period Price per Ton.

4) **Applicability:** The price adjustment applies only to the actual Portland cement content in the mix placed on the Project in accordance with the Contract Documents.

5) **Payment/Credit of Price Adjustment:** The Contract Price of the Portland cement content in the mix will be paid under the respective items 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 will be a separate payment item and processed by Change Order. 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 or credited if the variance from the Base Price is 5 percent or more for a monthly period. No further Price Adjustments will be processed after the Contract is finally complete, unless an extension of Contract Time is approved by the Owner.
SC-14.02. Progress Payments

Add the following language to Paragraph 14.02.A.

The provisions of MGL Chapter 30, Section 39G, Completion of public works; semi-final and final estimates; payments; extra work; disputed items, covering “periodic estimate” and “periodic payment” apply to this Project and shall be considered Progress Payments per Paragraph 14.02. The forms listed in Section 00 60 00 and included in the Contract Documents will be utilized.

Add the following immediately after subparagraph 14.02.A.1.

a. Pursuant to MGL Chapter 30, Section 39S, Contracts for construction; requirements, provide certification for each employee employed at the Work Site 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 at the time the employee begins Work.

Add the following immediately after subparagraph 14.02.D.3.

E. Pursuant to MGL Chapter 30, Section 39F, Construction contracts; assignment and subrogation; subcontractor defined; enforcement of claim for direct payment; deposit, reduction of disputed amounts regarding payment to Subcontractors, the following provisions shall be included in any subcontract in connection with Work under the Contract Documents.

“(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 65th 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) above 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) above, the Awarding Authority shall act upon the demand as provided in this section of the MGL.

“(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 10 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) above 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) above 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) above, 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.”
SC 14.04 Substantial Completion

Add the following immediately after Paragraph 14.04.E.

F. The provisions of MGL Chapter 30, Section 39G, Completion of public works; semi-final and final estimates; payments; extra work; disputed items, covering substantial completion apply to this Project. The forms listed in Section 00 60 00 and included in the Contract Documents will be utilized.

SC 14.07 Final Payment

Add the following immediately after subparagraph 14.07.A.1.

a. The provisions of MGL Chapter 30, Section 39G, Completion of public works; semi-final and final estimates; payments; extra work; disputed items covering the final estimate and completion of the Work apply to this Project. The forms listed in Section 00 60 00 and included in the Contract Documents will be utilized.

SC-15.01 Owner May Suspend Work

Add the following immediately after Paragraph 15.01.A.

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

“... (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 15 days or more or due to a failure of the Awarding Authority to act within the time specified in the Contract, the Awarding Authority shall make an adjustment in the Contract Price for any increase in the cost of performance of the 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) above 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 the Contract and, except for costs due to a suspension order, the Awarding Authority shall not approve any costs in the Claim incurred more than 20 days before the general Contractor notified the Awarding Authority in writing of the act or failure to act involved in the Claim.

“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) above give the general Contractor against the Awarding Authority, but nothing in provisions (a) and (b) above shall in any way change, modify or alter any other rights which the general Contractor or the Subcontractor may have against each other.”

SC-17.05 Controlling Law

Add the following immediately after Paragraph 17.05.A.

1. This Contract is subject to all Laws and Regulations of the United States of America (including the U.S. Code of Federal Regulations), the Commonwealth of Massachusetts and other public authorities, and all amendments thereto. Where any requirements contained herein do not conform to or are inconsistent with such Laws and Regulations to which the Contract is subject or by which it is governed, such Laws and Regulations shall have precedence over any matters set forth herein.

2. The Project is specifically subject to MGL Chapters 30 and 149 for contracts awarded pursuant to MGL Chapter 30, Section 39M.

3. Statutes, Regulations, and portions and summaries thereof which are set forth or referred to in the Contract Documents shall be construed to include all amendments thereto in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids). The Owner and Engineer make no representation as to and assume no responsibility for the correctness or completeness of such statutory matters referred to or set forth herein.

4. Any provision in violation of the foregoing shall be deemed null, void and of no effect. Where conflicts with Laws and Regulations exist, the more stringent requirement shall apply.

END OF SECTION
These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2007 Edition) included in Section 00 72 05. All provisions that are not so amended or supplemented remain in full force and effect unless amended or supplemented in another Section. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, if any, which are applicable to both the singular and plural thereof. The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

The content of this Section does not represent or reflect all applicable Laws and Regulations and may only include excerpts and portions of certain Laws and Regulations. Other provisions and policies, and Laws and Regulations, shall be deemed to be so included and incorporated herein. Contractor is solely responsible to determine, obtain, review and interpret the full text of applicable Laws and Regulations.

This Project is subject to the Environmental Protection Agency’s (EPA) Clean Water State Revolving Fund (SRF) program requirements, Department of Environmental Protection (“MassDEP”), Division of Municipal Services (“DMS”) SRF provisions and policies, other Project specific regulations and requirements, and Federal Law.

**SC-1.01 Defined Terms**

Add the following at the end of 1.01.A.2, Agreement.

Pursuant to MGL Chapter 30, Section 39L: Public construction work by foreign corporations; restrictions and reports, the Awarding Authority (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.

Add the following at the end of 1.01.A.6, Bidder.

In applicable statutory provisions, reference to “offeror” shall mean Bidder may and reference to “Standard Form 1442” shall mean Bid Form and Supplements.
Add the following at the end of 1.01.A.8, *Bidding Requirements*.

, where the notice inviting Bids complies with MGL Chapter 149, Section 44J: *Invitations to bid; notice; contents; violations; penalty.*

Add the following at the end of 1.01.A.29, *Owner*.

Owner may also be referred to as “*Contracting Officer*” in applicable statutory provisions which may be used interchangeably and shall have the same meaning. References to “*Government*” in applicable statutory provisions may also mean Owner if use of the term is consistent with Owner’s role and responsibilities under the Contract. Owner may also be referred to as “*Awarding Authority*” and “*Local Government Unit (LGU)*” per MassDEP DMS requirements, which may be used interchangeably and shall have the same meaning.

**SC-2.05 Before Starting Construction**

Pursuant to subparagraph 2.05.A.3 regarding the Schedule of Values, per MassDEP DMS policy memoranda, the items included must also be categorized by Eligible and Ineligible items under the State Revolving Loan Fund Program, in particular those listed in Policy Memorandum No. PM-7 included in the attachment to this Section.

**SC-6.03 Services, Materials, and Equipment**

Add the following immediately after Paragraph 6.03.A.

1. Contractor and Subcontractors shall comply with the *Diesel Retrofit Program* included as an attachment to this Section and shall each have provided the Contractor Certification which is incorporated into the Agreement.

2. Contractor shall 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.

3. Statutory requirements commonly known as “*American Iron and Steel (AIS) Requirement*” that requires all of the iron and steel products used in the Project to be produced in the United States including iron and steel products provided by the Contractor, apply to this Contract. Contractor shall provide that 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 AIS Requirement, unless a waiver of the AIS Requirement is
approved, and the Contractor will provide any further verified information, certification or assurance of compliance with the AIS Requirement, or information necessary to support a waiver of the AIS Requirement, as may be requested by Owner. See guidance information included in attachments to this section. See http://water.epa.gov/grants_funding/aisrequirement.cfm for approved waivers.

4. Per MassDEP DMS requirements, 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.

5. Display signs as required by MassDEP with the following information.

   - The name of the facility, project, and community
   - Project cost
   - The State Agency/SRF administering the program
   - The EPA and State Agency logos


**SC-6.06 Concerning Subcontractors, Suppliers and Others**

Add the following immediately after Paragraph 6.06.A.

1. Contractor shall 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.
2. Per MassDEP DMS requirements, Contractor shall comply with the minimum Disadvantaged Business Enterprise goals set forth in Section 00 73 38. The Awarding Authority (Owner) may suspend, terminate or cancel the 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 compliance with the terms of Section 00 73 38, and may 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.

SC-6.17 Shop Drawings and Samples

Add the following immediately after subparagraph 6.17.A.1.b.

c. Submit Certification of Compliance with AIS Requirements. Submit Step Certification (preferred) or General Certification for equipment and material provided for the Project, examples included as an attachment to this section.

SC-8.11 Evidence of Financial Arrangements

Pursuant to Paragraph 8.11.A, the Project is funded in part with monies made available by the EPA’s Clean Water State Revolving Fund and the Massachusetts Clean Water Trust (the “Trust”) and is subject to the approval by the MassDEP.

SC-11.01 Cost of the Work

Add the following immediately after subparagraph 11.01.A.1.a.

b. Per MassDEP DMS requirements, certain items have limitations on financial participation under the State Revolving Loan Fund Program. See the MassDEP-DMS Policy Memoranda included in the attachment to this Section.

1) mobilization shall not exceed 5 percent of the total Contract Price Policy Memorandum No. PM-7 included in the attachment to this Section;

2) the Direct Labor Cost markup percentage applicable to change orders for this Contract was submitted by the Contractor upon award and is attached to the Agreement; and
3) See the Policy Memoranda included in the attachment to this Section for the following.

   Permits – applicable portion of PM-2
   Pavement – PM-8
   Rock Excavation – PM-14
   Traffic Police – PM-15

Add the following immediately after subparagraph 11.01.B.5.

6. Cost of police details shall not be included in Contract Price nor in mobilization costs. Police details will be direct billed by the police department to Owner. Police details scheduled and not used by the Contractor will be back-charged to Contractor.

**SC-12.01 Change of Contract Price**

Add the following immediately after subparagraph 12.01.B.3.

4. Where the Work is covered by SRF funding, change orders shall be processed in accordance with MassDEP DMS Policy Memorandum PM-10 included in the attachment to this Section. Overhead and profit referenced in PM-10 shall be as follows for this Project.

   For items B(5) and C(5): 10%
   For items B(6) and C(6): 5%

   a. Documentation required to substantiate quantities in change orders shall be in accordance with MassDEP DMS Policy Memorandum PM-16 included in the attachment to this section.

   b. The Direct Labor Cost markup percentage applicable to change orders for this Contract was submitted by Contractor upon award and is attached to the Agreement.

Add the following at the end of subparagraph 12.01.C.1. “or as set forth above if Project is subject to SRF Program requirements.”

**SC-14.02 Progress Payments**

Add the following immediately after subparagraph 14.02.A.3.

4. Per MassDEP DMS requirements, the Contractor shall provide reports documenting the portion of Contract and subcontract dollars paid to DBEs, and Contractor’s efforts to achieve the goals, with each application for payment submitted or at such greater intervals as specified by the Owner in accordance with Section 00 73 38. The Contractor shall require similar reports from its Subcontractors.
**SC-14.07 Final Payment**

Add the following immediately after subparagraph 14.07.A.2.e.

f. Per MassDEP requirements, submit documentation required to substantiate quantities in the request for Final Payment in accordance with MassDEP DMS Policy Memorandum PM-16 included as an attachment to this section.

**SC-14.08 Final Completion Delayed**

Replace the Article heading, with “Final Completion of Post Substantial Completion Punchlist Delayed”.

In Paragraph 14.08.A, first sentence, replace “final completion of the Work” with “final completion of the Post Substantial Completion Punchlist Work”.

**SC-14.09 Waiver of Claims**

In Paragraph 14.09.A, first sentence, replace “final payment” with “payment for completion of Post Substantial Completion Punchlist”.

Add the following new Article.

**14.10 Final Payment**

Upon completion of the Warranty Inspection and final paving, issuance of the results of the Inspection along with the plan to repair and replace defective Work, Owner will make final payment in accordance with the Agreement.

**ATTACHMENTS**

A. Mass DEP-DMS Policy Memoranda (Appendix F)

B. DEP Diesel Retrofit Program (Mass DEP-DMS Appendix B)

C. AIS Guidance Memorandum and related information (Mass DEP-DMS Appendix I)

**END OF SECTION**
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.
Policy Memorandum No. PM-2 – Permits (Con’t)

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

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

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

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

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

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

POLICY MEMORANDUM NO. PM-3

FIELD CONTROLS

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

Whenever he has reason to believe that an error exists or whenever he is otherwise unable to locate the field controls, the contractor shall promptly notify the owner and the owner's engineer of such error with appropriate documentation.
POLICY MEMORANDUM NO. PM-4

RECORD DRAWINGS

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

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

POLICY MEMORANDUM NO. PM-5

PLAN SCALE

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

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

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

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

POLICY MEMORANDUM NO. PM-6

BORINGS LOGS

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

As part of the submission of plans and specification for approval, the owner’s representative shall include written justification for the lesser frequency and depth of borings where their interval is more than approximately 300’ or their depth is less than 50% below depth of pipe invert.
POLICY MEMORANDUM NO. PM-7

BREAKDOWN OF BID ITEMS

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

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

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

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

POLICY MEMORANDUM NO. PM-8

PAVEMENT

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

Loan eligibility shall be limited to the following:

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

<table>
<thead>
<tr>
<th>Nominal Pipe Diameter</th>
<th>Maximum Eligible Widths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial Pavement</td>
</tr>
<tr>
<td>0-24”</td>
<td>6’-6’</td>
</tr>
</tbody>
</table>

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

B. For each additional four (4) feet (or fraction thereof) of pipe invert depth, add three feet to the eligible width limits stated in paragraph A.
Policy Memorandum No. PM-8 – Pavement (Con’t)

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

Initial Pavement

\[ \text{Top of existing pavement} \]
\[ \text{Initial bituminous concrete pavement} \]
\[ d^* \]
\[ w \text{ (initial)} \]

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

OPTION I Permanent Trench Pavement

\[ \text{Top of existing pavement} \]
\[ \text{Top course} \]
\[ \text{Base course} \]
\[ d^* \]
\[ w \text{ (permanent)} \]

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

- 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)

All roadway widening ineligible

1½” overlay pavement up to 28 feet.

Initial Pavement (left in place)

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                          
  (If applied to any required direct labor costs.)
- Experience Modification Insurance
- Surcharges

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

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

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

(1 month (normal use) = 176 hours)

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

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

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

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

SRF Number ________________
Public Entity ________________
Contract Number ________________
Change Order Number ________________

Contract Amount (As Bid) $ ________________
Net Change in Contract Price (this change order) $ ________________
Total Adjusted Contract Price (including this and all other change orders) $ ________________

This change order extends the time to complete the work by ________ calendar days.
The extended completion date is ________________

This change order checked by ___________________________ (Chief) Resident Engineer ________________ Date ________________

This change order is requested by: ___________________________
This change order is recommended by: ___________________________

________________________ Consultant Engineer ________________ P.E. Number ________________ Date ________________

The undersigned agree to the terms of the change order.

________________________ Contractor ________________ Date ________________

________________________ Owner ________________ Date ________________

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

By: __________________________ Certification Officer (Auditor, accountant, treasurer) ________________ Date ________________

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

(1) Labor

<table>
<thead>
<tr>
<th>Laborer</th>
<th>Hours</th>
<th>Rate</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreman</td>
<td>10</td>
<td>$10.00</td>
<td>$100.00</td>
</tr>
<tr>
<td>Engineer</td>
<td>10</td>
<td>$8.50</td>
<td>85.00</td>
</tr>
<tr>
<td>Operator</td>
<td>10</td>
<td>$9.50</td>
<td>95.00</td>
</tr>
<tr>
<td>Laborers</td>
<td>24</td>
<td>$7.00</td>
<td>168.00</td>
</tr>
</tbody>
</table>

Total Labor Cost: $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

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
<th>Rate</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 l.f. of 12&quot; pipe</td>
<td>150</td>
<td>$2.00</td>
<td>300.00</td>
</tr>
<tr>
<td>15 v.f. precast SMH</td>
<td>15</td>
<td>$110.00</td>
<td>1,700.00</td>
</tr>
<tr>
<td>Freight (slip # Enclosed)</td>
<td></td>
<td></td>
<td>25.00</td>
</tr>
</tbody>
</table>

Total Materials & Freight: $2,025.00

(4) Equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Hours</th>
<th>Rate</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backhoe</td>
<td>10</td>
<td>$80.00</td>
<td>800.00</td>
</tr>
<tr>
<td>Truck-crane</td>
<td>10</td>
<td>$100.00</td>
<td>1,000.00</td>
</tr>
</tbody>
</table>

Total Equipment: $1,800.00

(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)

Total Cost: $5,296.00

Reminder: Provide support documentation as necessary i.e. vouchers, correspondence, Calculation, photographs, reports ..............
POLICY MEMORANDUM NO. PM-11  UTILITY RELOCATION

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

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

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

POLICY MEMORANDUM NO. PM-12  REFUNDABLE DEPOSITS FOR PLANS AND SPECIFICATIONS

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

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

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

POLICY MEMORANDUM NO. PM-13  BID OPENING PROCEDURES

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

Bid Opening Procedure

Step #1. Timeliness – The bid must be filed at the place and within the time specified therefore in the invitation to bid, and no bid shall be accepted after such time. The time at which a bid is filed should be time/date stamped or otherwise prominently noted on the bid;
Policy Memorandum No. PM-13 – Bid Opening Procedures (Con’t)

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

A. **Bid Bond**

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

B. **Check**

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

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

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

   **Alternates** – Any Alternates shall be acknowledged.

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

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

The Contractor’s Bid Opening Checklist also attached hereto, is for use by each contractor to assure that his bid conforms with this policy memorandum. It is recommended that the checklist (PM-13 Attachment 2) be included in information for bidders, or at the end of the bid proposal, or in some other prominent part of the bid specifications.
PM-13 Attachment 1

FORM FOR BID OPENING PROCEDURES
(to be completed by the owner’s evaluator(s))

<table>
<thead>
<tr>
<th>CONTRACT NO.:</th>
<th>DATE:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CONTRACT NAME:</th>
<th>BID OPENING TIME:</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BIDDER</th>
<th>1. TIMELINESS</th>
<th>2. BID SECURITY</th>
<th>3. SIGNATURE</th>
<th>4. ADDENDA ALTERNATIVES</th>
<th>5. WRITTEN DOLLAR AMOUNTS</th>
<th>COMPLIANCE (CIRCLE ONE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>YES  NO</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YES  NO</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YES  NO</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YES  NO</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YES  NO</td>
</tr>
<tr>
<td>9</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>YES  NO</td>
</tr>
<tr>
<td>10</td>
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<td></td>
<td></td>
<td></td>
<td>YES  NO</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YES  NO</td>
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<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YES  NO</td>
</tr>
</tbody>
</table>

Evaluator(s) ____________________________

DEP-DMS-PM Page 16 of 21

DEP-DMS-F Page 16 of 24
# 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.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>REQUIREMENTS</th>
<th>COMPLIANCE (CIRCLE 1)</th>
<th>REASONS FOR REJECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Timeliness</td>
<td>Bid filed w/in time specified</td>
<td>Yes</td>
<td>No; Rejected</td>
</tr>
<tr>
<td>2. Bid Security</td>
<td>Appropriate and properly Executed security w/bid.</td>
<td>Yes</td>
<td>No; Rejected</td>
</tr>
<tr>
<td>3. Signature</td>
<td>Bid signed by authorized Representative</td>
<td>Yes</td>
<td>No; Rejected</td>
</tr>
<tr>
<td>4. Addenda</td>
<td>All addenda acknowledge Any alternative</td>
<td>Yes</td>
<td>No; Rejected</td>
</tr>
<tr>
<td>5. Dollar Amount</td>
<td>Dollar amount in words Specified for each line item in bid</td>
<td>Yes</td>
<td>No; Rejected</td>
</tr>
</tbody>
</table>
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.

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

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

OLD GROUND SURFACE

TOP OF ROCK SURFACE

PAY WIDTH LIMIT (W)

D=0-24"  W=5FT
D >24"  W=D+3FT

DEPTH D-12 FT. (GROUND SURFACE TO PIPE INVERT)

D=NOMINAL PIPE DIAMETER

BOTTOM PAY LIMIT AS ESTABLISHED BY ENGINEER

FOR DEPTH 0 TO 12 FEET

OLD GROUND SURFACE

TOP OF ROCK SURFACE

PAY WIDTH LIMIT (W)

D=0-24"  W=7FT
D >24"  W=D+5FT

DEPTH OVER 12 FT. (GROUND SURFACE TO PIPE INVERT)

D=NOMINAL PIPE DIAMETER

BOTTOM PAY LIMIT AS ESTABLISHED BY ENGINEER

FOR DEPTH OVER 12 FEET AND UP TO 20 FEET

DEP/DMS
CG-14
Attachment #1

DEP-DMS-PM Page 19 of 21
DEP-DMS-F Page 19 of 24
POLICY MEMORANDUM NO. PM-15  

TRAFFIC POLICE

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

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

Owner’s Responsibility

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

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

POLICY MEMORANDUM NO. PM-16  DOCUMENTATION REQUIRED TO SUBSTANTIATE CONTRACT QUANTITIES

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 (L.b.) Locations, stations, and calculations (if applicable). Attach Delivery weight slips.

Square Feet (S.F.) Locations, stations and calculations

Square Yard (S.Y.) Locations, stations and calculations

Ton Locations, stations and calculations (if applicable). Attach Delivery weight slips.

Vertical Feet (V.F.) Locations, stations, elevations, and offsets.

Note:

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

DMS Policies 1 through 16  Approved By:

Steven J. McCurdy
Division of Municipal Services
DWS POLICY 88-02
DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLICY FOR REVIEW OF SEWER LINE/WATER SUPPLY PROTECTION

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

The following restrictions will apply to new sewer construction statewide:

Gravel Packed Wells

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

Tubular Wells

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

Gravel Packed and Tubular Wells

~ Within a minimum radius of 2,640 feet or unless otherwise documented by an appropriate study specifically defining the area of influence and approved by the Division of Water Supply, all sewer lines and appurtenances will be designed and constructed for maximum water tightness.

○ Force Mains or Pressure Sewers: shall be tested at 150% above maximum operating pressure or 150 p.s.i. whichever is greater. Testing shall conform to the requirements of the American Water works Association (AWWA) standard c 600.

○ Gravity Sewers: shall be tested by approved methods which will achieve test results for infiltration or exfiltration of less than 100 gallons/inch diameter/mile/24 hours.

○ Manholes: shall be installed with watertight covers with locking or bolted and gasketed assemblies. Testing for infiltration/exfiltration shall conform to the same standards as the maximum allowed for pipes in the manhole as required for gravity sewers, indicated above.

○ Satisfactory test results for Force Mains, Manholes and Gravity Sewers shall be performed prior to the expiration of the contractor’s one year guarantee period.

○ All pumping stations within this zone shall have standby power high water alarms telemetered to an appropriated location that is manned at all times. An emergency contingency plan must be developed by the owner and approved by the BWR.

○ A minimum of Class B bedding as defined by WPCF-MOP9 must be used for all piping.

○ Service connections (laterals and house connections) shall be rigidly inspected by the appropriate municipal official. Certified inspection reports shall be submitted to the BWR.
Bedrock Wells

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

Surface Water Supplies

~ Within 100 feet of all surface water supplies and tributaries all sewer lines and appurtenances are prohibited except as required to cross tributaries or to eliminate existing or potential pollution to the water supply. In the latter case, watertight construction methods shall be 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)

---

**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.

DEP-DWS-PM Page 3 of 3

DEP-DMS-F Page 24 of 24
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 Massachusetts Department of Environmental Protection’s (“MassDEP”) Diesel Retrofit Program by ensuring that all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract are equipped or retrofitted with a pollution control device in accordance with the Diesel Retrofit Program Standard;

2. the Bidder shall require all Subcontractors to comply with MassDEP’s Diesel Retrofit Program by ensuring all diesel powered non-road construction equipment and vehicles greater than 50 brake horsepower which will be used in the performance of the work under the Contract are equipped or retrofitted with a pollution control device in accordance with the Diesel Retrofit Program Standard; and

3. The Bidder shall submit and shall require each Subcontractor to submit a Diesel Retrofit Program Contractor Certification (form attached) with a Diesel Retrofit List to MassDEP Municipal Services and the Bidder within 10 days of the bidder being notified that it has been awarded the Contract. The Bidder shall require each Subcontractor to update such Certification and List within 2 days of using additional Diesel Construction Equipment on the project under the Contract.

(Signature of Bidder’s Authorized Representative) (Date)
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.
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 I

AMERICAN IRON AND STEEL REQUIREMENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

MEMORANDUM


FROM: Andrew D. Sayyes, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4691M)

TO: Water Management Division Directors
Regions 1 - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an “American Iron and Steel (AIS)” requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.
Implementation

The Act states:

Sec. 436 (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term “‘iron and steel products’” means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the “‘Administrator’”) finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.
(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency’s capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

**Project Coverage**

1) **What classes of projects are covered by the AIS requirement?**

   All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) **Does the AIS requirement apply to nonpoint source projects or national estuary projects?**

   No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a ‘treatment works’ as defined by section 212 of the Clean Water Act.

3) **Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?**

   Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) **What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?**

   The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) **What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?**
If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) **What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?**

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) **What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?**

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) **What if a project has split funding from a non-SRF source?**

Many States intend to fund projects with “split” funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A “project” consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.
9) **What about refinancing?**

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) **Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?**

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12)

**Covered Iron and Steel Products**

11) **What is an iron or steel product?**

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

- Lined or unlined pipes or fittings;
- Manhole Covers;
- Municipal Castings (defined in more detail below);
- Hydrants;
- Tanks;
- Flanges;
- Pipe clamps and restraints;
- Valves;
- Structural steel (defined in more detail below);
- Reinforced precast concrete; and
- Construction materials (defined in more detail below).

12) **What does the term ‘primarily iron or steel’ mean?**

‘Primarily iron or steel’ places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of
greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does ‘produced in the United States’ mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.
17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of ‘municipal castings’?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;
Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
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
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.

<table>
<thead>
<tr>
<th>Items</th>
<th>Notes</th>
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<tbody>
<tr>
<td><strong>General</strong></td>
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<tr>
<td>• Waiver request includes the following information:</td>
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<tr>
<td>— Description of the foreign and domestic construction materials</td>
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<tr>
<td>— Unit of measure</td>
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<tr>
<td>— Quantity</td>
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<td>— Price</td>
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<td>— Time of delivery or availability</td>
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<tr>
<td>— Location of the construction project</td>
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<tr>
<td>— Name and address of the proposed supplier</td>
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<tr>
<td>— A detailed justification for the use of foreign construction materials</td>
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<tr>
<td>• Waiver request was submitted according to the instructions in the memorandum</td>
<td></td>
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<tr>
<td>• 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</td>
<td></td>
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<tr>
<td><strong>Cost Waiver Requests</strong></td>
<td></td>
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<tr>
<td>• Waiver request includes the following information:</td>
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<tr>
<td>— Comparison of overall cost of project with domestic iron and steel products</td>
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<tr>
<td>— Relevant excerpts from the bid documents used by the contractors to complete the comparison</td>
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<tr>
<td>— 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</td>
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<tr>
<td><strong>Availability Waiver Requests</strong></td>
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<tr>
<td>• 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:</td>
<td></td>
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<tr>
<td>— Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials</td>
<td></td>
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<tr>
<td>— 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.</td>
<td></td>
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<tr>
<td>— Project schedule</td>
<td></td>
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<tr>
<td>— Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials</td>
<td></td>
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<tr>
<td>• 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</td>
<td></td>
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<tr>
<td>• Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?</td>
<td></td>
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</table>

Attachment 1: Information Checklist for Waiver Request
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.

<table>
<thead>
<tr>
<th>Review Items</th>
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<tbody>
<tr>
<td>Cost Waiver Requests</td>
</tr>
<tr>
<td>• Does the waiver request include the following information?</td>
</tr>
<tr>
<td>— Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products</td>
</tr>
<tr>
<td>— Relevant excerpts from the bid documents used by the contractors to complete the comparison</td>
</tr>
<tr>
<td>— A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market</td>
</tr>
<tr>
<td>• Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?</td>
</tr>
<tr>
<td>Availability Waiver Requests</td>
</tr>
<tr>
<td>• 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?</td>
</tr>
<tr>
<td>— Supplier information or other documentation indicating availability/delivery date for materials</td>
</tr>
<tr>
<td>— Project schedule</td>
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<tr>
<td>— Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials</td>
</tr>
<tr>
<td>• 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?</td>
</tr>
<tr>
<td>• 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)</td>
</tr>
<tr>
<td>• Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include:</td>
</tr>
<tr>
<td>— Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State</td>
</tr>
<tr>
<td>— Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States</td>
</tr>
<tr>
<td>— Correspondence with construction trade associations indicating the non-availability of the materials</td>
</tr>
<tr>
<td>• Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?</td>
</tr>
</tbody>
</table>

Yes  No  N/A  Comments
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.
ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _________ ("Purchaser") and the __________________________ (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel," that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.
Attachment 5: Sample Certification 1

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA’s State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative
Attachment 5: Sample Certification 2

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA’s State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative
SECTION 01 11 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Project Description

B. Description of the Work

C. Work Sequence and Coordination

D. Special Requirements

1.02 PROJECT DESCRIPTION

A. The name of the Project is FY20 Open Cut Excavation Sewer and Drainage System Repairs, for the City of Quincy, Massachusetts.

1.03 DESCRIPTION OF THE WORK

A. The Work for the FY20 Open Cut Excavation Improvements project includes labor, material and equipment, services required for construction, testing, and commissioning of the Project in accordance with the Contract Documents and as more specifically described in the Specifications and Drawings and includes, but is not limited to, the following principal features.

1. Open cut and replacement of approximately 1,650 linear feet of sewer pipe

2. Replacement and installation of approximately 14 sewer and drain manholes

3. Approximately 2,150 linear feet of Cured-In-Place-Pipe

4. Cementitious manhole rehabilitation of 4 manholes

5. Epoxy coating rehabilitation of 1 manhole

6. Open cut replacement of approximately 125 linear feet of drainage pipe

7. Replacement and installation of 6 deep sump catch basins

8. Maintain active services, providing temporary bypass pumping, plugging of flows, appurtenances, excavation, trench support, backfilling, restoration paving, environmental protection.
9. Maintain existing utilities and improvements, both below and above grade, in proximity to the Work.

10. Maintain and provide all traffic management required as directed and approved by the Engineer or City of Quincy Traffic Department.

11. All materials, equipment, services and construction inherent to the Work.

B. Work Site locations: generally as shown on the Drawings.

C. Existing conditions and Site data: per the Drawings and Section 00 31 00.

1.04 WORK SEQUENCE AND COORDINATION

A. Perform Work in accordance with approved Progress Schedule identifying interim milestones and hold points for Owner and Engineer approvals. Provide minimum 1-week advance notice of interim milestones and hold points for the Work identified in approved Progress Schedule.

1. School Area Work is not to occur during school hours. Initiate Work on weekends or after June 23, 2020, exact date to be confirmed with Owner pending start of school summer recess. Sequence Work such that School Area Work will be substantially complete by August 24, 2020 or outside of school hours.

B. Coordination

1. Maintain access to businesses and residence during execution of the Work.

2. Complete weather/season dependent Work within the allowable timeframe (e.g. Work requiring paving prior to the closure of asphalt plants for the winter). Notify Owner and Engineer in writing if delays due to scheduling are anticipated.

3. Coordinate with Owner to obtain permission from private property owners if required to cross private property to reach City Sewer easements where Work is located.

4. Maintain access to facilities for the Owner and MWRA throughout the Project.

5. Perform all open cut Work prior to CIPP Work. Coordinate with the Owner to schedule Work on Assabet Road prior to proposed CIPP Work on Squanto Road, performed by others.

6. Coordinate Work with National Grid Gas utility improvements. Gas main and service replacement anticipated by National Grid Gas on the following
roadways: Shennen Street, Highfield Road, Copley Street, Dickens Street, and Lafayette Street.

7. Coordinate with Owner to schedule Work on Trescott Street. This Work shall be prioritized to ensure it is completed prior to paving improvements that will be performed by others.

8. Coordinate with Owner to schedule Work on Hunt Street. Other improvement work is to occur at the same site, performed by others.

1.05 SPECIAL REQUIREMENTS

A. Portions of the Work are within the FEMA 100-year floodplain and within the 100-year floodplain. Use best management practices to avoid or minimize impacts to resource areas outside the footprint of the area of Work, and close trenches for open cut repairs at the completion of each workday.

B. Coordinate with Owner and Engineer for and provide public notification on the Project as specified below.

1. Notification to Owner and Engineer no less than 30 days prior to beginning Work in a new area of the Project to allow for Owner and Engineer to complete pre-Project notification to residents.

2. Posting parking restriction signs in accordance with Quincy DPW requirements, no less than 7 days prior to beginning construction or paving on a street.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION
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SECTION 01 15 30
PAYMENT AND ADMINISTRATIVE PROCEDURES
AND QUALITY REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements relating to payment, the process of contract administration, and the methods of communicating, controlling, and assuring quality. This Section applies to all Specifications and Drawings.

B. Certain provisions required by Laws and Regulations may be referenced. Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations.

C. Section Includes

1.02 PAYMENT PROCEDURES
   - Schedule of Values
   - Payment Procedures
   - Change Procedures
   - Measurement and Payment Procedures
   - Correlation of Submittals

1.03 ADMINISTRATIVE REQUIREMENTS
   - Project Management and Coordination; Meetings
   - Documentation of Progress
   - Submittal Procedures

1.04 QUALITY REQUIREMENTS
   - Reference Standards and Regulatory Requirements
1.02 PAYMENT PROCEDURES

A. Schedule of Values: in accordance with Article 2 of the Standard General and Supplementary Conditions, if any.

1. Provide sufficient detail to allow for determination of the value of the Work at any degree of completion.

2. For each line item, identify number and title of Specification section in accordance with the Table of Contents.

3. The unit price breakdown included in the Bid Form will constitute the preliminary Schedule of Values for this Project.

4. Number of hardcopies: 3

5. Submit electronically by email or via digital document exchange system in PDF format.

B. Payment Procedures: in accordance with Article 14 of Standard General and Supplementary Conditions, if any.

1. Submit Application for Payment using the form included in the Project Forms section. Utilize latest approved Schedule of Values for listing items in Application for Payment. Provide supporting documentation for items included in the Application for Payment.

a. Number of hardcopies: 6

b. Submit electronically by email or via digital document exchange system in PDF format.

2. Payment Period: at intervals stipulated in the Agreement.

3. Submit an updated Progress Schedule with each Application for Payment.

C. Change Procedures: in accordance with Articles 10 and 12 of Standard General and Supplementary Conditions, if any, utilizing forms included in Section 00 60 00 Project Forms.

Number of hardcopies: 6
Submit electronically by email or via digital document exchange system in PDF format.
1. Field Order: as authorized by Paragraph 9.04 of the Standard General and Supplementary Conditions, if any.

2. Change Request: issued by Engineer, Owner or Contractor to request or authorize minor variations and deviations, amendments or supplements to the Contract Documents. Initiate requests for substitute items per Paragraph 6.05 of the Standard General and Supplementary Conditions, if any, using a Change Request.
   
a. Engineer or Owner to include a detailed description of a proposed change with supplementary or revised Drawings and Specifications, including a change in Contract Times related to the change (with a stipulation for any overtime work required) and the period of time during which the requested price (if any) will be considered valid. Prepare and submit an estimate within 15 days.

b. Describe the proposed change and its full effect on the Work. Describe the reason for the change and the effect on the Contract Price and Contract Time with full documentation (and a statement describing the effect on Work by separate or other contractors).


4. Change Order: in accordance with Articles 10 and 12 of the Standard General and Supplementary Conditions, if any.
   
a. Stipulated Price Change Order: based on Contractor's maximum price quotation or Contractor's request for a Change Order as approved by Engineer or Owner.

b. Unit Price Change Order: for pre-determined unit prices and quantities and executed on a fixed unit price basis. Execute Work under a Work Change Directive for unit costs or quantities of Work not pre-determined. Changes in Contract Price and Contract Time to be computed as specified for Time and Material Change Order.

c. Time and Material Change Order: based on itemized account and supporting data after completion of change within time limits indicated in the Standard General and Supplementary Conditions, if any. Engineer or Owner and Contractor to determine the change allowable in Contract Price and Contract Time as provided in the Standard General and Supplementary Conditions, if any. Maintain detailed records of Work completed on this basis, provide full information for evaluation of proposed changes, and substantiate costs for changes in the Work.
5. “Or Equals” and Substitutes: Request “Or-Equal” and substitute items as a Change Request per subparagraph 1.02.C.2 above, with complete data substantiating compliance with Contract Documents.
   a. Or-Equal” and substitute items will be processed in accordance with Paragraph 6.05 of the Standard General and Supplementary Conditions, if any, and subparagraph 1.03.C.6 below.

D. Measurement and Payment Procedures
   1. Payment includes full compensation for required labor, material and equipment, tools, plant, transportation, services and incidentals; erection, application or installation and construction of an item of the Work; and overhead and profit, unless otherwise indicated.
   2. See Section 01 20 25 Measurement and Payment.

E. Correlation of Submittals
   1. Promptly revise Schedule of Values and Applications for Payment to record each authorized Change Order as a separate line item and adjust the Contract Price.
   2. Promptly revise Progress Schedule to reflect any change in Contract Times and revise sub-schedules to adjust time for other items of the Work affected by the change.
   3. Promptly enter changes in Project record documents.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Project Management and Coordination; Meetings
   1. Contact information for Owner and other entities related to the Project and special coordination requirements and contacts during prosecution of the Work will be provided at the Preconstruction Conference and Site Mobilization Meeting.
   2. Inform Owner and Engineer of the address for sending official correspondence and the address and telephone number of Contractor's representative who will be project manager and Site superintendent for the Contract.
3. During periods of construction and testing keep Owner and Engineer informed in writing with name, address, and telephone number of Contractor's representative who will be responsible and available outside of normal working hours for emergency repairs and the maintenance of safety devices.

4. Identify the 24 hour, 7 days per week emergency response telephone or cell phone number that is staffed by a person (not a passive answering machine) or provide that a phone call will be returned within one hour.

5. Identify correspondence, submittals, drawings, data and materials, packing slips or other items associated with this Contract as follows:

FY20 Open Cut Excavation Sewer and Drainage System Repairs
CWSRF #4515 – Contract A

6. Coordinate scheduling, submittals, and Work of the various Specifications to effectuate an efficient and orderly sequence for installing interdependent construction elements, with provisions for accommodating items installed later.

7. Preconstruction Conference and Site Mobilization Meeting

   a. Owner to schedule an initial preconstruction conference in accordance with Paragraph 2.06 of the Standard General and Supplementary Conditions, if any.

   b. Attendance required by Owner, Contractor, Engineer, Contractor's Superintendent, Project Manager, and Subcontractors as a minimum.

   c. Sample Agenda

      • Distribute Contract Documents
      • Discuss design concepts
      • Discuss preliminary Progress Schedule, Schedule of Submittals, Schedule of Values and preliminary cash flow projections.
      • Designate personnel representing each party; communication procedures
      • Procedures and processing of submittals, substitutions, applications for payments, Change Orders and Contract closeout procedures
      • Scheduling
      • Use of premises by Owner and Contractor
      • Owner's requirements and partial occupancy
      • Construction facilities and controls provided by Owner
      • Temporary utilities provided by Owner and Contractor
      • Survey and Site Layout
- Security and housekeeping procedures
- Schedules
- Procedures for testing
- Procedures for maintaining record documents
- Requirements for start-up
- Inspection and acceptance of equipment put into service during construction period
- Access, laydown and coordination with others

d. Engineer will record minutes and distribute draft copies promptly after meeting to Owner and Contractor for review, then revise as required and distribute thereafter to meeting participants, with copies to Owner and Contractor, and those affected by decisions made.

8. Progress Meetings

a. In addition to other regular Project meetings for other purposes (as indicated elsewhere in the Contract Documents), Engineer to schedule progress meetings beginning no later than 60 days after the Initial Conference and continue throughout progress of the Work thereafter on a biweekly basis with times coordinated with preparation of payment requests.

b. Every entity then involved in the planning, coordination, or performance of Work is required to be properly represented at each meeting. Attendance is required by Contractor, Contractor's Superintendent, major Subcontractors and Suppliers, Owner and Engineer as appropriate to agenda topics for each meeting. When applicable, consultants, separate contractors (if any), principal Subcontractors, Suppliers, manufacturers/ fabricators, governing authorities, insurers, special supervisory personnel and others with an interest or expertise in the progress of the Work will be included.

c. During each meeting, review each entity’s present and future needs including interface requirements, time, sequence, deliveries, access, Site utilization, temporary facilities and services, hours of Work, hazards and risks, housekeeping, submittals, change orders, and documentation of information for payment requests. Discuss whether each element of current Work is ahead of schedule. Determine how behind-time Work will be expedited and secure commitments from the entities involved in doing so. Discuss whether schedule revisions are required to ensure current Work and subsequent Work will be completed within the Contract Times. Review everything of significance which could affect the progress of Work.
d. Sample Agenda
   - Review minutes of previous meetings – unresolved issues
   - Overall project status
   - Work Completed
   - Anticipated Work
   - Schedule
   - Pay Applications
   - Change Orders
   - Submittals
   - Observations, problems, and decisions
   - General Discussion/Comments
   - Action Items
   - Date and time for next meeting

e. Engineer will record minutes and distribute draft copies within 7 days after each meeting to Owner and Contractor for review, then revise as required and distribute thereafter to meeting participants, with copies to Owner and Contractor, and those affected by decisions made.

9. Pre-installation Conference and Coordination Meeting
   a. When required, convene a pre-installation conference at Site before commencing certain Work that requires coordination or has special requirements or approval.
   b. Convene coordination meetings as may be generally required.
   c. Attendance required by parties directly affecting, or affected by, Work of the specific Specification section.
      1) For pre-installation conference, notify Owner and Engineer 5 days in advance.
      2) For coordination meetings, party requesting coordination meeting to notify other party(s).
   d. Review conditions, preparation and procedures, and coordination with related Work.
B. Documentation of Progress

1. Submit preliminary and final Progress Schedules as specified in Paragraphs 2.05 and 2.07 of the Standard General and Supplementary Conditions, if any, or as established in Notice to Proceed.

Number of hardcopies: 3

Submit electronically by email or via digital document exchange system in PDF format.

a. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

b. Indicate estimated percentage of completion for each item of Work at each submission.

c. Indicate dates for fabrication, factory testing, delivery, shipping and field testing, and material and equipment delivery dates, including those furnished by Owner. Coordinate with Schedule of Submittals.

2. Submit revised Progress Schedule on monthly basis and with each Application for Payment, identifying changes since previous version. Coordinate content with Schedule of Values, if any.

3. Documentation of Pre-Construction Conditions, Construction Progress, and Final Conditions

a. Documentation of Pre-Construction Conditions

1) Submit photographs prior to starting construction to record Site conditions. Ensure existing conditions that might be affected by the Work are clearly recorded. Identify photographs with date, time, orientation and Project identification. Re-take any photograph furnished which, in the opinion of the Engineer, is of poor quality or incomplete at no additional cost to Owner.

2) Format: PDF or JPG format, minimum 300 dpi quality and a minimum resolution of 6.0 megapixels. Identify photographs with date, time, orientation and Project identification.

   a) Number of hardcopies: 2

   b) Submit electronically by email or via digital document exchange system in PDF format.
b. Documentation of Construction Progress

1) Submit photographs of progress of Work. Identify photographs with date, time, orientation and Project identification. Re-take any photograph furnished which, in the opinion of the Engineer, is of poor quality or incomplete at no additional cost to Owner.

2) Format: PDF or JPG format, minimum 300 dpi quality and a minimum resolution of 6.0 megapixels.

3) Number of hardcopies: 6

4) Submit electronically by email or via digital document exchange system in PDF format.

4. Reports

a. Submit weekly Safety Reports signed by the Safety Representative.

b. Other reports to be submitted:

1) Updates to the Construction Operations Plan approved pursuant to SC 2.07 of Section 00 73 10 when it is modified

Number of hardcopies: 0
Submit electronically by email or via digital document exchange system in PDF format.

C. Submittal Procedures

1. Schedule submittals to expedite the Project and coordinate with schedules required by Paragraph 1.03.B above. Deliver each submittal in the quantity and electronic form indicated to Engineer (with copy to Owner where required) at the addresses specified below. Coordinate submission of related items.

Engineer:

Woodard & Curran
40 Shattuck Road Suite 110
Andover, MA 01810
Attn: David Moering
Phone: 978.482.7896
Email: dmoering@woodardcurran.com
Owner:
City of Quincy, Massachusetts
55 Sea Street
Quincy, Massachusetts 02169
Attn: Al Grazioso; Public Works Commissioner
Phone: 617.376.1900
Email: agrazioso@quincyma.gov

2. Present submittals in a clear and thorough manner, in English and using
English units. Provide space for Contractor, Engineer, and Owner's review
stamps. Use sheet size of not less than 8 1/2 by 11 inches and not more than
24 by 36 inches.

3. Revise and resubmit documents as required. Identify all changes made
since previous submittal. Distribute copies of reviewed submittals to
concerned parties. Instruct parties to promptly report any inability to
comply with provisions. Submittals not requested on the submittal schedule
may not be recognized or processed.

4. Submit preliminary and final Schedule of Submittals as specified in Article
2 of the Standard General and Supplementary Conditions, if any, or as
established in Notice to Proceed. Include all submittals specified in the
Standard General and Supplementary Conditions, if any, General
Requirements, and other Specification sections.

Number of hardcopies: 0
Submit electronically by email or via digital document exchange system in
PDF format.

a. Include description of each submittal, date by which each submittal
will be delivered to Engineer and Owner date by which each
submittal must be approved to maintain project schedule, and
relevant section reference.

b. Allow 10-15 days from receipt of submittal/resubmittal for Engineer
review of submittals and possible resubmittal.
5. **American Iron and Steel (AIS) Submittals and Record Keeping:** Iron and steel products are subject to the requirements included in Section 00 73 76 including the guidance documents attached. Identify all AIS products and provide AIS certification documents or pursue an appropriate waiver as specified in Section 00 73 76.

   a. Submit the AIS Recordkeeping and Deminimus Waiver Spreadsheet available electronically in Excel format from the Engineer. A sample is included as an attachment to this section.

   b. Gather AIS Certificates for the products from vendors and/or manufacturers and submit to Engineer for review prior to material delivery/installation. If a manufacturer cannot provide a completed certificate until the product is made, a letter of intent to supply an AIS compliant product and certificate upon delivery should be provided.

      1) Provide certification letters in accordance with attachments to Section 00 73 76.

      2) Provide AIS Letter of Intent when manufacturer’s product is made up of raw materials sourced from multiple facilities. It should express awareness that all iron and/or steel used in manufacture will be sourced domestically and the intent to follow up with the foundry/other manufacturing facility location information when known. This letter should be on company letterhead and signed by a company representative.

   c. Obtain AIS waivers in accordance with Section 00 73 76.

      1) The requirement for domestic manufacture may be waived in certain circumstances. The most common waiver is the Deminimus Waiver which can generally be applied to AIS products that are incidental to the core purpose of the Project and are relatively low in cost (see discussion below). A national waiver for stainless steel nuts and bolts used in pipe assemblies (Nuts and Bolts Waiver) applies to product manufacturers and expires February 2020. The Minor Components Waiver is also available to manufacturers allowing provision of a valid AIS Certificate for products containing minor non-domestic iron or steel components if they constitute less than 5 percent off the product material cost. A Project Specific Waiver may be applied for with MassDEP if there is a valid, substantial, and thoroughly documented issue with product availability or if the incremental cost to supply an AIS product domestically increases the total Project cost by more than 25 percent.
a) Deminimus Waiver – To use the Deminimus Waiver, provide an estimate of the Total Material Cost for the Project and the cost for the AIS product to be waived. This information should be entered on the AIS Recordkeeping and Deminimus Waiver Spreadsheet which is designed to calculate the Deminimus cost limits for the Project. The total cost of all Deminimus AIS products may not exceed 5 percent of the Total Material Cost. The cost of the waived AIS product may not exceed 1 percent of the Total Material Cost. The basis for the individual item and total costs should both be the same, for example, the cost to deliver the products to the Site, or the cost to purchase the products.

b) Project Specific Waiver - If the quantity of a domestically produced AIS product on the market is limiting availability or significantly impacting the Project progress, apply through MassDEP for an Availability Waiver, making a request to the in writing to the MassDEP SRF Program project engineer and submitting to the Engineer for processing.

d. Maintain a record of AIS Certification submittals and approvals and Deminimus Waiver items throughout the Project and submit to the Engineer and Owner upon request. Provide final AIS Recordkeeping and Deminimus Waiver Spreadsheet and associated AIS records prior to final payment.

6. Shop Drawings and Samples: Submit in accordance with Paragraph 6.17 of the Standard General and Supplementary Conditions, if any, and as follows, and coordinate with the Schedule of Submittals required in subparagraph 4 above.

Number of hardcopies: 0

Submit electronically by email or via digital document exchange system in PDF format.
a. Complete a Submittal Transmittal (Form 00 62 11) as is indicated, numbering each submittal consecutively. Assign resubmittals the same Transmittal number as the original with a suffix of a sequential letter to indicate the resubmittal (e.g. the first resubmittal of submittal 25 would be number 25A.) Include only those documents previously issued under original Submittal Transmittal number in resubmittals. Do not combine new submittals with resubmittals.

b. Attach a Submittal Transmittal to each group of Shop Drawings, manufacturer's literature, equipment data and Samples submitted. Use a sufficient number of Submittal Transmittal forms so that: items on a single Submittal Transmittal form pertain to the same equipment item, Specification section or element of Work; items on a single Submittal Transmittal form are either original submittals or the same number resubmittal; and each Sample is listed on a separate Submittal Transmittal form.

c. Submittals which do not have a fully completed Submittal Transmittal form will be returned along with unreviewed attachments. Returned submittals, even though incomplete, will be counted as a submittal.

d. Submission of any Shop Drawing or Sample bearing Contractor's and Engineer's approval shall constitute a representation to Owner that the requirements of Paragraph 6.17 of the Standard General and Supplementary Conditions, if any, have been fulfilled.

e. Engineer to complete review in accordance with Paragraph 6.17.D. of the Standard General and Supplementary Conditions, if any.

7. Variations: Identify variations from Contract Documents and material and equipment or system limitations which may be detrimental to successful performance of the completed Work and identify reasons therefor in accordance with subparagraph 6.17.C.3 of the Standard General and Supplementary Conditions, if any.

a. Clearly identify requests for “Or-Equal” and substitute items and submit per Paragraph 6.05 of Standard General and Supplementary Conditions, if any, and subparagraph 1.02.C.5 above. Substitute items will not be considered when indicated or implied on Shop Drawing or material and equipment data submittals without separate written request, or when acceptance will require revision to the Contract Documents.
8. Manufacturers' Installation Instructions and Certificates: Submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing.

Number of hardcopies: 0

Submit electronically by email or via digital document exchange system in PDF format.

a. Indicate special procedures, perimeter conditions requiring special attention and special environmental criteria required for application or installation.

b. Submit manufacturers' certificates for recent or previous test results on material or equipment, but they must be acceptable to Engineer and Owner. Indicate material or equipment conforms to or exceeds specified requirements and provide supporting reference date, affidavits, and certifications as appropriate.

c. Submit test results, data, and reports and certifications to Engineer based on tests performed. Submit test reports and certifications for independent testing services specified.


a. As-Builts for Material and Equipment

   Number of prints: 1

   Electronic format: PDF

   Submit electronically by email or via digital document exchange system in PDF format.

   Indicate "As-Supplied" in revision block and sign. Show all changes and revisions to Final Completion per execution and closeout requirements. Include with subparagraph d. Operation and Maintenance Data per Part 2 below

b. Drawings Conformed by Contractor to Construction Records: Submit the following.

   Number of prints: 1

   Electronic format: PDF

   Submit electronically by email or via digital document exchange system in PDF format.
Indicate "Conformed by Contractor to Construction Records" in revision block and sign. Show all changes and revisions to Final Completion per execution and closeout requirements.

c. **Warranties and Guarantees**: Submit duplicate notarized copies of warranty documents which are executed and transferable from Subcontractors, Suppliers, and manufacturers. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of Warranty Period.

1) Submit in searchable PDF format by email or via digital document exchange system in PDF format.

2) Submit 2 copies in ring binders with durable plastic covers and table of contents.

d. **Operation and Maintenance Data**

1) Submit draft of completed volumes 30 days prior to equipment startup. Revise content of all sets as required prior to final submission.

   Number of hardcopies: 2

   Submit in searchable PDF format by email or via digital document exchange system in PDF format.

2) Submit final volumes within 10 days after final inspection. Submit in searchable PDF format by email or via digital document exchange system in PDF format.

   Submit 2 copies of data in ring binders with durable plastic covers with 8 1/2 by 11 inch text pages. Cover: title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of Project, and subject matter of binder when multiple binders are required.

3) Subdivide binder contents with permanent page dividers, logically organized as described below with laminated plastic tabs and clearly print the contents. Prepare a Table of Contents for each volume, with material, equipment, or system description identified, in three parts as follows.
**Part 1**: Directory, listing names, addresses, and telephone numbers of Contractor, Subcontractors, and major equipment Suppliers, and service representative.

**Part 2**: Operation and maintenance instructions **arranged by system** and subdivided by Specification section.

For each system, identify names, addresses, and telephone numbers of Subcontractors and Suppliers. Identify the following:

- Significant design criteria
- List of equipment with As-Builts certified “As-Supplied”
- Parts list for each component
- Operating instructions
- Inspection, maintenance and adjustment instructions for equipment and systems
- Lubrication and maintenance schedules
- Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents
- Troubleshooting guides
- Schematic diagrams

**Part 3**: Material Safety Data Sheets

**Part 4**: Other Project documents and certificates, including certificates and copies of warranties

1.04 **QUALITY REQUIREMENTS**

A. Reference Standards and Regulatory Requirements

1. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or Laws or Regulations of any governmental authority are used in accordance with Paragraph 3.02 of the Standard General and Supplementary Conditions, if any.

2. Acronyms and abbreviations used are defined in the applicable versions of the Encyclopedia of Associations published by Gale (part of Cengage Learning) generally available in large libraries and on the internet.
3. Specific requirements applicable to the Project include the following.

a. Comply with the Massachusetts Department of Transportation - Highway Division’s (referred to as “MassDOT”) Construction Specifications (including Interim Supplemental Specifications and Supplemental Specifications but not including Compensation sections), Construction Details (including Standard Drawings), and Design Guides as incorporated into the Specifications and Drawings, and as may be modified therein or superseded by the Owner’s requirements through the direction of the Engineer. Specific sections of the MassDOT documents are referenced in the Specifications and Drawings. References to “Department” in the MassDOT documents shall mean Owner or Resident Project Representative for this Project. See MassDOT Highway Division website for latest documents. 


b. Comply with MWRA 8(m) Permit included in Section 00 31 00.

c. Obtain and comply with DCR Construction Access Permit as required.

1.05 ATTACHMENTS

A. AIS Recordkeeping and Deminimus Waiver Spreadsheet

END OF SECTION
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### Deminimus Waiver Tracking

<table>
<thead>
<tr>
<th>General Category</th>
<th>Item Description</th>
<th>Project Location</th>
<th>AIS Certificate Review</th>
<th>Deminimus Waiver</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Source</td>
<td>Letter of Intent to Certify (1)</td>
<td>AIS Certificate Date</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Estimated Total Material Cost:**

- 5 percent of ETMC: $0
- 1 percent of ETMC: $0

**Total Deminimus:**

- $0

---

**Note 1:** This is only required when the manufacturer doesn’t know where the iron/steel stock materials are coming from until they fill the order. This may also be a pre-approval letter.
<table>
<thead>
<tr>
<th>Enacted</th>
<th>Expiration</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1       | 22-Feb-17  | **Short Term National Product Waiver for Stainless Steel Nuts and Bolts Used in Pipe Couplings, Restraints, Joints, Flanges, and Saddles**  
Waiver permits the use of non-domestically produced stainless steel nuts and bolts in bolting-type pipe couplings, restraints, joints and repair saddles in iron and steel products for projects funded by the CWSRF or DWSRF.  
Product must be purchased prior to expiration of waiver. |
| 2       |            | **National Product Waiver for Minor Components in Iron and Steel Products (with Cost Ceiling)**  
Waiver permits projects funded by the CWSRF or DWSRF to use non-domestically produced miscellaneous minor components within an otherwise domestically produced iron and steel product for up to 5 percent of the total material cost of the product.  
This waiver is different than the national de minimis waiver. The national de minimis waiver applies to incidental components of a project, this waiver covers components within an iron and steel product. |
| 3       |            | **De Minimis Waiver**  
Waiver allows a small percentage of incidental products of unknown or non-domestic origin, up to 5% total material cost of project, up to 1% max for single item.  
Users of de minimis waiver should maintain documentation of all the de minimis items in a project. Minimum documentation: tabular list of de minimis items with units and price, with summation. |
| 4       |            | **National Product Waiver for Pig Iron and Direct Reduced Iron for SRF Projects**  
This waiver permits the use of iron and steel products that were manufactured using non-domestic pig iron and direct reduced iron in projects that receive funds from either the CWSRF or DWSRF. |
| 5       |            | **National Plans and Specs Waiver Pursuant to Section 436 of P.L. 113-76, Consolidated Appropriations Act**  
Waives AIS requirements for plans and specifications submitted to a state agency prior to and including January 17, 2014, due to the uncertainty surrounding AIS legislation. |

**Project Waivers**

Three reasons for a waiver:

1. Applying requirements would be inconsistent with the public interest.
2. Iron and steel products are not produced in sufficient quantity or satisfactory quality domestically.
3. Inclusion of domestic Iron and Steel products will increase overall project cost by more than 25%.

**Project Waiver Guidance:** [https://www.epa.gov/cwsrf/american-iron-and-steel-requirement-waiver-process](https://www.epa.gov/cwsrf/american-iron-and-steel-requirement-waiver-process)
Certification Letters must contain 5 items:

1. **Q:** What is the product?  
   **A:** The letter should list specific products delivered to jobsite. Quantities are NOT required.

2. **Q:** Where was it made?  
   **A:** The letter should include the location(s) of the foundry/mill/factory where the product was manufactured (City and State).

3. **Q:** To whom was it delivered?  
   **A:** The letter should include the name of the project and jurisdiction where the product was delivered.

4. **Signature of company representative**  
   **Notary not required.**

5. **AIS requirements must be referenced.**  
   References to other programs (e.g. DOT programs) are not acceptable.

*Certification letters must be from the Manufacturer, not the supplier.*

*EPA will review Cert Letters for you, send here: SRF_AIS@epa.gov*  
with subject line "Cert Letter Review"
AIS applies to: Products made primarily of iron or steel, permanently incorporated into the project*

Products specifically included (starred items defined below):

Lined/Unlined pipes or fittings
Manhole Covers
Municipal Castings*
Hydrants
Tanks
Flanges
Pipe clamps and restraints
Valves
Structural Steel**
Reinforced precast concrete***
Construction Materials****

Notes: "Primarily" Iron or Steel products are greater than 50% iron or steel, measured by material cost.
Trench boxes, scaffolding, or equipment removed from project site upon completion are not subject to AIS requirements.
However, if a product is used only for construction purposes, but left in place, then the product must be domestically produced. (e.g. steel sheeting).

*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 drinking water, stormwater, wastewater, and surface infrastructure. Refer to Q19 in above memo link. Examples:

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.

**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.

***Reinforced Precast Concrete***
AIS requirements apply to reinforced concrete. 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 products must take place in the US.*
Cement and other raw materials used in concrete production are not required to be domestic.
<table>
<thead>
<tr>
<th>Construction Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Materials are 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. Examples: 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.</td>
</tr>
</tbody>
</table>

Construction Materials are NOT mechanical and electrical components, equipment and systems. 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. Examples: 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.
Example 1: Packaged equipment systems do not require AIS compliance. A valve provided by a blower manufacturer is not required to comply with AIS. However, if a Contractor supplies a valve to connect to a packages system, then AIS compliance is required.

Example 2: A manual door falls under AIS, but a motorized door does not.

A screen is considered a construction material (AIS applies), unless it has mechanical parts, then it is not (AIS does not apply).

Example 3: Clarifier tanks must comply with AIS. Clarifier arms and components do not require compliance.
SECTION 01 20 25

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the measurement and payment for the Work to be completed under each item in Section 00 43 22 Unit Prices Form, which may also be referred to as “pay item”.

B. Payment procedures are in accordance with the Agreement, Article 14 of the General Conditions, the Supplementary Conditions (if any), and the General Requirements.

C. Measurement: as determined, verified, or approved by Engineer or Owner in accordance with Paragraph 11.03 of the General Conditions, the Supplementary Conditions (if any), and the General Requirements, except as otherwise specified.

D. The Work described in each pay item shall be as described in the Specifications and shown on the Drawings and not included in other pay items.

1. Pay item descriptions are general and may not specifically describe all associated Work or elements thereof, do not constitute Specifications, and do not supersede the content of the Specifications and Drawings.

2. Review the Specifications and Drawings for Work associated with each pay item. Claims for being unfamiliar with the content of the Specifications and Drawings will not be considered.

E. The following Work is not specifically described or designated as a pay item, is considered incidental to all pay items, and shall not be measured separately for payment.

1. Division 01 General Requirements EXCEPT those items included in Mobilization/Demobilization and included as a separate pay item.

2. Materials, equipment, and services necessary to verify existing field conditions and the location, size, type, material, and orientation of existing pipes and utilities shown on the Drawings excluding test pits.

3. Restoration of all areas disturbed by the Contractor within the limits of Work, including planting.
4. Field and laboratory testing and reporting by independent laboratory, including but not limited to compaction of backfill materials; aggregate gradation; and concrete testing

F. Payment will not be made for restoration of areas disturbed by the Contractor outside the limits of Work.

G. Payment will only be made for those utility services, including water and fire services, specifically identified for replacement on the Drawings. Relocation or replacement for the Contractor’s convenience or due to breakage by the Contractor of any other utility services shown on the Drawings, or at locations which could reasonably be assumed, shall be at no cost to Owner.

H. Design, installation and removal of excavation support systems, temporary and permanent utility/structure support systems associated with a pay item shall be considered incidental to that pay item.

I. Additional dewatering and erosion control (including installation, operation, maintenance, removal and off-Site disposal of erosion control devices) associated with a pay item shall be considered incidental to that pay item.

J. Pay items identified as a Contingency Allowance will be processed per Article 11.02 of the General Conditions and Supplementary Conditions.

K. Police details will be direct billed by the police department to Owner. Provide daily detail slips to the Engineer. Police details scheduled and not used by the Contractor will be back-charged to Contractor.
## 1.02 MEASUREMENT AND PAYMENT BASIS

<table>
<thead>
<tr>
<th>ITEM 1: Mobilization/Demobilization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
</tr>
<tr>
<td><strong>Payment</strong></td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
</tr>
</tbody>
</table>

Includes delivery to and removal of equipment from the Project Site, temporary utilities, facilities and controls, obtaining necessary permits including associated fees, insurance and bond costs, signage, development of pre-construction schedules and plans required by the General Conditions, Supplementary Conditions and General Requirements; necessary pre-construction investigations, verifying existing field conditions, coordination, and Site cleanup, restoration and closeout. Note Owner will waive fees associated with permits and costs for these permits shall not be included in this item. Contractor shall be responsible for any third-party permit fees.
<table>
<thead>
<tr>
<th>ITEM 2a: 8-Inch PVC Gravity Sewer</th>
<th>ITEM 2b: 10-Inch PVC Gravity Sewer</th>
<th>ITEM 2c: 12-Inch PVC Gravity Sewer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
<td>As measured along the horizontal projection of the centerline of the pipe from inside manhole face.</td>
<td></td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>Unit price per linear foot of pipe installed complete in place and tested</td>
<td></td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
<td>Monthly based on progress; 80 percent upon installation, 10 percent upon receipt of positive test results, 10 percent upon final cleanup and acceptance</td>
<td></td>
</tr>
</tbody>
</table>

Includes but is not limited to all labor, material and equipment required for installation of sewer pipe, abandonment and removal and disposal of all sewer pipe shown on the Drawings and includes unmarked sewer pipe and replacement piping which, in the Engineer’s judgment, could not be avoided by the Contractor. Also includes but is not limited to all labor, tools, equipment, material, excavation and backfill, bedding, shoring/bracing and wood sheeting left in place, geotechnical engineer certified trench shoring per OSHA for trenches in excess of 20-feet deep, saw cutting, furnishing, handling and installation of materials, pressure testing, couplings, tree trimming, removing and replacing signs, fences and mailboxes, removing and replacing granite curbing and bituminous concrete curbing, sidewalk replacement, replacement of asphalt berm, dust controls, furnishing and installing the pipe; wyes and reconnection to existing service laterals; removal and disposal of manholes; pavement cutting, removal and disposal of pavement, clearing and grubbing, pipe bedding and blanket, concrete cradles, marking tape, backfill and compaction, shoring and bracing, clay dams, wyes, ductile iron tees for chimneys, pipe insulation, coring and/or reconnection into existing manholes, bricking and bulkheading of existing pipe where noted on Drawings, replacement of marked utility services to the property line, replacement of marked drain lines, pipe jacking, carrier pipes, if needed, to meet horizontal and vertical separation requirements from water mains or to cross culverts, testing, cleaning and flushing, bypass pumping of sewer flows and/or hauling and disposal. Also includes traffic control, protection of trees to be preserved, loaming and seeding, post-installation CCTV for all pipe segments completed, and all other Work incidental to installing pipe not specified to be paid for under a separate pay item.
ITEM 3a: 4-Foot Diameter Precast Concrete Sewer Manhole Base  
ITEM 3b: 4-Foot Diameter Sewer Manhole Extended Base Section

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Each installed, complete in place, as shown on the Drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per each</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress: 90 percent upon installation, 10 percent upon acceptance of manhole following receipt of a positive test results and construction of invert</td>
</tr>
</tbody>
</table>

Includes but is not limited to all labor, tools, equipment, dust controls, removal and disposal of existing sewer structures, furnishing and installing precast concrete manhole bases of varying height; pavement cutting, removal and disposal of pavement, clearing and grubbing, excavation, bedding, shoring/bracing and sheeting left in place, backfill and compaction; interior drop connections if required, connection to existing sewer or drain with new pipe if applicable, supports, damproofing, flexible boots, butyl sealants, construction of inverts, concrete encasement, link seals, hydraulic cement, coring, manhole rungs, testing, landscape restoration, loam and seed, resetting of curbs; and all other appurtenances contained within the manhole base or extended base section as shown on the Drawings. For trenches in excess of 20-feet, Contractor responsible for providing geotechnical engineer certified trench shoring per OSHA. Extended bases for anti-flotation shall be installed by the direction of the Engineer or Owner.

ITEM 4: 4-Foot Diameter Precast Concrete Sewer Manhole Riser

<table>
<thead>
<tr>
<th>Measurement</th>
<th>As measured from top of cone to the downstream invert of the pipe, complete in place, as shown on the Drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per vertical foot</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress: 90 percent upon installation, 10 percent upon acceptance of manhole following receipt of a positive test results</td>
</tr>
</tbody>
</table>

Includes but is not limited to all labor, tools, equipment, dust controls, removal and disposal of existing sewer structures, furnishing and installing precast concrete manhole riser and top sections of varying height; pavement cutting, removal and disposal of pavement, clearing and grubbing, excavation, bedding, shoring/bracing and wood sheeting left in place, backfill and compaction, shoring and bracing; interior drop connections, connection to existing sewer or drain with new pipe if applicable, supports, stainless steel pipe supports and anchors, damproofing, flexible boots, butyl sealants, construction of inverts, concrete encasement, link seals, hydraulic cement, coring, manhole rungs, testing, bricking and bulkheading of existing pipe where noted on Drawings, landscape restoration, loam and seed, resetting of curbs; and all other appurtenances contained within the manhole riser and top sections as shown on the Drawings. For trenches in excess of 20-feet, contractor is responsible for providing geotechnical engineer certified trench shoring per OSHA.
### ITEM 5: 30-Inch Standard Manhole Frame and Cover

<table>
<thead>
<tr>
<th><strong>Measurement</strong></th>
<th>Each installed, complete in place, as shown on the Drawings</th>
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</thead>
<tbody>
<tr>
<td><strong>Payment</strong></td>
<td>Unit price per each</td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
<td>Monthly based on progress</td>
</tr>
</tbody>
</table>

Includes but is not limited to all materials, equipment, services and for furnishing and setting frames and covers to final grade of standard frames and covers, including brick and mortar leveling courses or concrete grade rings as specified, and asphalt collar over frame base, as specified in Section 33 39 13. Contractor is responsible for setting manhole frame and cover grades during temporary and final paving and all resetting, raising or lowering associated with roadway and laying final pavement shall be included in this item.

### ITEM 6a: 8-Inch Cured-In-Place-Pipe

### ITEM 6b: 10-Inch Cured-In-Place-Pipe

### ITEM 6c: 12-Inch Cured-In-Place-Pipe

<table>
<thead>
<tr>
<th><strong>Measurement</strong></th>
<th>Actual number of linear feet of each pipe size lined, measured from the interior walls of the manholes</th>
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</thead>
<tbody>
<tr>
<td><strong>Payment</strong></td>
<td>Unit price per linear foot</td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
<td>Monthly based on progress up to 90 percent; 10 percent at final warranty inspection</td>
</tr>
</tbody>
</table>

Material and equipment, services, installation, and construction associated with the placement of cured-in-place pipe (CIPP) as specified in Section 33 01 30.72, including removing and reconstructing the top sections of manholes as well as any disturbed pavement as necessary to facilitate access for lining and other incidental Work. Additional expenses related to alternative hours worked to perform Work during low flow; pre- and post-installation CCTV inspection; pipe cleaning; protruding lateral cutting/grinding; the storage, testing, and disposal of any material resulting from the pipe cleaning and inspection process; pedestrian control, traffic control and bypass pumping or redirecting of existing flows shall be considered incidental to the Work and shall not be measured separately for payment. Work shall include reinstatement of all service connections, confirmation of all active services. Grouting of service connections after CIPP liner is installed to be paid under Item 11b. Testing and sealing of pipes on Assabet Road to be paid under Items 7 and 8, all other streets are incidental to the Work. Includes all material, pre-liners, labor and equipment necessary to provide excavation, trenching, temporary paving, permanent paving, bypass piping and pumping equipment associated with bypass pumping existing sewer flows as required including any site restoration to re-establish pre-project condition. Warranty inspection which includes cleaning and CCTV of CIPP is included. This item shall include any additional environmental controls that are required and shall be considered incidental to the Work and shall not be measured separately for payment.
ITEM 7: Assabet Road Testing of Mainline Joints 8-inch to 12-inch Pipe

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Actual number of mainline joints and circular cracks tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per each</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress up to 90%; 10% at final warranty testing</td>
</tr>
</tbody>
</table>

Material and equipment, services, and construction associated with the pressure testing of mainline pipe joints and circular cracks as specified in Section 33 01 30.61, including other incidental Work. Additional expenses related to alternative hours worked to perform Work during low flow; CCTV inspection; the storage, testing, and disposal of any material resulting from the cleaning and inspection process; environmental controls; and bypass pumping or redirecting of existing flows shall be considered incidental to the Work and shall not be measured separately for payment.

ITEM 8: Assabet Road Sealing of Mainline Joints 8-inch to 12-inch Pipe

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Actual number of mainline joints and circular cracks grouted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per each</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress up to 90%; 10% at final warranty testing</td>
</tr>
</tbody>
</table>

Material and equipment, services, installation, construction and testing associated with the grouting of mainline pipe joints and circular cracks as specified in Section 33 01 30.61, including other incidental Work. Additional expenses related to alternative hours worked to perform Work during low flow; CCTV inspection; the storage, testing, and disposal of any material resulting from the cleaning and inspection process; environmental controls; and bypass pumping or redirecting of existing flows shall be considered incidental to the Work and shall not be measured separately for payment. Includes up to three gallons of grout pumped per mainline joint or circular crack. Additional grout shall be paid for under Item 11b.

ITEM 9: Epoxy Coating of Manhole

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Actual number of vertical feet of manhole coated, measured along the interior vertical wall from the top of the manhole bench to the bottom of the manhole frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per vertical foot</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress up to 90%; 10% at final warranty testing</td>
</tr>
</tbody>
</table>

Material and equipment, services, installation, and construction associated with the cementitious or epoxy coating of manhole walls as specified in Section 33 01 30.81, including initial interior sealing, patching or repointing existing structure, power washing the structure, surface preparation, sealing of the bench, and other incidental Work. Additional expenses related to alternative hours worked to perform Work during low flow; power washing the structure; surface preparation; the storage, testing, and disposal of any material resulting from the cleaning and inspection process; environmental controls; and bypass pumping or redirecting of existing flows shall be considered incidental to the Work and shall not be measured separately for payment.
ITEM 10: Cementitious Manhole Restoration

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Each installed complete in place as shown on Drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per each</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on quantity completed</td>
</tr>
</tbody>
</table>

Includes all equipment, services, material, installation, construction and labor associated with cementitious restoration of existing sewer manhole as specified in Section 33 01 30.81, including initial interior sealing, patching or repointing of the existing structure, power washing the structure, surface preparation, sealing of the bench and invert, and other incidental Work. Additional expenses related to alternative hours worked to perform Work during low flow; power washing the structure; surface preparation; the storage, testing, and disposal of any material resulting from cleaning and inspection process, and bypass pumping or redirecting of existing flows shall be considered incidental to the Work and shall not be measured separately for payment. Access to manholes, removal and disposal of sediment and debris, pedestrian and traffic control shall be considered incidental to the Work and shall not be measured separately for payment. All traffic control plans shall be approved by the City Traffic Engineer prior to the Work being started. This item shall include any additional environmental controls not paid for under Item 21 that are required and shall be considered incidental to the Work and shall not be measured separately for payment.

ITEM 11a: Manhole Curtain Grout Pumped

ITEM 11b: Mainline Joint Sealing and Service Connection Grout Pumped

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Actual number of gallons of grout pumped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per gallon</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress</td>
</tr>
</tbody>
</table>

Includes all equipment, material, construction and labor associated with manhole curtain grouting, mainline service connection grouting, and additional grout for mainline joint sealing requested by Engineer as specified in 33 01 30.81 and Section 33 03 30.61, respectively.

ITEM 12: Heavy Cleaning – MH Rehab

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Actual number of gallons of grout pumped to seal manholes, measured along the interior vertical wall from the top of the manhole bench to the bottom of the manhole frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per vertical foot</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress</td>
</tr>
</tbody>
</table>

Material, equipment, and services associated with the cleaning of manhole as specified in Section 33 01 30.81, and other incidental Work. Additional expenses related to alternative hours worked to perform Work during low flow; the storage, testing, and disposal of any material resulting from the cleaning and inspection process; and bypass pumping or redirecting of existing flows shall be considered incidental to the Work and shall not be measured separately for payment.
<table>
<thead>
<tr>
<th>ITEM 13: Asbestos Cement Pipe Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
</tr>
<tr>
<td><strong>Payment</strong></td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
</tr>
</tbody>
</table>

Includes all labor, tools, equipment, training, and materials to remove and dispose of asbestos cement pipe and asbestos contaminated soils in accordance with Section 02 82 35, including but not limited to legal removal, transport, and disposal of identified asbestos containing asbestos cement pipe and resultant asbestos-contaminated soils, asbestos abatement activities within fully enclosed negative pressure asbestos abatement work areas (glovebag), filing and payment for all notifications and permits necessary to complete the work and providing all temporary connections, electrical cords, hoses, water heaters, and other equipment as required for asbestos abatement and air clearance sampling needs.

<table>
<thead>
<tr>
<th>ITEM 14: Temporary Trench Pavement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
</tr>
<tr>
<td><strong>Payment</strong></td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
</tr>
</tbody>
</table>

Includes all labor, equipment, tools, and materials to furnish and install temporary trench pavement, including saw cutting neat, straight edge, remove and dispose of existing pavement, fine grading and compacting gravel sub-base, emulsion, bituminous tack coat, adjusting of roadway castings to final grade, traffic control, placement and compaction of required depth of Type I-1 binder course hot mix asphalt in required lift depths, restoring pavement markings, and all other incidental Work necessary to furnish and install temporary trench pavement. Includes maintenance of temporary trench pavement until replaced by permanent pavement.

<table>
<thead>
<tr>
<th>ITEM 15: Permanent Trench Pavement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
</tr>
<tr>
<td><strong>Payment</strong></td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
</tr>
</tbody>
</table>

Includes all labor, equipment, tools, and materials to furnish and install binder and top course hot mix asphalt for permanent trench pavement, including saw cutting neat, straight edge, remove and dispose of temporary pavement and existing pavement, fine grading and compacting gravel sub-base, emulsion, bituminous tack coat, adjusting of roadway castings to final grade, traffic control, placement and compaction of required depth of Type I-1 binder and top course hot mix asphalt in required lift depths, restoring pavement markings and all other incidental Work necessary to furnish and install permanent trench pavement.
ITEM 16: Additional Bituminous Pavement

<table>
<thead>
<tr>
<th>Measurement</th>
<th>In place based on weigh slips submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per ton</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on quantity installed</td>
</tr>
</tbody>
</table>

Includes but is not limited to all labor, material and equipment required to install additional bituminous pavement as directed by the Engineer including binder and top course, loaming and seeding of disturbed areas, striping, removing and replacing mailboxes, signs irrigation systems and all other incidentals necessary to furnish and install additional bituminous pavement. Leveling course for trenches, leveling course for mill and overlay, and driveway apron reconstruction. Includes payment for additional temporary trench pavement necessary to match existing thickness. Contractor shall provide Engineer with weigh slips.

Item 17: Remove, Stack and Reset Granite Curb

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Per linear foot measured in place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per linear foot</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Completion of Work – 100%</td>
</tr>
</tbody>
</table>

Includes all labor, services, materials, transportation, tools and equipment to: remove and protect existing granite curbs, sack and store in a secure location; saw cutting of the existing pavement where indicated or directed; removal and disposal of the existing pavement; excavation; all handling (including retrieval of stacked curb from DPW storage location(s)); cutting ends square; trimming exposed and hidden faces; cleaning all sections to be reset; provision and installation of gravel borrow; mortar bedding; grading and compaction; provision and placement of concrete base; provision and installation of pavements between the reset curb and the existing or proposed pavement, replacement and compaction of sidewalk subgrade; resetting of original curbing and all other Work incidental to the satisfactory completion of the Work. Any surplus (excess) curbing in good condition to shall be delivered to Owner at 55 Sea Street at no additional cost.

ITEM 18: Rock Excavation

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Actual number of cubic yards of rocks and boulders (rock) removed, measured in place within the trench pay limits shown on the Drawings and as specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per cubic yard</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress</td>
</tr>
</tbody>
</table>

Includes all labor, tools, equipment and materials to remove rock from its original bed by drilling, barring, or wedging, specifically ledge or bedrock and boulders larger than one cubic yard in volume. Includes excavation, removal, and disposal of the rock, replacement of rock with gravel backfill material as specified in Section 31 00 00 or directed by the Owner, traffic control, and other incidental Work necessary to remove and dispose of rock encountered in trenches excavated to perform the Work shown on the Drawings.
ITEM 19: Unsuitable Material Excavation Above Normal Grade

| **Measurement** | Actual number of cubic yards of unsuitable material, measured in place within the trench pay limits shown on the Drawings and as specified |
| **Payment**     | Unit price per cubic yard |
| **Schedule of Payment** | Monthly based on progress |

Material, equipment, and services associated with the excavation and legal disposal of materials within trench pay limits unsuitable for pipe or structure subgrade or trench backfill, and compaction as specified in Section 31 00 00. Includes replacement of unsuitable materials with select backfill, backfilling, and compacting in accordance with the Contract Documents. Excavation of unsuitable material above normal grade (at or above the elevation of the trench bottom) that has not been directed by Engineer will not be measured for payment.

ITEM 20: Unsuitable Material Excavation Below Normal Grade

| **Measurement** | Actual number of cubic yards of unsuitable material, measured in place to the depth and length directed and to the width of trench pay limits shown on the Drawings and as specified |
| **Payment**     | Unit price per cubic yard |
| **Schedule of Payment** | Monthly based on progress |

Material, equipment, and services associated with the excavation and legal disposal of materials below normal grade (below the elevation of the trench bottom) as directed by Engineer. Includes placement of filter fabric against undisturbed material as directed, replacement of unsuitable materials with select backfill, backfilling, and compacting in accordance with the Contract Documents. Over-excavation that has not been directed by Engineer will not be measured for payment.

ITEM 21: Special Pipe Bedding

| **Measurement** | As measured along the centerline of the pipe at locations directed by the Engineer |
| **Payment**     | Unit price per linear feet, complete in place |
| **Schedule of Payment** | Monthly based on quantity installed |

Includes but is not limited to all materials, equipment, services for excavation, installation of geotextile fabric and crushed stone bedding determined by the Engineer as suitable for pipe support below normal grade of the trench (below the elevation of the trench bottom) as defined in Section 31 00 00 including furnishing and installing gravel as specified and compacting, all required testing, documentation, and legal disposal of spoils not containing oil or hazardous materials. Excludes suitable backfill used to replace rock and boulder excavation.
ITEM 22: Normal Dewatering

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Portion of the Work completed and accepted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Percent of lump sum price based on Schedule of Values</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress</td>
</tr>
</tbody>
</table>

Includes but is not limited to all labor, material and equipment required to design, install, operate, maintain, and remove of dewatering system(s), including, but not limited to, pumping and handling groundwater, normal dewatering in accordance with Section 01 50 00, permits not included in mobilization, treatment, testing if required, legal discharge/disposal thereof, environmental controls and power as required.

ITEM 23: Special Dewatering

<table>
<thead>
<tr>
<th>Measurement</th>
<th>As measured along the centerline of the pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Percent of lump sum price based on Schedule of Values</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on quantity installed</td>
</tr>
</tbody>
</table>

Includes but is not limited to all labor, material and equipment required to design, install, operate, maintain, and remove of dewatering system(s), including, but not limited to, installing wellpoints, deep wells, or eductor and ejector systems to control groundwater and hydrostatic pressures to allow for installation of the work, conducting additional borings or subsurface explorations deemed necessary, pumping and handling groundwater in accordance with Section 01 50 00, permits not included in mobilization, treatment, testing if required, legal discharge/disposal thereof, environmental controls and power as required.

ITEM 24: Test Pits

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Each excavated, complete in place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per each</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress</td>
</tr>
</tbody>
</table>

All labor, equipment, tools and materials to determine location, depth, diameter and material type for uncharted utilities or to shut off existing utilities in locations shown on Contract Drawings, excavation, removing and disposing of unsuitable materials, replacement of unsuitable materials with select backfill, backfilling and compacting in accordance with the Contract Documents, loam and seed, removing and resetting granite and bituminous curb, traffic control, temporary pavement, and all other incidentals necessary to excavate uncharted utilities or locations noted in Contract Drawings to determine information required.

ITEM 25: Catch Basin Sediment Capture Device (Temporary Inlet Protection)

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Units installed complete in place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price each</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on quantity installed, tested and accepted</td>
</tr>
</tbody>
</table>

All labor, materials, tools and equipment necessary to furnish and install sedimentation sacks in accordance with the Contract Documents, routine maintenance and removal of sediment accumulation, regular replacement of sedimentation sacks as required or directed, cleaning catch basin sumps of any sediment allowed to enter the drainage system due to negligence of maintenance and all other incidentals necessary to furnish and install sediment sacks for all catch basins within and adjacent to the Project area.
ITEM 26: 15-inch PVC Drain Pipe

| Measurement | Along the horizontal projection of the centerline of the pipe; measured from inside face of manhole |
| Payment     | Unit price per linear foot |
| Schedule of Payment | Monthly based on quantity installed, tested and accepted. |

All labor, equipment, tools and materials to furnish and install HDPE drain pipe including traffic control signs, barricades, barrels and devices, clearing and grubbing, saw cutting, excavating, removing and disposing of excess material, shoring/bracing, dewatering, removing and disposing existing pipe, manholes and structures, maintaining existing flows, temporary connections to existing drain, pipe connections, coring, flow barriers, flap gates, testing, bypass pumping of stormwater flows, hauling and disposal, pipe bedding, blanket and backfill, compaction, video inspection and testing, crossing utilities, support of existing utilities as specified, loam and seed, tree trimming, removing and replacing signs, fences and mailboxes, removing and resetting granite curbing, replacement of bituminous and concrete curbing, removing, resetting and/or replacing guard rails, and all other incidentals necessary to furnish and install the pipe, complete in place, as specified, shown on the Drawings or required by field conditions.

ITEM 27: 4-Foot Precast Concrete Catch Basin Complete with Frame and Grate

| Measurement | Each installed, complete in place, as shown on the Drawings |
| Payment     | Unit price per each |
| Schedule of Payment | Monthly based on progress; 90 percent upon installation, 10 percent upon acceptance and cleanup. |

Includes but is not limited to all materials, equipment, services and for furnishing and installing drain catch basins complete, including brick and mortar leveling courses or concrete grade rings as specified, and asphalt collar over frame base. Contractor is responsible for setting catch basin frame and grate grades during temporary and final paving and all resetting, raising or lowering associated with roadway and laying final pavement shall be included in this item, pavement cutting, removal and disposal of pavement, clearing and grubbing, excavation, bedding, shoring/bracing and wood sheeting left in place, backfill and compaction, shoring and bracing; hooded outlet, supports, construction of inverts, concrete encasement, deep sumps, riser sections, flat or cone tops, providing frame and grate, double frame and grate, or curb inlet, hydraulic cement, coring, testing, landscape restoration, inlet structure, loam and seed, resetting of curbs; and all other appurtenances contained within the catch basin.
ITEM 28a: 4-Foot Diameter Precast Concrete Drain Manhole Complete with Frame and Cover

ITEM 28b: 4-Foot Diameter Precast Concrete Drain Manhole Complete with Frame and Cover and Extended Base

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Each installed, complete in place, as shown on the Drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per each</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress: 90 percent upon installation, 10 percent up on acceptance of manhole following receipt of a positive test results</td>
</tr>
</tbody>
</table>

Includes but is not limited to all materials, equipment, services and for furnishing and installing drain manholes complete, including brick and mortar leveling courses or concrete grade rings as specified, and asphalt collar over frame base. Contractor is responsible for setting manhole frame and cover grades during temporary and final paving and all resetting, raising or lowering associated with roadway and laying final pavement shall be included in this item, pavement cutting, removal and disposal of pavement, clearing and grubbing, excavation, bedding, shoring/bracing and wood sheeting left in place, backfill and compaction, shoring and bracing, supports, construction of inverts, concrete encasement, base section, flat or cone tops, frame and covers hydraulic cement, coring, manhole rungs, testing, landscape restoration, loam and seed, resetting of curbs; and all other appurtenances contained within the manhole required for removal and disposal of unmarked drains and replacement piping which, in the Engineer’s judgment could not be avoided by the Contractor or is shown to be replaced or installed new on the Drawings. Excludes storm drains removed by the Contractor for its convenience. Extended bases for anti-flotation shall be installed by the direction of the Engineer or Owner.
ITEM 29a: 5-Foot Square Precast Concrete Drain Manhole Complete with Frame and Cover
ITEM 29b: 5-Foot Square Precast Concrete Drain Manhole Complete with Frame and Cover and Extended Base

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Each installed, complete in place, as shown on the Drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per each</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress: 90 percent upon installation, 10 percent up on acceptance of manhole following receipt of a positive test results</td>
</tr>
</tbody>
</table>

Includes but is not limited to all materials, equipment, services and for furnishing and installing drain manholes complete, including brick and mortar leveling courses or concrete grade rings as specified, and asphalt collar over frame base. Contractor is responsible for setting manhole frame and cover grades during temporary and final paving and all resetting, raising or lowering associated with roadway and laying final pavement shall be included in this item, pavement cutting, removal and disposal of pavement, clearing and grubbing, excavation, bedding, shoring/bracing and wood sheeting left in place, backfill and compaction, shoring and bracing, supports, construction of inverts, concrete encasement, base section, flat or cone tops, frame and covers hydraulic cement, coring, manhole rungs, testing, landscape restoration, loam and seed, resetting of curbs; and all other appurtenances contained within the manhole required for removal and disposal of unmarked drains and replacement piping which, in the Engineer’s judgment could not be avoided by the Contractor or is shown to be replaced or installed new on the Drawings. Excludes storm drains removed by the Contractor for its convenience. Extended bases for anti-flotation shall be installed by the direction of the Engineer or Owner.

ITEM 30a: 4-Foot Diameter Precast Concrete Manhole Riser Section
ITEM 30b: 5-Foot Square Precast Concrete Manhole Riser Section

<table>
<thead>
<tr>
<th>Measurement</th>
<th>As measured from top of cone to the downstream invert of the pipe, complete in place, as shown on the Drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>Unit price per vertical foot</td>
</tr>
<tr>
<td>Schedule of Payment</td>
<td>Monthly based on progress: 90 percent upon installation, 10 percent up on acceptance of manhole following receipt of a positive test results</td>
</tr>
</tbody>
</table>

Includes but is not limited to all labor, tools, equipment, dust controls, removal and disposal of existing sewer structures, furnishing and installing precast concrete manhole riser and top sections of varying height; pavement cutting, removal and disposal of pavement, clearing and grubbing, excavation, bedding, shoring/bracing and wood sheeting left in place, backfill and compaction, shoring and bracing; interior drop connections, connection to existing sewer or drain with new pipe if applicable, supports, stainless steel pipe supports and anchors, damp proofing, flexible boots, butyl sealants, construction of inverts, concrete encasement, link seals, hydraulic cement, coring, manhole rungs, testing, bricking and bulkheading of existing pipe where noted on Drawings, landscape restoration, loam and seed, resetting of curbs; and all other appurtenances contained within the manhole riser and top sections as shown on the Drawings. For trenches in excess of 20-feet, contractor is responsible for providing geotechnical engineer certified trench shoring per OSHA. Excludes manhole base in Items 28 and 29.
<table>
<thead>
<tr>
<th>ITEM 31: Tide Gate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
<td>Actual flap gate furnished and installed</td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>Unit price per each</td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
<td>Completion of work – 100%</td>
</tr>
<tr>
<td>Includes all labor, services, material and equipment associated with furnishing and installing the flap gate including; mounting flange and associated hardware for end of pipe mounting of the gate; dewatering and other required work</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ITEM 32: Assabet Road Landscaping</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
<td>Portion of the Work completed and accepted</td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>Percent of lump sum price based on Schedule of Values</td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
<td>Monthly based on progress</td>
</tr>
<tr>
<td>Includes but is not limited to all labor, tools, material and equipment required for furnishing and installing all landscaping impacted during construction, removal and disposal of existing trees and stumps as shown on the Drawings, cutting of trees as shown on the Drawings, removal and replacement of existing ground cover plants, installation of loam and seed within Assabet Road cross-country Work. Includes preparation of areas for seeding and plant materials and all other Work incidental to the satisfactory completion of the Work</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ITEM 33: Miscellaneous Reinforced Concrete</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
<td>Complete in place based on batch plant slips</td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>Unit price per cubic yard</td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
<td>Monthly based on quantity installed</td>
</tr>
<tr>
<td>Includes but is not limited to all labor, tools, material and equipment required for furnishing and installing miscellaneous concrete, the inspection and removal of the existing concrete cap, providing and placing concrete and reinforcement (proportional to specified) as specified in Section 03 30 00; specifically includes additional concrete, length width, and thickness required to match existing conditions</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ITEM 34: Controlled Density Fill</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement</strong></td>
<td>As measured in place prior to excavation within pat limits shown on Drawings</td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>Unit price per cubic yard</td>
</tr>
<tr>
<td><strong>Schedule of Payment</strong></td>
<td>Monthly based on quantity installed</td>
</tr>
<tr>
<td>All labor, tools, equipment, materials, excavation, placement and testing of controlled density fill material at locations shown on the Drawings or required by Section 31 00 00. Includes any brickling and bulkheading of existing pipes as shown on the Drawings. Controlled Density Fill material shall be as defined in Section 31 00 00</td>
<td></td>
</tr>
</tbody>
</table>
ITEM 35: Rodent Control

Measurement: Portion of the Work completed and accepted

Payment: Percent of lump sum price based on Schedule of Values

Schedule of Payment: 50% upon acceptance of the Rodent Control Plan and completed Property Owner Permission Forms – 50% upon completion of Final Service / Post Construction activities

Material and equipment, and services inherent to the Work for control and preventing spread of rodents as specified in Section 01 57 17.

ITEM 36: Owner’s Contingency Allowance for Materials Escalation Price Adjustment (Statutory)

Measurement: Portion of Owner’s contingency allowance amount authorized per Paragraph 11.02 of the General Conditions and Supplementary Conditions

Payment: Percent of not to exceed contingency amount authorized by Change Order

Schedule of Payment: Monthly as authorized by Change Order

For price adjustments for materials escalation of Liquid Asphalt, Diesel Fuel, Gasoline, and Portland Cement per statutory requirements in accordance with Section 00 73 73. Contractor shall not receive payment for any unused portion of the contingency allowance.

ITEM 37: Owner’s Contingency Allowance for Contaminated Soil and Groundwater

Measurement: Portion contingency allowance amount authorized per Paragraph 11.02 of the General Conditions and Supplementary Conditions

Payment: Percent of not to exceed contingency amount authorized by Change Order

Schedule of Payment: Monthly based on progress and authorized by Change Order

For labor, equipment, tools, and materials necessary to excavate, stockpile, maintain stockpiles, load and transport contaminated soil, and to store, treat and discharge contaminated groundwater as specified in Section 02 61 05 in the event contamination is encountered during construction. Includes laboratory characterization of contaminated soil and groundwater. Contractor shall not receive payment for any unused portion of the contingency allowance for Contaminated Soil and Groundwater.

PART 2 - PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION
SECTION 01 43 05
QUALIFICATION REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY
A. Meet or provide capability to meet the criteria specified below and in individual Specification sections in connection with various portions of the Work of the Contract Documents.

1.02 GENERAL REQUIREMENTS
A. Contractor shall have been regularly and actively engaged in similar Work as described in the Contract Documents, operating under the same business name and business organization structure, for the last 5 years on at least 5 projects.

B. Contractor shall have successfully completed at least 5 projects involving construction of similar facilities in the same state as the Project covered by the Contract Documents.

C. Contractor shall have:
   1. have a full-time on-Site project manager in responsible charge of the Work with at least 10 years’ experience as project manager on comparable projects.

D. Contractor or its Subcontractors shall have successfully completed:
   1. at least 5 projects that included a Cured-In-Place-Piping of at least 5,000 linear feet within the past 5 years.
   2. at least 3 projects that included bypass pumping of at least 2 million gallons per day (mgd) installed within the past 5 years;
   3. at least 10 projects that included either a combination of stormwater, water and sewerage utilities within public streets within the last 5 years; and
   4. at least 5 projects that included pavement and street repair within public streets within the last 5 years

1.03 SPECIAL REQUIREMENTS
A. Meet or provide capability to meet the following for Work identified.
1. Sewage and stormwater bypass pumping: provided, operated, and maintained by a firm that has been regularly engaged in providing bypass pumping for the last 10 years and having at least 10 successful projects.

   a. The firm shall have successfully completed at least 10 projects within the last 5 years that involved equipment similar to that proposed for the Project with bypass pumping capacities of not less than 2 mgd.

1.04 STATUTORY

   A. Any Work involving the removal, containment, or encapsulation of Asbestos or material containing Asbestos may only be performed by a licensed contractor in accordance with the provisions of MGL Chapter 149, Sections 6A-6E, applicable Laws and Regulations, and requirements as may be included in the Specifications and Drawings.

   B. Sheet metal work must be performed by a contractor licensed in accordance with 271 CMR 1.00, et seq. governing licensing, permitting, and sheet metal work in Massachusetts.

END OF SECTION
SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies temporary facilities and controls for execution of the Work put into place for use only during the period of construction, that will be removed when no longer required for construction operations. This Section applies to all Specifications and Drawings and provisions of this Section may be supplemented in other sections of Division 01.

B. Certain provisions required by Laws and Regulations may be referenced. Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations.

C. Section Includes

1.02 TEMPORARY CONSTRUCTION FACILITIES
   - Barriers
   - Protection of Work
   - Security
   - Safety Facilities
   - Access Roads
   - Parking
   - Field Offices
   - Staging Area
   - Project Identification
   - Progress Cleaning and Waste Removal

1.03 TEMPORARY UTILITIES

1.04 TEMPORARY CONTROLS
   - Pest Control
   - Dust Control
   - Water Control and Dewatering
   - Erosion and Sediment Control
   - Noise Control
   - Pollution Control
   - Traffic Regulation

1.05 REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS
1.02 TEMPORARY CONSTRUCTION FACILITIES

A. Barriers

1. Comply with the requirements of Paragraph 6.11. of the Standard General Conditions and Supplementary Conditions, if any.

2. Furnish barriers to prevent unauthorized entry to and clear delineation of construction areas, to allow for Owner's use of Site, and to protect existing facilities and adjacent properties from damage from construction operations as recommended by OSHA and as otherwise required for the protection of life and property during construction.

3. Construct barricades and protective facilities in accordance with local and state regulations. Furnish and install signs, lights, reflectors, and such protection facilities as may be required.


5. Provide protection for plant life designated to remain. Replace damaged plant life.

6. Protect non owned vehicular traffic, stored materials, Site and structures from damage.

7. If required, furnish commercial grade, minimum 8 foot high chain link fence around construction Site. Equip with vehicular gates with locks.

B. Protection of Work

1. Protect Work during working and non-working hours.

2. Provide special protection where specified in Specifications or Drawings and in accordance with manufacturer recommendations.

3. Furnish temporary and removable protection for installed equipment and material. Control activity in immediate Work area to minimize damage.

4. Protect exterior areas of Work from damage. Prohibit traffic from landscaped areas.
C. Security
   1. Provide protection to stored items, the Work and Owner's operations from unauthorized entry, vandalism, or theft, and against fire, storms and other losses during working and non-working hours.
   2. Coordinate with Owner's security program.

D. Safety Facilities
   1. Provide first aid and other safety facilities required by Laws and Regulations during working and non-working hours.

E. Access Roads
   1. Construct and maintain temporary roads accessing public thoroughfares to serve construction area. Control dust and water.
   2. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.
   3. Provide for emergency access and maintain throughout the Work Site.

F. Parking: off-Site at a location determined by Contractor.
   1. Do not allow construction vehicle parking on existing pavement or sidewalks.

G. Field Offices: Not required for the Project.

H. Staging Area: Owner is not providing a location for staging area. Determine and secure a location for staging area.

I. Project Identification: not required for the Project.

J. Progress Cleaning and Waste Removal
   1. Comply with the requirements of Paragraph 6.11. B and C of the Standard General Conditions and Supplementary Conditions, if any.
   2. Maintain areas free of waste materials, debris, and rubbish and maintain the Site in a clean and orderly condition.
   3. Remove debris and rubbish from spaces and other closed or remote spaces before enclosing the space.
4. Collect and remove waste materials, debris, and rubbish from Site at least weekly and legally dispose off-Site.

1.03 TEMPORARY UTILITIES

A. Dust Control: Execute Work by method to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere. Utilize the application of sprinkled water to reduce the emission of air-borne soil particulates from the Project Site.

B. Furnish and maintain required sanitary facilities and enclosures. Do not use existing facilities.

C. Temporary Water service: Contractor shall coordinate to obtain temporary water meter from Quincy Department of Public Works, Water Division and pay deposit for Contractor to use City fire hydrants. Deposit is refundable upon return of water meter. All hydrants to be used shall be coordinated and approved by the Water Division prior to opening fire hydrant.

D. Furnish lighting for construction operations. Furnish lighting for exterior staging and storage areas and for security purposes. Maintain lighting and provide routine repairs.

E. Furnish heat devices and heat and cooling devices as required to maintain specified conditions for construction operations.

F. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

G. Fire Protection

1. Provide temporary fire protection equipment and services during construction per NFPA and local fire code and regulations, and fire marshal’s requirements.

2. Use Work procedures that minimize fire hazards to the extent practicable and materials that are fire resistant where possible. Collect and remove combustible debris and waste materials from the Site each day. Store fuels, solvents, and other volatile or flammable materials away from the construction and storage areas in well-marked, safe containers in accordance with Laws and Regulations.

1.04 TEMPORARY CONTROLS

A. Pest Control: Provide methods, means, and facilities to control and prevent spread of pests during construction operations. Comply with requirements provided in section 01 57 17.
B. Dust Control: Execute Work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere. Utilize the application of sprinkled water to reduce the emission of air-borne soil particulates from the Project Site.

C. Water Control and Dewatering: as specified below.

1. Grade Site to drain away from excavations to approved drainage collection facilities. Ensure collected surface drainage water meets permitted criteria for sediment content prior to discharge.

2. Maintain excavations free of water. Furnish, operate and maintain pumping equipment.

3. Dewater excavations and legally dispose of water in a manner that will not cause injury to public and private property.

4. Protect Site from puddling, ponding or running water.

5. Obtain necessary regulatory approvals for the disposal of dewatering flows, including, among others, approval by the Environmental Protection Agency under the National Pollutant Discharge Elimination System (NPDES) program for construction dewatering activities. Submit the completed and approved construction dewatering permit to the Engineer immediately upon receipt.

6. Design, furnish, install, maintain, operate and remove temporary dewatering systems as required to lower and control water levels and hydrostatic pressures in excavations during construction; legally dispose of pumped water; construct, maintain, observe and, except where indicated or required to remain in place, remove dewatering equipment and system at the completion of construction.

   a. Dewatering may include: lowering the water table, intercepting and collecting seepage which may penetrate the support of excavation, slopes or bottom of the excavation; increasing the stability of excavated slopes; preventing loss of material from beneath the slopes or bottom of the excavation; reducing lateral loads on sheeting and bracing; limiting horizontal displacements and stresses in support of excavation to tolerable and allowable levels; preventing displacements of existing structures, utilities, pavements, and sidewalks; improving the excavation and hauling characteristics of sandy soil; preventing rupture or heaving of the bottom of any excavation; and disposing of pumped water.
b. Normal dewatering is defined as using conventional pumps installed in open excavations, ditches, or sumps to control water and allow for installation of the pipe in a dry trench.

c. Special dewatering is defined as installing wellpoints, deep wells, or educator and ejector systems to control groundwater and hydrostatic pressures to allow for installation of the work. Special dewatering includes design of the dewatering system by a Professional Engineer currently registered in the state where the Project is located in good standing, and conduction additional boring or subsurface explorations deemed necessary by the Contractor, and approved by the engineer, to support design.

1) For Special Dewatering, retain the services of a Professional Engineer currently registered in the state where the Project is located in good standing, experienced in design of dewatering system, to independently evaluate the boring logs and other soils information available to determine those areas that will require special dewatering techniques and to design the required system. If, in the opinion of the Contractor or Contractor’s Dewatering Professional Engineer, additional boring are needed to design special dewatering systems or determine areas where special dewatering techniques will be required, the Contractor shall retain and pay for the services of a boring subcontractor. Contractor’s Dewatering Professional Engineer shall provide sufficient on-Site inspection and supervision to assure that the dewatering is carried out in accordance with the approved design.

d. Design a dewatering system capable of:

1) Effectively reducing the hydrostatic pressure and lowering the groundwater levels to a minimum of 2 feet below excavation subgrade in the existing fills and any organic peat, and below the excavation subgrade in the existing organic silts/clays unless otherwise directed by the Engineer, so that all excavation bottoms are firm and dry;

2) Maintaining a dry and stable subgrade until the structures, pipes, appurtenances, and drainage pipe and structure bedding to be built therein have been completed to the extent that structures, pipes, and appurtenances will not be floated or otherwise damaged.

3) Lowering of the groundwater level within the work area without adversely affecting existing structures, utilities, pavements, sidewalks or wells outside of the Work area.
e. Submit the following.

1) Plans and description of the Normal and/or Special Dewatering systems, including the number, location and depth of wells, wellpoints or sumps, designs of filters to prevent pumping of fine soil, method and location for filtering, sedimentation tanks and legal disposal of pumped water, and flow capacity of proposed system, accounting for groundwater level relative to tide cycles if applicable.

2) Design calculations, description and complete layout drawings, stamped and signed by Contractor’s Dewatering Professional Engineer, at least two weeks prior to scheduled installation of Special Dewatering system.

3) Locations of observation wells

4) Records of pump operation and groundwater elevations

7. Dewatering Operations and Procedures

a. Provide electrically operated dewatering equipment, powered with dedicated generators adequately sized to operate the dewatering system and capable of running on commercial power. Provide standby equipment independent of commercial power and provide for dewatering within 24 hours upon primary pump or power failure. No work shall be performed by the Contractor below the pre-construction groundwater level during dewatering system failure.

b. Provide suitable temporary pipes, flumes or channels for water that may flow along or across the Site of the Work.

c. Provide dewatering equipment with noise attenuation systems capable of meeting the governing noise regulation requirements.

d. Encapsulate the suction end of the pump with crushed stone, filter fabric, and other materials to minimize the amount of silt discharged to the amount allowed by the construction dewatering permit.

e. Do not operate equipment on paved surfaces to prevent damaging these surfaces.

f. Locate dewatering facilities to prevent interference with utilities and construction work to be done by others.

g. For dewatering operations with relatively minor flows, direct pump discharges using filtration bag or system per Erosion and Sediment Control below, or pump into hay bale sedimentation traps lined with filter fabric. Filter water through the hay bales and filter fabric prior to seepage into storm drainage or any natural water course.
h. For dewatering operations with larger flows, provide pump discharges into a steel dewatering/sedimentation basin. Use steel baffle plates to slow water velocities, to increase the contact time, and allow adequate settlement of sediment prior to discharge into waterways, storm drainage or discharge point allowed by the construction dewatering permit.

i. Utilize silt sacks in catch basins when excess silt is suspended in the discharge water per Erosion and Sediment Control below.

j. If siltation basin is used, size to effectively filter for the volume and discharge rate of water anticipated without overflow.

k. Provide treatment necessary to prevent discharge of silty and/or contaminated ground water caused by the Contractor’s operations, or any contaminated ground water that may pass from excavated surfaces and/or through the excavation support system selected by the Contractor.

l. Dispose of water pumped or drained from the Work in accordance with permit requirements and in a manner to prevent undue interference with other work or damage to adjacent properties, pavements and other surfaces, buildings, structures and utilities.

m. Obtain necessary regulatory approvals for the disposal of dewatering flows, including, among others, approval by the Environmental Protection Agency under the National Pollutant Discharge Elimination System (NPDES) program for construction dewatering activities. Submit the completed and approved construction dewatering permit to the Engineer immediately upon receipt.

8. Special Dewatering

a. Use Special Dewatering as necessary if Normal Dewatering methods are inadequate to ensure dry and stable excavation subgrade conditions.

b. Special Dewatering techniques may consist of one- or two-stage wellpoint systems, deep wells, or eductor and ejector type systems. Design with suitable screens to prevent pumping of fines and to address specified Work Site conditions.

c. In areas requiring special dewatering, lower the groundwater level to a minimum of 2 feet below the existing fill and/or organic peat subgrades or to the excavation subgrade for organic silt/clay subgrades prior to any installation and maintain that groundwater level until the excavation has been backfilled and provide monitoring by Contractor’s Dewatering Professional Engineer to ensure conformance with the requirements herein.
d. Furnish materials and install at least two observation wells at each excavation area. The location of the wells shall be proposed in the field by the Contractor’s Dewatering Professional Engineer and reviewed and approved by the Engineer.

9. All water control and dewatering references to excavation Work shall also apply to all CIPP lining activities.

D. Erosion and Sediment Control: as specified below.

1. Comply with:
   a. MassDEP requirements
   b. MassDOT requirements within State rights of way
   c. Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, prepared by the MassDEP

2. Plan and execute construction using methods to control surface drainage from cuts and fills, from borrow and waste disposal areas and prevent erosion and sedimentation.

3. Submit erosion and sediment control plan to Engineer prior to the start of construction.

4. Install erosion and sediment controls as shown on the Drawings and as required by Laws and Regulations. Install additional erosion and sedimentation control measures as necessary to stabilize the Site. Coordinate temporary erosion controls with permanent erosion controls to the extent practical. Provide and maintain devices to control erosion, siltation, and sedimentation that occur during construction operations. Undertake reasonable precautions and measures to avoid erosion of soil and to prevent silting of drainage ditches, storm sewers, rivers, streams, and lakes.

5. Employ pollution prevention measures, erosion and sedimentation control before, during, and after soils are exposed. Implement measures prior to soil disturbance or soil storage to the extent possible to ensure that such measures are in place before activity occurs and employ additional measures as the Work progresses. Implement and maintain as necessary until the Site is permanently stabilized.

6. Perform inspections of disturbed soil areas, material storage areas exposed to precipitation, and erosion control measures with Engineer a minimum of once every 14 days and also within 24 hours after any storm event greater than 0.5 inches of rainfall. Immediately correct deficiencies in the erosion control measures identified or indicated by failures or erosion by
implementing additional measures or different techniques to correct and prevent subsequent erosion at no additional cost to Owner.

7. In the event that silt or debris breaches erosion control, immediately remove and clean silt or debris from drainage ditches and storm sewers and revise erosion control measures as required by the Conservation Commission or the Engineer. Should silt or debris breach erosion controls and reach rivers, streams or lakes, immediately notify local, state or Federal representatives as required and implement required remediation methods at no additional cost to Owner.

8. Limit duration of the exposure of soils on embankments, excavations, and graded areas to a minimum.

9. Provide temporary measures such as berms, dikes and drains to prevent water flow. Install erosion control measures in any ditch, swale or channel before water is allowed to flow in the waterway. Handle water pumped from trenches to minimize discharge of silty water to the maximum extent practicable.

10. Stabilize storm drain outfalls before the discharge points become operational. Install inlet protection immediately upon construction of culverts.

11. Stabilize disturbed areas with temporary and permanent erosion control practices as soon as practicable, but no more than 14 days after construction activity on a particular portion of the Site has temporarily or permanently ceased. Exceptions to this time requirement include: a) where construction activities will resume on the particular portion of the Site within 21 days; and b) where snow cover delays initiation of stabilization measures.

12. Place stockpiled topsoil on the Site away from natural drainages, in piles with side slopes of 50 percent to 70 percent. Install siltation fence around the base of the pile to prevent eroding soil from washing into drainages. Cover topsoil piles which are to remain for a period of 21 days or more with temporary seed and mulch immediately following stockpiling.

13. Conduct pavement sweeping to remove sediment and soil debris accumulation on pavement resulting from construction activity.

E. Noise Control

1. Provide methods, means, and facilities to minimize noise from construction operations.

2. Provide noise attenuation systems capable of meeting the federal and state Department of Environmental Protection Air Quality Control Regulations.
3. Construct sound enclosures or utilize other noise reduction techniques if the equipment does not meet the noise level requirements.

F. Pollution Control: as specified below.

1. Submit Emergency Response Plan and employ additional protective measures to prevent harm to wetland, flood and buffer zone resource areas as shown on the Drawings.

2. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

   a. Water Pollution Control
      1) Ensure that sediment, debris, petroleum, chemicals, or other contaminants will not enter existing drainage facilities and channels. Use construction methods that will prevent entrance of pollutants and wastes into existing streams, rivers, lakes, and flowing and dry watercourses.

      2) Obtain legal disposal sites and dispose of pollutants and wastes in a legal manner.

      3) Respond immediately to emergencies as directed when water quality of existing streams, rivers, lakes and flowing and dry watercourses is threatened. Take corrective action to remove or contain pollutants until a permanent solution is determined.

   b. Air Pollution Control
      1) Equipment and vehicles that exhibit excessive exhausts emissions due to poor engine adjustments or inefficient operation will not be permitted to operate until corrective repairs or adjustments are made.

      2) Burning of materials from clearing or grubbing operations, combustible construction materials, and rubbish will not be allowed.

G. Traffic Regulation: as specified below.

1. Submit traffic control plans and coordinate with Owner and local agencies. Plans shall be approved by Quincy Traffic Management Engineer prior to completing work. Submit plan for traffic control to Owner for review 14 days in advance of any Work within public right-of-way, street closure or detour.
2. Provide and maintain traffic control and maintenance devices in accordance with Part 6, Temporary Traffic Control, of the "Manual on Uniform Traffic Control Devices for Streets and Highways", published by the U.S. Department of Transportation, Federal Highway Administration and other applicable codes and standards as specified. Operate devices 24 hours per day as required.


   b. Comply with relevant provisions of Section 7.00 of the MassDOT Standard Specifications and Supplements, and the following.

      1) The intent of posting police details is to ensure public safety and protection of property through appropriate traffic control. Police personnel are not to be employed as watchmen to protect the Contractor's equipment and materials.

      2) All uniformed traffic police personnel required for traffic control for construction shall be authorized by Owner’s Safety Officer and/or the Engineer.

      3) Payment will be made by Owner for uniformed traffic police only.

      4) Submit a forecast weekly traffic police detail schedule, at least 72 hours prior to the start of the Work describing: the nature and location of the Work, the number of police personnel, the estimated number of police hours required for each location, and justification for each uniformed officer being requested. Payment to the police for work under this Contract shall be in accordance with the Massachusetts General Laws, Chapter 149, Section 34B.

      5) If uniformed police have been arranged to work, and weather or some other situation prohibits the Work, notify the Police Department Detail before 5:30 a.m. on the day of intended Work to cancel the work order. Unless the work order is canceled in time, the Contractor shall be charged at the rate of minimum four hours for each officer included in the detail and shall be fully responsible for payment of all charges thus incurred.
3. Provide for access by emergency vehicles, such as police, fire, and disaster units at all times. Contractor shall be liable for damages resulting from failure to provide such access.

4. During construction hours, traffic flow must be controlled by uniformed traffic police officers or other traffic controllers allowed by Laws and Regulations. The services of traffic controllers shall in no way relieve the Contractor of its responsibilities under the Contract.

5. Maintain minimum of one moving lane on roadways at all times.

   a. Where detours are permitted, provide necessary barricades, flashers, flashing arrows and signs in accordance with referenced Manuals and Laws and Regulations.

   b. Provide gravel borrow and bituminous concrete to maintain temporary passable travel lane ramps, temporary bridging, steel plates, temporary pavement, wood-framed walkways, caution, safety and other necessary signs directing the pedestrian and vehicular traffic towards unblocked and safe areas.

   c. Except when road closure and road blockage permits are obtained, maintain two lanes of traffic (one in each direction) on all City roadways throughout construction and during non-working hours to the maximum extent possible.

   d. Lane closures will not be permitted from 5:00 am to 9:00 am and 2:00 pm to 7:00 pm except when road closure and road blockage permits are obtained.

6. Provide safe access/egress to businesses and abutting property owners within the Project area. In areas where the construction activity is in progress, provide directional signs in front of businesses indicating "OPEN FOR BUSINESS" or similar for guidance of customers.

   a. Certain construction operations such as utility work and roadway/sidewalk reconstruction may restrict access/egress on some roads and to businesses and abutting property owners. Under these circumstances, schedule operations during off-peak hours or late evenings with Owner approval so that a particular work activity can be completed in the shortest possible time.

   b. Provide 48 hours notice to businesses and abutting property owners when access/egress will not be available or restrictions will exist.

7. Exercise particular care to establish and maintain such methods and procedures that will not create hazards.

   a. Remove or properly cover traffic control, safety devices and/or signs having messages that are irrelevant to normal traffic conditions at
the end of each Work period. Keep signs clean at all times and provide that legends are distinctive and unmarred.

b. Place excavated material and construction equipment so that vehicular and pedestrian traffic is maintained at all times unless road closure permit is obtained. If the Contractor's operations cause traffic hazards, implement appropriate safety measures immediately.

c. In areas of high pedestrian and vehicular traffic volume, remove waste materials and construction equipment from the Work Site on a daily basis. Do not park construction equipment overnight on the Site or the adjacent roads unless permitted by Owner.

d. Provide night watchmen where special hazards exist.

8. Post signage clearly stating that any vehicle impeding the progress of construction will be towed at the vehicle owner’s expense. Towing charges incurred by Owner for Contractor’s failure to post such signs will be borne by the Contractor.

1.05 REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, and facilities before Final Application for Payment inspection.

B. Remove temporary underground installations and grade Site as indicated. Clean and repair damage caused by installation or use of temporary utilities, facilities, and controls.

C. Restore existing facilities and areas used during construction to original condition. Restore permanent facilities used during construction to specified condition.

END OF SECTION
SECTION 01 51 40
TEMPORARY SEWAGE BYPASS

PART 1 – GENERAL

1.01 SUMMARY

A. Provide, operate, and maintain a functional bypass pumping system capable of bypassing each area of Work without leakage or spillage of sewage upon the ground or streets or back up of sewage into any building or onto any property for the duration of the Project.

B. Design Requirements:
   1. Provide a manhole to manhole bypass pumping plan for each sewer segment to be lined as shown on the Drawings designed by a Professional Engineer registered in the state where Project is located.
   2. Provide temporary bypass pumping adequate to handle dry weather and wet weather flows and to protect against surcharging of the existing system upstream of the Work area.
   3. Bypass pumping system shall operate continuously for the entire duration of the lining process including the pre-construction CCTV inspection of the existing sewer, when the new CIPP liner is installed & cured in place, post-construction CCTV inspection, and system brought into continuous service.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: in accordance with Division 01 General Requirements.

1.04 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

1. Bypass pumping plan for each bypass location, stamped by a Professional Engineer registered in the state in which the Project is located, prior to implementation and prior to the start of construction

2. Minimum contents of sewage bypass pumping plan:
a. Standard Operating Procedure: Describe the normal sequence of events to be followed while pumping and setting up and breaking down pumping equipment. Plan must address strategies and safeguards to ensure that public safety and environmental health is maintained at all times, the possibility of property damage and wetlands impacts, and overall level of inconvenience is minimized. Plan shall include a bypass routing diagram for each Work zone, estimates of anticipated bypass flows, an emergency response plan, and a list of the equipment that will be used.

b. Layout drawing showing locations of equipment on Site and how access to the Site is maintained

c. Equipment lists

d. Pump curves and motor and engine data demonstrating equipment is sufficiently sized to meet all specified and anticipated operating conditions

e. Notification form

f. Emergency Response Plan: Describe the intended means of handling the following situations, including response and clean-up measures, and emergency backup power or backup fuel storage. List equipment to be used and where it will be stored.

- Break or failure of bypass line (pipe)
- Failure of bypass pump
- Overflow
- Back up into dwelling or onto private property
- Failure of bypass pumping system to accommodate flow

3. Shop Drawings for equipment and materials including, but not limited to:

- Pumps
- Engines and/or Motors
- Sound Enclosures
- Pipe or hose
- Joints/couplings
- Plugs and/or bladders

4. Statement of Qualifications demonstrating experience of the firm in accordance with Article 1.04 and listing a minimum of 10 successful bypass pumping projects conducted in the last five years. Provide contact information for no fewer than 5 of these projects which:

- Have been completed in the last 5 years,
- Involved similar equipment to that proposed for this Project, and
Had duty capacities of not less than 2 mgd.

1.05 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Qualifications: per Division 01 General Requirements and as follows.

1. Bypass pumping system shall be provided, operated, and maintained by a firm which has been regularly engaged in providing bypass pumping for a minimum of 10 years.

1.06 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

B. The Project area consists of active sanitary sewers; therefore, flows and flow data are variable depending on location and conditions. Visit the Work locations prior to start of Work to visually inspect flow conditions as necessary.

C. Portions of the Project are subjected to infiltration and inflow. Account for infiltration and inflow volume in the planning and conduct of the Work.

PART 2 – PRODUCTS

2.01 BYPASS PUMPING SYSTEM

A. Godwin Pumps (a Xylem brand)

B. Griffin Dewatering

C. Rain for Rent

D. Or equal

2.02 PUMPS, PIPES & FITTINGS

A. Provide pumps suitable for use with raw, unscreened sewage and capable of conveying the volume of flow anticipated with a sufficient margin of safety. Provide for 100 percent redundancy (2 pumps the Site for every 1 pump required) if flow cannot be returned to the sewer at any time if pumping system failure occurs.

1. Redundant pumping: suction and discharge piping with quick connect couplings to facilitate change out of pumps.

A. Pump Connections: quick connect couplings to facilitate change out of pumps
B. Pipe: carbon steel, fused high-density polyethylene pipe, or equal.
C. Joints: Victaulic or approved equal.
D. Fittings: quick-connect type.
E. Lay-flat hose: extra heavy duty, highly abrasion resistant, fitted with gasketed couplings, and rated for 150 percent of working pressure.
F. Provide sound attenuation enclosure for engines and pumps in accordance with state and local noise requirements.
G. Control: automatic level control for pumps. Redundant pump shall start automatically if one duty pump fails.
H. Autodialers: provide autodialers with capacity to call up to 3 different phone numbers upon low fuel and pump failure.

PART 3 – EXECUTION

3.01 GENERAL

A. Maintain flows under all flow conditions. Adequately handle flows, even instantaneous peak flows, without damage or overflow, providing for potential large instantaneous flow contributors connected to the sewer under repair.
B. Allow for passage of traffic and protect bypass piping at driveway and street crossings.
C. Coordinate bypassing with low-flow times to the extent possible. Prevent overflows or backups.
D. If Contractor determines bypass pumping is not required at a location due to lack of flow or determines that a Work item does not require bypass pumping to be performed, and Engineer agrees, protect flows from construction debris and ensure no debris enters the sewer system.
E. Repair damage to existing pipes and structures to the satisfaction of the Engineer.
F. Prevent sanitary flow from discharging into salt or fresh water body by means of overflow, bypass pumping, or other methods.
G. Restore normal service to entire system at end of normal working hours each day.

3.02 SHUTDOWN

A. Deliver approved notification form by hand to each residence and business whose service will be disrupted a minimum of 48 hours in advance of the intended
shutdown (e.g. prior to disconnecting a service on Tuesday, provide notification on the previous Friday.)

1. Notification less than 48 hours is unacceptable. Costs associated with delays caused by the Contractor’s failure to meet this requirement shall be considered delays within the Contractor’s control and at Contractor’s expense.

B. Leave a notice at the primary entrances to each housing unit and business unit in the Project area (e.g. provide 2 notices at duplexes). Leave notices in a conspicuous location reasonably free from damage. Do not use mailboxes.

3.03 TEMPORARY POWER
A. Provide fuel and power to run bypass pumps at no additional cost to Owner.

3.04 PIPING
A. Provide that piping system has adequate water tightness. Perform a leakage test with clean water at Engineer’s direction, at no additional cost to Owner.
B. Lay temporary piping along the general lines of streets or roadways in a manner that causes the minimum amount of disruption and is least likely to be damaged. Use temporary bituminous pavement, cold patch, or other approved material to form a ramp on each side of the pipe or depress the pipe at driveways to allow for property owners to drive over the temporary pipe as directed by the Engineer.

3.05 OPERATION AND MAINTENANCE
A. Continuously monitor bypassing operations regardless of duration or timing of bypassing. Unattended bypass pumping is prohibited.
B. Arrange for bypass pumping past working hours with Engineer and provide adequate sound attenuation and an attendant.
C. Do not allow leaks in bypass pumping systems. Clean and disinfect leaks at no additional cost to Owner.

END OF SECTION
SECTION 01 51 42

TEMPORARY STORMWATER DRAINAGE BYPASS

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. Furnish, install and maintain temporary measures for storm drain bypass, including but not limited to, temporary bypass piping, plugs, and pumping.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: in accordance with Division 01 General Requirements.

1.04 SUBMITTALS

A. Submit in accordance with the Division 01 General Requirements.

B. Bypass Pumping Plan for each bypass location to Engineer and Owner 2 weeks prior to bypassing stamped by a professional engineer registered in the state where Project is located.

C. Bypass Pumping Plan must contain at a minimum:

1. Standard Operating Procedure: Describe the normal sequence of events to be followed while setting up, pumping, and breaking down pumping equipment. Plan must address strategies and safeguards to ensure that public safety and environmental health is constantly maintained, the possibility of property damage and wetlands impacts, and overall level of inconvenience is minimized.

2. A bypass routing diagram including pump location for each Work zone,

3. Calculations: Estimates of anticipated peak flows, pump rates, pump curves, and other relevant design.

4. List of the equipment that will be used during normal pumping operation.

5. Emergency Response Plan: Describe the intended means of handling the following situations, include both response and clean-up measures. List equipment to be used and where it will be stored in case of emergency:
a. Break or failure of bypass line (pipe)
b. Failure of bypass pump
c. Overflow
d. Back up into dwelling or onto private property
e. Failure of bypass pumping system to accommodate flow.

D. Shop Drawings for equipment and materials including, but not limited to:

1. Pumps
2. Engines and/or Motors
3. Sound Enclosures
4. Pipe or hose
5. Joints/couplings
6. Plugs and/or bladders

1.05 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 BYPASS PUMPING SYSTEM

A. Godwin Pumps (a Xylem brand)
B. Griffin Dewatering
C. Rain for Rent
D. Or equal

2.02 PUMPS, PIPES & FITTINGS

A. Pump: suitable for usage with storm drainage and capable of conveying the volume of flow anticipated with a sufficient margin of safety. Provide for 100 percent redundancy (two pumps shall be provided at the Site for every one pump required) if flow cannot be returned to the storm drain at any time if pumping system failure occurs. Redundant pump: include suction and discharge piping and quick connect couplings to facilitate change out of pumps.

B. Pipe and fittings: constructed of carbon steel, or fused high-density polyethylene pipe or approved equal. Fittings shall be quick-disconnect type.
C. Lay flat hose: extra heavy duty, highly abrasion resistant and fitted with gasketed couplings. Hose shall be rated for 150 percent of working pressure.

D. Provide a temporary enclosure for the bypass pumping system for sound attenuation operating outside of regular working hours meeting state and local Laws and Regulations for noise requirements.

E. Control: automatic level control for pumps. Redundant pump shall start automatically if one duty pump fails.

F. Autodialers: provide autodialers with capacity to call up to 3 different phone numbers upon low fuel and pump failure.

PART 3 – EXECUTION

3.01 GENERAL

A. Adequately bypass flow around the affected section of the Work, even instantaneous peak flows, without damage or overflow. Be aware of potential large instantaneous flow contributors connected to the storm drain under repair.

B. Allow for passage of traffic. Protect bypass piping at driveway and street crossings.

C. Maintain roadway drainage system during precipitation events to prevent flooding of public right-of-way and adjacent properties.

   1. Protect against surcharging of the existing system upstream during dry weather and wet weather flows.

   2. Protect Site from flooding. Provide measures to adequately isolate the Site from backflow of adjacent waterways to provide dry working conditions.

D. Continuously monitor bypass operations regardless of duration or timing of bypassing.

E. Coordinate bypassing with low-flow times, to the extent feasible. Ensure no overflows or backups occur.

F. Temporary damming of waterways is not allowed.

G. If it is determined that bypass pumping is not required at a location due to lack of flow or that a Work item does not require bypass pumping to be performed, and the decision is agreed upon by the Engineer, provide protection of flows from any construction debris and ensure that no debris enters the storm drain system.
H. Bypass Pumping
   1. Bypass storm drain pumping: a typical manhole to manhole or catch basin to manhole bypass pumping setup.
   2. Submit a bypass plan to Engineer prior to implementation of such Work and prior to the start of construction.

I. Restore normal service to entire system at the end of normal working hours every day or post an attendant on Site.

J. Repair any damage that occurs to existing pipes and structures to the satisfaction of the Engineer.

K. Temporary Bypass will be considered incidental to the Work to be performed, unless otherwise indicated.

3.02 FLOW DATA

A. Active storm drains exist in the entire Project area. Therefore, flows and flow data are variable depending on location, weather conditions and tides. Visiting areas of the Site prior to Work to visually inspect flow conditions is encouraged. Maintain flows as specified under all flow conditions.

B. Portions of the Project area are subject to tidal infiltration and inflow. Account for tide elevations, tide cycles, and tidal I/I volume in the planning and conduct of the Work.

C. Portions of the Project area are subject to groundwater inflow. Account for groundwater infiltration in the planning and conducting the Work.

3.03 TEMPORARY POWER

A. Provide fuel and/or power to run pumps associated with the bypass at no additional cost to the Owner. Include emergency backup power or backup fuel storage as part of the Bypass Pumping Plan.

3.04 PIPING

A. Lay temporary piping along the general lines of the street in a manner that causes the minimum amount of disruption and is least likely to be damaged. Make provisions at driveways, provisions to permit property owners to drive over the temporary pipe by use of temporary bituminous pavement, cold patch, or other approved material to form a ramp on each side of the pipe to the satisfaction of the Engineer or by depressing the pipe as directed by the Engineer.
3.05 OPERATION AND MAINTENANCE

A. Constantly attend the bypass system. Provide an attendant if bypass pumping must continue beyond working hours.

END OF SECTION
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SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENT CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide and maintain devices to control erosion, siltation, sedimentation, and dust that occur during construction operations in accordance with this Section, applicable reference standards listed in Article 1.03, as may be shown on the Drawings and as required by Laws and Regulations.

2. Attendance at Preconstruction On-Site Conference with the Conservation Agent and/or a member of the Conservation Commission.

B. Related Requirements

1. Division 31 Earthwork, all sections

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. Order of Conditions

2. U.S. Composting Council (USCC)

3. Massachusetts Executive Office of Environmental Affairs, Massachusetts Erosion & Sedimentation Control Guidelines for Urban and Suburban Areas


   a. M6.04.2 Straw Mulch

   b. 767 Mulching; Seed for Erosion Control
1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.
   
   1. Prior to the commencement of any activity on Site, arrange and attend Preconstruction On-Site Conference with the Conservation Agent and/or a member of the Conservation Commission in accordance with Section 01 15 30.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product Data
   
   1. Siltation fence
   2. Erosion control mulch sock/tube
   3. Temporary erosion control matting
   4. Siltation control devices

C. Erosion and sediment control plan prior to the start of construction

D. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Conform to all requirements of applicable federal, state and local permits, including the “Erosion and Sedimentation Control Details”, and the local Conservation Commission.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Composting materials: provided with a Certificate of Compliance from an USCC’s Seal of Testing Assurance (STA) Program Certified Laboratory, verifying that the compost meets the parameters listed herein and certification not older than 90 days.

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.
PART 2 – PRODUCTS

2.01 MATERIALS

A. Siltation Fence: Mirafi Environfence, Amoco 1380 Silt Stop or equivalent.

B. Mulch Sock/Compost Filter Tube
   1. Type and use: as specified by the Massachusetts Erosion & Sedimentation Control Guidelines for Urban and Suburban Areas.
   2. Long fibered hay, grass mowings, or straw, in dry condition and which are relatively free of weeds and foreign matter detrimental to plant life.
   3. Mulch binder: asphalt emulsion mulch binder of type acceptable to the Engineer.
   4. Mulch netting: plastic or nylon mesh netting with approximate openings of 1/8 inch; or other netting approved by the Engineer.
   5. Color: orange or orange striped for visibility.
   6. Tensile strength: minimum 202 psi per ASTM D5035 with ultra-violet exposure resistance of 100 percent at 1,000 hours per ASTM G155.
   7. Stakes for installing compost filter tubes: 1-1/2 inches square hard wood stakes, trimmed to a blunt end.
   8. Compost fill material for the compost filter tube: certified through the USCC’s STA Program and not derived from agricultural, food, or industrial residues; bio-solids (treated sewerage sludge); yard clippings; source-separated or mixed solid waste, free from man-made foreign matter, and without objectionable odors.

C. Seeding
   1. Select seed variety and applied rates based upon the date of application per the following table. Equivalent seed mixture based on suitability for use in controlling erosion of the various soil types and slopes may be used as approved by the Engineer.

<table>
<thead>
<tr>
<th>Dates</th>
<th>Seed</th>
<th>Applied Rate (pounds per 1,000 feet²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/1 to 7/1</td>
<td>Oats</td>
<td>1.8</td>
</tr>
<tr>
<td>8/15 to 9/15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/1 to 7/1</td>
<td>Annual Ryegrass</td>
<td>0.9</td>
</tr>
<tr>
<td>5/15 to 8/15</td>
<td>Sundangrass</td>
<td>0.9</td>
</tr>
<tr>
<td>9/15 to 10/15</td>
<td>Winter Ryegrass</td>
<td>2.6</td>
</tr>
</tbody>
</table>
D. Sod: grown from certified seed of adapted varieties to produce high quality sod free of any serious thatch, weeds, insects, diseases and other pest problem, be at least 1 year old and not older than 3 years, and cut with a 1/2 inch to 1 inch layer of soil.

E. Drains: Flexible drains consisting of collapsible neoprene pipe, minimum 8 inch diameter.

F. Stone check dam: aggregate consisting of hard, durable rock, sieve analysis by weight.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 inch</td>
<td>90 - 100</td>
</tr>
<tr>
<td>1.5 inch</td>
<td>0 - 40</td>
</tr>
<tr>
<td>No. 4</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

G. Siltation Control Devices

1. Dirtbag® or equivalent, to be used on the discharge of any excavation dewatering setup.

2. Inlet Protection (Silt Sack) Acceptable Manufacturers
   a. ACF Environmental, Wilmington, MA
   b. Atlantic Construction Fabrics, Inc, Richmond VA
   c. ESS Brothers & Sons Inc, Loretto, MN
   d. Bowhead Manufacturing Company, Seattle, WA

3. Material: woven polypropylene geotextile material with built-in high-flow relief systems (overflow weirs). Manufacture for a 24 inch by 24 inch opening under regular flow conditions and to fit the catch basin or drop inlet to which it is to be installed with capability of being removed, emptied and reinstalled.

H. Erosion Control Blanket

1. Provide erosion control blanket for slope stabilization as directed by the Engineer in accordance with this Specification and in compliance with the Order of Conditions.

2. Provide with soft pine wood wedges and stakes of entirely of biodegradable materials as recommended by the manufacturer.
3. Erosion control blanket (coir log): coconut fiber mats woven into a matrix complying with the following.

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>Test Method</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>ASTM D 3776</td>
<td>17.8 oz/SY (600 g/m²)</td>
</tr>
<tr>
<td>Wide width tensile strength <strong>Wet</strong></td>
<td>ASTM D 4595</td>
<td>910 lbs/ft (13.3 kN/m)</td>
</tr>
<tr>
<td>Machine direction</td>
<td></td>
<td>870 lbs/foot (12.7 kN/m)</td>
</tr>
<tr>
<td>Wide width tensile strength <strong>Dry</strong></td>
<td>ASTM D 4595</td>
<td>1130 lbs/foot (16.5 kN/m)</td>
</tr>
<tr>
<td>Machine direction</td>
<td></td>
<td>1040 lbs/foot (15.2 kN/m)</td>
</tr>
<tr>
<td>Cross direction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elongation at failure <strong>Wet</strong></td>
<td>ASTM D 4595</td>
<td>32 percent</td>
</tr>
<tr>
<td>Machine direction</td>
<td></td>
<td>26 percent</td>
</tr>
<tr>
<td>Cross direction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open area</td>
<td>Calculated</td>
<td>58 percent</td>
</tr>
<tr>
<td>Thickness</td>
<td>ASTM D 177</td>
<td>0.35 inch (9 mm)</td>
</tr>
<tr>
<td>Recommended shear stress</td>
<td></td>
<td>4 lbs./sq. ft. (192 N/sq.m.)</td>
</tr>
<tr>
<td>Recommended flow</td>
<td></td>
<td>10 fps (3 m/s)</td>
</tr>
<tr>
<td>Recommend slope</td>
<td></td>
<td>2:1</td>
</tr>
</tbody>
</table>

I. Catch Basin Silt Sacks


2. Test Method: ASTM D-4884 165.0 lbs./inch.


4. Meet the following ASTM D-4884 standards. Properties are Minimum Average Roll Values (MARV).
<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Units</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grab Tensile</td>
<td>ASTM D-4632</td>
<td>lbs.</td>
<td>315x300</td>
</tr>
<tr>
<td>Grab Elongation</td>
<td>ASTM D-4632</td>
<td>%</td>
<td>15x15</td>
</tr>
<tr>
<td>Puncture</td>
<td>ASTM D-4833</td>
<td>lbs.</td>
<td>125</td>
</tr>
<tr>
<td>Mullen Burst</td>
<td>ASTM D-3786</td>
<td>psi</td>
<td>650</td>
</tr>
<tr>
<td>Trapezoid Tear</td>
<td>ASTM D-4533</td>
<td>lbs</td>
<td>120x150</td>
</tr>
<tr>
<td>UV Resistance</td>
<td>ASTM D-4355</td>
<td>%</td>
<td>90</td>
</tr>
<tr>
<td>Apparent Opening</td>
<td>ASTM D-4751</td>
<td>US Sieve</td>
<td>40</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>ASTM D-4491</td>
<td>gal/min/ft²</td>
<td>40</td>
</tr>
<tr>
<td>Permittivity</td>
<td>ASTM D-4491</td>
<td>sec⁻¹</td>
<td>0.55</td>
</tr>
</tbody>
</table>

PART 3 – EXECUTION

3.01 GENERAL

A. Undertake reasonable precaution to avoid erosion of soil and to prevent silting of drainage ditches, storm sewers, rivers, streams, and lakes.

B. Plan and execute construction using methods to control surface drainage from cuts and fills, from borrow and waste disposal areas and prevent erosion and sedimentation. Coordinate temporary erosion controls with permanent erosion controls to the extent practical.

C. Employ pollution prevention measures, erosion and sedimentation control, before, during and after soils are exposed. Prior to soil disturbance or soil storage, ensure measures are in place before activity occurs. Employ additional measures as the Work progresses. Implement and maintain erosion and sedimentation control measures as necessary until the Site is permanently stabilized.

D. Provide measures to control dust caused whether on or off the Project Site.

E. Keep exposure of soils on embankments, excavations, and graded areas to as short a duration as possible. Initiate mulching, seeding and other temporary erosion control practices as specified.

F. Install erosion control measures in any ditch, swale or channel before runoff is allowed to flow to the waterway.

G. Dewater trench to install materials in the dry.

H. Contain water pumped from trenches and excavations. Do not discharge trench dewatering and pipe dewatering to the waterway.

I. Employ the use of siltation control devices at all times to prevent runoff from entering waterway.
J. Stabilize disturbed areas with temporary and permanent erosion control practices as soon as practicable, but no more than 14 days after construction activity on a particular portion of the Site has temporarily or permanently ceased except where construction activities will resume on the particular portion of the Site within 21 days; and where snow cover precludes initiation of stabilization measures.

K. Perform inspections of disturbed soil areas, material storage areas exposed to precipitation, and erosion control measures with Engineer a minimum of once every 14 days and also within 24 hours after any storm event greater than 0.5-inches of rainfall. Immediately correct deficiencies in the erosion control measures identified or indicated by failures or erosion by implementing additional measures or different techniques to correct and prevent subsequent erosion at no additional cost to Owner.

L. Control dust in accordance with Division 01 General Requirements. Utilize the application of sprinkled water and calcium chloride to reduce the emission of airborne soil particulates from the Site.

3.02 PREPARATION

A. Temporary Erosion Control Blanket

1. Conform to grades and cross sections for slopes and ditches shown on the Drawings.

2. Finish to a smooth and even condition with all debris, roots, stones, and lumps raked out and removed.

3. Apply seed prior to placement unless otherwise directed.

4. Dewater trenches and swales to install materials in the dry.

3.03 INSTALLATION

A. Siltation Fence

1. Construct as shown on Drawings. Install parallel to contours where possible, prior to site clearing and grading activities.

2. Bury lower edge of fabric at least 6 inches below ground surface to prevent underflow.

3. Curve ends of fence uphill to prevent flow around ends.

4. Inspect frequently; repair or replace any damaged sections.

5. Remove fence only when adequate grass catch has been established.
B. Mulch Sock/Tube

1. Install compost filter tubes, also referred to as sedimentation barriers consisting of a 9 inch diameter filter tube filled with approved mulch and compost materials.

2. Undertake immediately after each area has been properly prepared.

3. Fill sedimentation barriers by truck mounted blowers with an adequate volume of material to provide a firm barrier that slumps not more than 20 percent of the height measured in place. Fill tubes of compost on or off Site. Place, fill and stake tubes in place to ensure stability against water flows and tamp to ensure good contact with soil.

4. Hay mulch should cover the ground enough to shade it, but should not be so thick that a person standing cannot see ground through the mulch.

5. Remove matted mulch or bunches.

6. Install sedimentation barriers in the locations shown on Drawings and as directed by Engineer. Install in continuous lengths not to exceed 100 feet. Shorter lengths may be used as needed to finish a line of barrier, but not be shorter than 10 feet.

7. Overlap barrier sections not less than 2 feet at section ends, with the ends pressed firmly together. Stake section ends with the fabric ends tied off.

8. Drive stakes into the existing grade not less than 1 foot, spaced at a minimum of 8 feet on center. Provide additional stakes as needed for the ends of each section and for overlapping sections.

C. Sod

1. Lay sod strips on the prepared soil, perpendicular to the slope or direction of water flow, starting at the lowest elevation. Butt the edges and ends of the sod strips together and tamp or roll. Stagger joints.

2. Staple sod strips at ends and at 3-foot intervals along the center of the strip.

3. Irrigate sodded area immediately after installation.

D. Temporary Seeding

1. Seed with appropriate seeds and application rates specified in the table in Part 2 of this Section. Sow seed at the rate indicated, on the pure live seed basis.
2. Mulch areas where temporary seeding has been applied. Do not mulch seeded areas where matting will be immediately installed. If temporary seeding does not achieve adequate growth by November 1, apply an additional layer of mulch at that time.

3. Mulch temporarily or permanently seeded areas, areas which cannot be seeded within the recommended seeding dates, and any soil stockpile areas, immediately following seeding. Straw or hay mulch, wood fiber mulch, and hydromulch are recommended.

E. Topsoil Storage

1. Place topsoil which is stockpiled on the site for use in loam applications out of natural drainages, in 8 foot high piles which have side slopes of 50 percent to 70 percent.

2. Install siltation fence around the base of the pile to prevent eroding soil from washing into drainages.

3. Cover any topsoil piles which are to remain for a period of 21 days or more with temporary seed and mulch immediately following stockpiling.

F. Store Check Dam

1. Place in locations indicated on Drawings or as ordered to provide for temporary control of erosion and sedimentation.

2. Install as directed by the local Conservation Commission and Engineer.

G. Siltation Control Devices – Silt Sacks

1. Install in accordance with the Drawings and manufacturer’s instructions. Install Inlet Protection (Silt Sacks) in catch basins and as required by the Engineer.

2. Keep silt sacks in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth.

3. Install prior to commencement of any excavation including but not limited to, cold planning, pavement reclamation, or unclassified excavation.

H. Silt Curtain

1. Install silt curtain filter material in accordance with the Drawings and prior to commencement of any excavation including but not limited to, cold planning, pavement reclamation, or unclassified excavation.
2. Keep silt curtain in place until removal is approved by the Engineer in accordance with water quality monitoring.

I. Other Temporary Measures

1. Provide and maintain temporary slope drains as required.

2. Employ other temporary erosion control measures as directed by the Engineer or local Conservation Commission.

3.04 FIELD QUALITY CONTROL

A. Site/Field Tests and Inspections

1. Inspect erosion control practices immediately after each rainfall and at least daily during prolonged rainfall or snowmelt for damage. Make appropriate repairs or replacement at no additional cost to the Owner, until acceptance by Engineer.

3.01 MAINTENANCE

A. Maintain areas mulched or matted, at no additional cost to the Owner, until Project acceptance.

B. Maintain detention basins by removing silt that reaches a depth of over 1 foot, at no additional cost to the Owner, until Project acceptance.

C. Maintain sedimentation barrier and periodically inspect barrier lines during construction. Remove accumulated sediment higher than 1/2 the height of the barrier, or before a major storm event and as directed by the Engineer.

D. Remove silt from siltation fence when it has reached one-half the fence height, or prior to expected heavy runoff or siltation.

E. Repair matting if any pine anchors become loosened or raised, or if any matting becomes loose, torn, or undermined, make satisfactory repairs immediately.

F. Inspect filter tubes after each rainfall and at least daily during prolonged rainfall. Immediately correct deficiencies, including, but not limited to, washout, overtopping, clogging due to sediment, and erosion. Review location of tubes in areas where construction activity causes drainage runoff to ensure that the tubes are properly located for effectiveness. Maintain the functional integrity of filter tubes in sound condition at all times. Where deficiencies exist, such as overtopping or wash-out, install additional staking or compost material as directed by the Engineer. Remove sediment deposits as necessary to maintain the filters in working condition. Repair or replace filter tubes that are decomposing, cut, or otherwise compromised.
G. Inspect condition of silt sacks after each rainstorm and during major rain events and clean periodically to remove accumulated sediment and debris. Handle and dispose of debris accumulated in silt sacks. Repair or replace damaged silt sacks.

H. Periodically inspect and empty the silt curtain and as directed. Dispose of removed material off Site. Inspect the condition of silt curtain after each rainstorm and during major rain events. Repair and replace damaged silt curtain at no additional cost to Owner.

3.02 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

B. Remove temporary materials and devices when permanent soil stabilization has been achieved. Re-use materials in good condition if approved by the Engineer.

C. Remove filter fabric from the Site at completion of the Project.

D. Remove sedimentation barrier including removal of sediment accumulated at the barrier line, stakes and the barrier and the compost fill. Do not remove before a major storm event or as directed by Engineer. Finish final grade below and around the sedimentation barrier to the match the existing grade.

E. Level and grade to the extent required to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.

F. Remove and legally dispose of unsuitable materials from Site.

END OF SECTION
SECTION 01 57 17

TEMPORARY RODENT CONTROL

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide temporary rodent control for areas of construction by a licensed rodent exterminator in accordance with this Section.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.

1.04 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

1. Name, contact information, and license information for rodent exterminator to be retained for the duration of the Project

2. Pre-construction inspection notification

3. Rodent control plan showing number and location of bait stations, property information where bait stations will be located, and any additional actions to be taken to prevent or mitigate rodent activity and presence, including identification of pesticides to be used as well as manufacturer instructions, warnings, and safety data sheets (SDS)

4. Template and completed property owner permission forms for all properties included in rodent control plan. Form should include at a minimum a summary of rodent control activities and bait stations to be included on the property, schedule for rodent control activities, property owner information, and signature of property owner and date.
5. Records of property owner(s) who declined permission to implement rodent control activities

6. Licensed rodent exterminator’s logbook including a diagram with locations of all bait stations, SDS for pesticides being used, and rodent exterminator’s license and insurance information. Logbook must be available for inspection by the Owner’s Health Department or Inspectinal Services.

7. Rodent control reports within 7 days after each treatment that document, at a minimum, the locations of treatments, percentage of bait consumed, and any rebaiting or rodent control related activities.

1.05 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Qualifications of rodent exterminator: per Division 01 General Requirements and as follows.

1. Licensed and insured in the state where the Project is located

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

A. Ensure that the rodent exterminator complies with the following.

1. Perform a pre-construction baiting and a maintenance baiting program extending for duration of construction activities.

2. Respond to changes in rodent populations and rodent related complaints associated with the construction activities in addition to rodent control guidelines and measures determined.

3. Follow minimum steps specified in order to control and/or eliminate the rodent population and performs these steps per street or Work area for Work on multiple non-contiguous streets or Work areas. These steps are provided as guidelines only and do not supersede the judgement and measures deemed necessary by rodent exterminator.

4. Coordinate with Owner’s Health Department or Inspectional Services.
3.02 SITE INSPECTION

A. 45 days prior to commencement of Work, notify public and private property owners within 300 feet of construction activities of investigations 2 days ahead of investigation.

B. Inspect public and private areas within 300 feet of construction activities. Investigate signs of rodent activity as a basis for the rodent control plan.

C. In preparation for providing rodent control for public and private premises impacted by related rodent activity within a 300-foot radius of Project limits:

1. Obtain written permission, via the property owner permission form identified in Section 1.04 above, from public and private property owners where bait will be placed, or for other rodent control activities.

2. Identify property owners who declined permission to implement rodent control activities on their property and reason for declining permission if known. Submit records to the Quincy Health Department or Inspectional Services.

3.03 FIRST SERVICE - PRE-CONSTRUCTION

A. Provide rodent control for any premises, public and private, impacted by related rodent activity within a 300-foot radius of Project limits per the approved rodent control plan.

B. Perform sub-surface baiting treatment to sewer and drain lines within a 300-foot radius of construction activities. Make pesticide applications with bait formulations labeled for use in sewers and drains.

3.04 SECOND SERVICE FOLLOW UP / PRE-CONSTRUCTION

A. 7 to 10 days after First Service, re-inspect public and private areas within a 300-foot radius of construction activities. Re-treat active locations.

B. Perform sub-surface treatment. Rebait / re-treat active sewer and drain lines treated during First Service.

3.05 THIRD SERVICE FOLLOW UP / PRE-CONSTRUCTION

A. 10 to 14 days after Second Service, re-inspect public and private areas within a 300-foot radius of construction activities. Re-treat active locations.

B. Perform sub-surface treatment. Rebait / re-treat active sewer and drain lines.
3.06 PERIODIC SERVICE / MAINTENANCE DURING CONSTRUCTION

A. Every 2 weeks after Third Service, re-inspect public and private areas within a 300-foot radius of construction activities. Re-treat active locations.

B. Perform sub-surface treatment. Rebait / re-treat active sewer and drain lines.

3.07 FINAL SERVICE / POST CONSTRUCTION

A. 20 days after Substantial Completion, rodent exterminator shall retrieve all baits, traps, pesticides and other materials and equipment deployed for rodent control from public and private areas and sewer and drain lines.

B. Notify Owner Health Department or Inspectional Services upon completion of final service.

END OF SECTION
SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies general requirements for products, materials and equipment. This Section applies to all Specifications and Drawings and provisions of this Section may be supplemented in other sections of Division 01.

B. Certain provisions required by Laws and Regulations may be referenced. Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations.

C. Section Includes

1.02 SOURCE QUALITY CONTROL

General
Independent Testing Agency Certification
Factory Testing

1.03 PRODUCT REQUIREMENTS

General
Transportation and Handling
Storage and Protection

1.04 WARRANTIES

1.02 SOURCE QUALITY CONTROL

A. General

1. Subject material and equipment furnished under the Contract Documents to a complete factory testing program as specified.

2. Shop Drawings and submittals: reviewed by Engineer before initiating testing program.

3. Perform checks and tests in accordance with manufacturer's recommendations and referenced standards.
4. Evaluate test results and advise Owner immediately of any discrepancy between test results and test limits or the failure of any device or system under test. Include test limits for acceptability applicable to each test on the certified test records.

5. Record test information, including the evaluation of testing results, on forms approved by Owner and Engineer.

B. Independent Testing Agency Certification

1. If specified, furnish certificates from an independent testing agency.

2. Independent testing agency to certify that material and equipment components have been examined and tested and are in conformance with the requirements specified in the Contract Documents.

3. Take Samples in accordance with the requirements specified in the Contract Documents, as selected by Owner or independent testing agency. Furnish and ship at no additional cost to Owner.

C. Factory Testing

1. Provide 14 days prior written notice of factory inspections and tests to Owner and Engineer.

2. If failure to give proper written notice results in material and equipment being assembled or covered before a factory inspection or test, make material and equipment ready for inspection or test and reassemble or recover at no additional cost to Owner.

3. Owner may inspect any portion of material and equipment furnished at any reasonable time during manufacture and may witness testing of any portion of material and equipment wherever located. Owner and Engineer to witness tests only.

4. Furnish, set up and operate test equipment and facilities.

5. If facilities for conducting required tests are unavailable to the manufacturer, conduct tests elsewhere or have them performed by an independent agency approved by Owner.

6. Protect material and equipment after testing and checking to provide that subsequent testing of other equipment or systems does not disturb, damage or otherwise interfere with functional capability of material and equipment.

7. Assume responsibility for protection of material and equipment and safety of all personnel during factory testing program.
8. Grounds for rejection: failure to withstand tests; failure to meet ratings; failure to meet applicable standards.

9. In the event of failure
   a. Submit revisions of documents requiring approval for changes required for rectification.
   b. Obtain Owner's and Engineer’s approval before making such changes.
   c. Provide written details of any changes to be made not requiring approval.
   d. Notify Owner and Engineer in writing before retesting.
   e. Furnish new material and equipment which meets requirements of the Specifications if rejected material and equipment cannot be rectified to satisfaction of Owner and Engineer.
   f. Retest after rectification in presence of Owner or Engineer.

10. Assume responsibility for all costs, including, but not limited to: loss or damage to materials and equipment resulting from testing; retesting; rectification; new material and equipment to replace damaged or non-rectifiable material and equipment; removal, furnishing, transportation, unloading, and installation of replacement material and equipment; and witness of testing by Owner and Engineer including travel, lodging, meals, and payroll.

11. Submit certified test reports which define tests, list results, and are signed by Contractor's representative, and copies of raw data collected during tests. Submission of certified test reports does not relieve Contractor of responsibility for material and equipment meeting requirements of the Contract Documents after installation.

1.03 PRODUCT REQUIREMENTS

A. General

1. Products include new material and equipment incorporated into the Work and may also include existing material and equipment required for reuse. This does not include machinery and equipment used for preparation, fabrication, conveying, installation and erection of the Work.

2. Do not use materials and equipment removed from existing Work Site, except as specifically permitted.
3. Provide complete with accessories, trim, finished, safety guards, and other devices and details need for a complete installation and for the intended use or effect.

4. Provide standard products which have been produced and used successfully on other similar projects for similar applications. Provide products which are likely to be available to Owner in the future for items required for maintenance and repair or replacement Work.

5. Furnish interchangeable components of the same manufacturer, for similar components.

B. Transportation and Handling

1. Transport and handle material and equipment in accordance with manufacturer's instructions.

2. Notify Engineer and Owner in writing upon acceptance of a shipment.

3. Promptly inspect shipments to assure that material and equipment comply with requirements, quantities are correct, and material and equipment are undamaged.

4. Furnish equipment and personnel to handle material and equipment by methods to prevent soiling, disfigurement, or damage.

5. Uncrate equipment and dispose of packing material properly.

C. Storage and Protection

1. Store and protect material and equipment in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive material and equipment in weather tight, climate controlled enclosures.

2. For exterior storage of fabricated material and equipment, place on sloped supports, above ground.

3. Provide for bonded off Site storage and protection when Site does not permit on Site storage or protection.

4. Cover material and equipment subject to deterioration with impervious sheet covering. Furnish ventilation to avoid condensation or potential degradation of material and equipment.

5. Store loose granular materials on solid flat surfaces in a well-drained area. Avoid mixing with foreign matter.
6. Furnish equipment and personnel to store material and equipment by methods to prevent soiling, disfigurement, or damage.

7. Arrange storage of material and equipment to permit access for inspection. Periodically inspect to assure material and equipment are undamaged and are maintained in acceptable conditions.

8. After receipt of material and equipment, assume responsibility for loss and damage including but not limited to breakage, corrosion, weather damage, and distortion.

1.04 WARRANTIES

A. Provide warranties for equipment and material in accordance with Paragraphs 6.19 and 14.03 of the Standard General and Supplementary Conditions, if any.

B. Provide extended or special warranties as indicated in individual Specification sections.

END OF SECTION
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SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies general execution requirements and startup/commissioning and performance testing for closeout of the Work. This Section applies to all Specifications and Drawings and provisions of this Section may be supplemented in other sections of Division 01.

B. Certain provisions required by Laws and Regulations may be referenced. Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations.

C. Section Includes

1.02 OVERALL EXECUTION REQUIREMENTS
   Coordination
   Existing Conditions
   Field Engineering
   Record Documents
   Cutting and Patching
   Electrolytic Corrosion Prevention
   Quality Assurance and Control of Installation
   Manufacturers’ Field Services
   Independent Testing

1.03 STARTUP, TESTING, AND COMMISSIONING
   Spare Parts
   Consumables
   Checkout and Starting Systems
   Starting, Adjusting, and Balancing
   Startup and Commissioning/Performance Testing
   Demonstration and Training

1.04 CLOSEOUT REQUIREMENTS
1.02 OVERALL EXECUTION REQUIREMENTS

A. Coordination

1. Conduct preconstruction and pre-installation meetings before commencing certain Work that requires coordination or has special requirements or approvals.

2. Comply with the required Work sequence and coordination as may be specified in Summary of Work and reflect in the Project scheduling.

3. Coordinate Work such that Work is completed with minimum disruption to residents and businesses.

4. Coordinate space requirements and installation of Work. Utilize spaces efficiently to maximize accessibility for other installations, maintenance, and repairs.
   
a. A primary Site restriction is the width of the streets and volume of traffic within the Project Site which may require complete shut down or partial blocking of the streets during construction. Coordinate with the Fire Department and Police Department.

5. Coordinate Work of the various Specifications with interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.

6. Coordinate related Work at the Site in accordance with Article 7 of the Standard General and Supplementary Conditions, if any.

7. Coordinate completion and cleanup of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.

8. After Owner occupancy of premises, coordinate access to Site for correction of defective Work and/or incomplete Work to minimize disruption of Owner's activities.

9. Specific requirements applicable to the Project include the following.
   
a. Coordinate with the MWRA Inspection Department 72-hours prior to start of Work per the MWRA 8(m) permits included Section 00 31 00.

B. Existing Conditions

1. Paragraph 4.01 of the Standard General and Supplementary Conditions, if any, covers Availability of Lands.
2. Paragraph 4.02 of the Standard General and Supplementary Conditions, if any, covers Subsurface and Physical Conditions.

3. Pursuant to Paragraph 4.04 of the Standard General and Supplementary Conditions, if any, existence and location of Underground Facilities and other utilities and construction indicated as existing are not guaranteed. Before beginning Work investigate and verify the existence and location of Underground Facilities and other utilities and construction.
   a. Conduct test pits and other utility research and properly restore utilities interfered with or damaged during construction at no cost to the Owner.
   b. Engage a professional subsurface utility locator to verify the existence and location of underground utilities prior to starting Work.
   c. Contact DIGSAFE (www.digsafe.com) by dialing 811.

4. Paragraph 4.05 of the Standard General and Supplementary Conditions, if any, covers Reference Points.

5. Paragraph 4.06 of the Standard General and Supplementary Conditions, if any, covers Hazardous Environmental Conditions at Site.

C. Field Engineering: Not required for the Project.

D. Record Documents

1. Provide record documents in accordance with Paragraph 6.12 of the Standard General and Supplementary Conditions, if any, and in accordance with Section 01 15 30.

2. Store record documents separate from documents used for construction. Record information concurrent with construction progress.

3. Legibly mark each item to record description of actual equipment and material installed and actual construction on the Drawings and approved submittals, including the following.
   a. Manufacturer's name and equipment and material model and number
   b. Material and equipment substitutions or alternates utilized
   c. Approved changes
   d. Measured depths of foundations
e. Measured horizontal and vertical locations of Underground Facilities and appurtenances, referenced to permanent surface improvements

f. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work

g. Field changes of dimension and detail

h. Details not on original Contract Documents or Shop Drawings

E. Cutting and Patching

1. Employ skilled and experienced personnel to perform cutting and patching.

2. Submit written request in advance of cutting or alteration which affects:

   a. structural integrity of any element of Project;
   b. integrity of weather exposed or moisture resistant elements;
   c. efficiency, maintenance, or safety element;
   d. safety, traffic, or hazard barriers;
   e. visual qualities of sight exposed elements; and
   f. work of Owner or separate contractor.

3. Execute cutting, fitting, and patching including excavation and fill to complete Work and to:

   a. fit materials together, to integrate with other work;
   b. uncover Work to install ill-timed Work;
   c. remove and replace defective or non-conforming Work;
   d. remove Samples of installed Work for testing when requested; and
   e. provide openings in element of Work for penetration of mechanical and electrical work.

4. Execute Work by methods to avoid damage to other work and which will provide appropriate surfaces to receive patching and finishing.

5. Provide adequate temporary support for Work to be cut.

6. Restore Work with new materials in accordance with requirements of Contract Documents. Use materials identical with original materials where recognized that satisfactory results can be produced.
7. Provide protection from elements for areas which may be exposed by uncovering work.

8. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit. Restore exposed finishes of patched areas; and, where necessary extend finish restoration onto retained adjoining Work in a manner, which will eliminate evidence of patching.

9. Identify any Hazardous Waste, Hazardous Environmental Condition, or hazardous substance exposed during the Work to Owner for decision or remedy in accordance with Paragraph 4.06 of the Standard General and Supplementary Conditions, if any.

10. Cut work by methods least likely to damage Work to be retained and work adjoining. Cut Work with sawing and grinding tools, not with hammering, chopping, or burning tools. Cut masonry and concrete materials with masonry saw or core drill. Do not use pneumatic tools without prior approval. Core drill openings through concrete Work. Adhere to mandatory cutback requirements when saw cutting concrete and roadway openings.

11. Do not cut and patch structural Work in a manner resulting in reduction of load-carrying capacity or load/deflection ratio.

12. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Maintain supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage and seal voids. For interior work at penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire resistant material, to full thickness of the penetrated element.

13. Do not cut and patch operational or safety-related components that reduce capacities to perform in manner intended. Do not cut and patch Work that reduces visual qualities. Remove and replace unsatisfactory cutting patching as directed by Engineer or Owner.

F. Electrolytic Corrosion Prevention

1. Prevent galvanic action, bimetallic corrosion, anodic or cathodic action, and electrolysis at all electrical grounds and for all galvanic scale (electromotive series or table of oxidation potentials). Do not allow contact of dissimilar metals further apart than 0.35 on the galvanic scale (electromotive series or table of oxidation potentials). The electrode potential of common metals is listed below.

<p>| Electrode Potential |</p>
<table>
<thead>
<tr>
<th>Metal</th>
<th>Volts (Relative to Hydrogen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium</td>
<td>+2.37</td>
</tr>
<tr>
<td>Aluminum</td>
<td>+1.70</td>
</tr>
<tr>
<td>Zinc+</td>
<td>+0.76</td>
</tr>
<tr>
<td>Chromium</td>
<td>+0.56</td>
</tr>
<tr>
<td>Iron and Steel</td>
<td>+0.44</td>
</tr>
<tr>
<td>Cadmium</td>
<td>+0.40</td>
</tr>
<tr>
<td>Nickel</td>
<td>+0.25</td>
</tr>
<tr>
<td>Tin</td>
<td>+0.14</td>
</tr>
<tr>
<td>Lead</td>
<td>+0.13</td>
</tr>
<tr>
<td>Copper</td>
<td>-0.34</td>
</tr>
</tbody>
</table>

2. Unless otherwise indicated, provide dielectric insulators between ferrous and nonferrous pipe and equipment.

G. Quality Assurance and Control of Installation

1. Monitor quality control of Subcontractors, Suppliers, manufacturers, material, equipment, services, Site conditions, and workmanship, to produce Work of specified quality. Conduct field quality control and testing specified.

2. Comply fully with manufacturers' installation instructions, including each step in sequence. If manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

3. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

4. Perform Work using persons qualified to produce workmanship of specified quality.

5. Install field Samples and mockups at the Site as required in Specifications for review. Acceptable Samples and mockups represent a quality level for the Work. Where field Sample or mockup is specified to be removed, clear area after field Sample or mockup has been accepted by Engineer or after Work is complete when mockup is to serve as a control reference.

6. Protect adjacent construction in accordance with Paragraph 6.13 of the Standard General and Supplementary Conditions, if any.

H. Manufacturers' Field Services

1. If required in the Specifications, arrange and pay for material or equipment Suppliers or manufacturers to provide qualified staff personnel...
(field representative) to perform the following services and services specified. Submit reports of activities, actions taken and test results to Engineer within 10 days of completion.

a. Observe Site conditions, conditions of surfaces and installation, quality of workmanship.

b. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

c. Assist with field assembly as required.

d. Furnish, setup, and operate required test equipment and facilities.

e. Perform and record results of manufacturer recommended inspections and tests, and tests specified for material and equipment.

f. Be responsible for protection of material and equipment and safety of all personnel during testing.

g. Perform any other services normally provided by field representative's company.

h. Instruct operating personnel in proper use of material and equipment.

i. Instruct and supervise field repairs before acceptance by Owner.

I. Independent Testing

1. Employ and pay for specified services of an independent firm in accordance with Paragraph 13.03 of the Standard General and Supplementary Conditions to perform inspection and testing as may be specified except where responsibility for a specific inspection or test is expressly allocated to Owner in the Specifications or by Laws and Regulations.

2. Reports will be submitted by the independent firm to Owner, in duplicate indicating observations and results of tests and indicating compliance or noncompliance with Contract Documents.

3. Inspection, testing, and source quality control may occur on or off the Project Site.

4. Cooperate with independent firm. Furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.

5. Notify Owner and independent firm 24 hours before expected time for operations requiring services.
6. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.

7. Retesting required because of nonconformance to specified requirements will be performed by the same independent firm if instructed by Owner. Payment for retesting will be charged to Contractor by deducting inspection or testing charges from the Contract Price.

8. Testing or inspecting does not relieve Contractor from performing Work in accordance with requirements of the Contract Documents.

1.03 STARTUP, TESTING, AND COMMISSIONING

A. Spare Parts

1. Provide spare parts required for construction, startup, testing and commissioning of the Work prior to achievement of Substantial Completion, including spare parts for flushing and consumable supplies such as bolts, nuts, gaskets, filters, insulating tape, etc., normally consumed in the startup, commissioning and testing.

2. If spare parts are to be purchased by Owner as specified, Contractor shall have the right to use the spare parts purchased by Owner provided that such spare parts are replaced prior to Substantial Completion at Contractor’s expense. Replacement spare parts, replaced by Contractor, shall be new, unused and identical as the original spare part used.

B. Consumables

1. Provide initial fills of consumables including equipment lubricants, resins, chemicals, desiccants, and fuels. Provide subsequent fills if required during Warranty Period if acts or omissions of Contractor cause such consumables to require replacement.

2. Coordinate with Owner for consumables required.

C. Checkout and Starting Systems

1. Coordinate schedule for startup and operation of various equipment and systems with Owner.

2. Notify Owner 7 days before startup of each major piece of equipment or system, including a staffing request for Owner’s operations and maintenance personnel required to adequately and safely support each specific start-up and operation activity.
3. Verify that each system or piece of equipment item has been assembled, constructed, or completed in accordance with the Contract and capable of functioning as intended.

4. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, magnetic center alignment, belt tension, control sequence, or other conditions which may cause damage.

5. Verify that each piece of equipment or system has successfully completed construction testing and cold commissioning, including hydrostatic testing, loop checks, relay checks, calibration, and continuity checks and that all tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

6. Verify wiring and support components for equipment are complete and tested.

7. Execute start up under supervision of responsible manufacturers’ representative or Contractor's personnel in accordance with manufacturers' instructions utilizing Owner’s qualified operations and maintenance staff trained by Contractor.

8. When specified in individual Specification Sections, require manufacturer to provide field representative to be present at Site to inspect, check and approve equipment or system installation before start up, and to supervise placing equipment or system in operation.

D. Adjusting and Balancing

1. Supply necessary equipment, material, construction power, and consumables (except for those provided by Owner) needed to startup and fully test the Work and replenish the same until Substantial Completion is achieved. Contractor may utilize Owner’s operating spare parts, such use requiring timely replacement at Contractor’s expense.

2. Coordinate as required for conduct of independent testing.

3. Perform specified and required adjusting and balancing concurrently to the maximum extent possible on individual equipment and systems and prior to startup and commissioning/performance testing.

E. Startup and Commissioning/Performance Testing

1. Conduct startup and commissioning/performance tests to demonstrate the Work meets the requirements of the Contract Documents, satisfies the Owner’s requirements, and is in accordance with Paragraph 14.04. of the
Standard General and Supplementary Conditions, if any. Conduct testing in accordance with individual Specifications.

2. Prepare and submit a written startup and commissioning/performance testing procedures no later than 60 days prior to start of testing for review and final test procedures no later than 30 days prior to start of testing. Submit a staffing request for Owner’s operations and maintenance personnel.

3. Calibrate test equipment and instrumentation on Site or provide acceptable certificate of calibration conducted within 30 days of testing.

4. Complete functional testing prior to initiating the startup and commissioning/performance testing as specified.

5. Complete specified startup and commissioning/performance tests prior to Substantial Completion. Owner and Engineer will witness Performance Testing. Notify Owner and Engineer in writing at least 7 days prior to starting any startup and commissioning/performance testing. Coordinate for witnessing of tests by required regulatory representatives.

6. Submit written test reports.

F. Demonstration and Training

1. Provide formal demonstration and training of Owner’s personnel as specified in individual Specifications.

1.04 CLOSEOUT REQUIREMENTS

A. Substantial Completion shall have been achieved when the following has been completed and the requirements of Paragraph 14.04 of the Standard General and Supplementary Conditions, if any, have been met.

1. Work is complete, systems are successfully operating, and final testing has been successfully completed.

2. A full inventory of the spare parts and special tools purchased by the Owner are replenished and in the custody of the Owner.

3. The Site has been restored to the satisfaction of the Owner.

4. An inspection of the Work has been completed by the Engineer and the Owner.

5. An updated Punch List is provided.
6. The Contractor’s written warranty and guarantee has been submitted as required by Paragraph 6.19.D. of the Standard General and Supplementary Conditions, if any.

7. A Certificate of Substantial Completion has been provided in accordance with Paragraph 14.04.C. of the Standard General and Supplementary Conditions, if any.

B. The Contractor shall have sole care, custody, and control of the Work until achievement of Substantial Completion. During the period between Substantial Completion and the date for Final Completion, Contractor shall be given access to correct items on the Punch List and achieve Final Completion.

C. The date of achieving Substantial Completion is the date set forth in the Certificate of Substantial Completion that is accepted and signed by the Owner.

D. Final Completion shall have been achieved when the Work is complete, the requirements of Paragraphs 14.06 and 14.07 of the Standard General and Supplementary Conditions, if any, have been met, and when the following is complete.

1. Substantial Completion has been achieved and liquidated damages for failure to meet Substantial Completion Date have been paid.

2. All Work including Punch List Items has been completed.

3. Final cleaning has been conducted and Contractor equipment and supplies including waste materials have been removed from the Site and legally disposed of.

4. A full set of record documents have been submitted as specified in subparagraph 1.03.C.8 above and Contractor’s written warranty and guarantee has been resubmitted if adjusted.

5. Inspections required by Laws and Regulations are complete. Certificates and permits to occupy and operate have been issued if required.

6. Spare parts, maintenance and extra materials have been delivered in quantities specified to Project Site and stored as directed.

7. A request for final inspection in accordance with Paragraph 14.06 of the Standard General and Supplementary Conditions, if any, has been submitted to the Engineer and the inspection has been completed and the results accepted by the Owner.

8. A Final Application for Payment has been submitted to the Engineer identifying total adjusted Contract Price, previous payments, and balance
due along with required documentation in accordance with Paragraph 14.07.A. of the Standard General and Supplementary Conditions, if any.

END OF SECTION
SECTION 02 61 05

REMOVAL AND DISPOSAL OF CONTAMINATED SOIL AND WATER

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes
   1. Remove and dispose of contaminated soil and material generated during normal requirements for excavation including associated handling, transportation, and stockpiling of contaminated soil/material in accordance with this Section and applicable reference standards listed in Article 1.03.
   2. Remove, treat and dispose of contaminated water generated during dewatering in conformance with Laws and Regulations.

B. Related Work
   1. Section 31 00 00 – Earthwork
   2. Section 33 31 11 – Public Sanitary Sewerage Gravity Piping
   3. Section 33 41 00 – Storm Drainage Piping

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

B. Conduct Work of this Section only after issuance of Change Order.

C. Excavation beyond that which is required to install and backfill the sewer main as specified and shown on the Drawings or as required by the Response Action Performance Standards in the Massachusetts Contingency Plan shall not be considered part of this work unless authorized by the Owner, Engineer, and/or Owner’s Project Manager. Costs for excavation, soil/water handling and management, sampling, and transportation/disposal of soil and water for work that is not authorized and is conducted beyond that which is required by the Drawings or Massachusetts Contingency Plan shall not be considered for payment.

D. Delay claims related to unexpected and undocumented subsurface conditions shall not be considered for payment.

E. Costs for additional equipment, materials, and supplies not included in the change order price submitted and necessary to respond to known environmental conditions shall not be considered for payment.
F. Contractor shall be responsible for all costs, fees, expenses, fines, or penalties resulting from Contractor negligence including but not limited to:

1. Untimely, inaccurate, or incomplete regulatory submittals
2. Mishandling contaminated soils, materials, and water
3. Improper transportation and disposal of contaminated soils, materials, and water
4. Faulty equipment or materials
5. Violations of applicable Laws and Regulations at no additional cost to Owner.

1.03 REFERENCES

A. Reference Standards

1. Massachusetts Department of Environmental Protection (MassDEP)
   a. 310 CMR 30.000 Hazardous Waste Regulations
   b. 310 CMR 40.0000 Massachusetts Contingency Plan

2. Environmental Protection Agency (EPA)
   a. 40 CFR Part 761 TSCA PCB regulations
   b. 40 CFR Part 239 to 299 RCRA regulations

3. Occupational Safety and Health Administration (OSHA)
   b. OSHA 29 CFR 1926, Safety and Health Regulations for Construction

B. Notice of Activity and Use Limitation, as prepared in November 2010

C. Definitions

1. Emergency discharge is a discharge that is a result of remediation or dewatering activities conducted in response to a public emergency which requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services.

2. On-Site material: suitable material from on-Site excavation.
1.04 SUBMITTALS

A. Provide in accordance with Division 01 General Requirements.

B. Provide qualifications for Licensed Site Professional (LSP) to Owner and Engineer for review and approval.

C. Provide the appropriate federal or state environmental reports signed by LSP documenting the plan, status, and completion/close-out of work to remove treat and/or dispose of contaminated soil, material, and water generated during excavation and dewatering activities including associated handling, containment, stockpiling/live-loading, transportation, disposal of contaminated soil/material, and disposal/discharge of contaminated water.

D. Provide all environmental permits necessary to conduct excavation activities in contaminated areas.

E. Provide Contactor’s Health and Safety Plan, OSHA HAZWOPER (29 CFR 1910.120) original 40-hour certificate, the most recent 8-hour annual HAZWOPER refresher certificate, and medical monitoring letter indicating staff are fit for duty.

F. Provide Contractor’s certificate of completion for Construction Safety Training (OSHA 29 CFR 1926).

G. Provide electronic copies for all soil, material, and water laboratory reports. Laboratory reports shall appropriately characterize waste for disposal facility acceptance criteria and for compliance with applicable Laws and Regulations.

H. Where disposal or discharge of water is required to support excavation activities, provide electronic copies of all water laboratory reports and discharge monitoring reports. Reports shall appropriately characterize the water for disposal facility acceptance criteria and for discharge in compliance with applicable Laws and Regulations.

I. Provide electronic copies of all executed waste profiles, facility acceptance, transport and/or disposal documentation including bills of lading (BOLs), disposal facility receipts, hazardous waste manifests, or other documents necessary to manage contaminated soil, material, and water.

J. Provide copies of field logs/notes and field screening data during excavation activities.

K. Provide a dewatering plan prepared and stamped by a registered engineer.
1.05 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. The selected and Owner-approved LSP shall be in good standing and have completed at least 3 Utility-Related Abatement Measures since the 2014 changes to the MCP in urban areas where historic fill was with releases of oil and/or hazardous materials that were released to the environment.

C. Handle, transport and dispose of contaminated material in accordance with applicable Laws and Regulations.

D. Perform work in accordance with Response Action Performance Standards identified in the Massachusetts Contingency Plan and other federal, state, and local Laws and Regulations.

E. Contractor shall prevent cross-contamination of imported materials and wastes during the proposed Work.

F. Contractor shall prevent the migration of contaminants via stormwater, illicit discharge, or by wind erosion during the proposed Work.

G. Should any conditions be observed that are not consistent with or are outside of the types of materials described herein, the Contractor shall notify the Engineer immediately and cease operations that are disturbing said materials until directed by the Engineer.

H. Provide that workers performing removal and disposal of contaminated material are OSHA certified in accordance with Article 1.03 and Articles 1.04 E and F above.

PART 2 – PRODUCTS

2.01 GROUNDWATER TREATMENT AND SOIL MANAGEMENT

A. Provide groundwater treatment system(s) capable of treating and disposing of groundwater in compliance with all federal, state and local Laws and Regulations.

B. Complete, file and obtain all permits required for groundwater treatment and discharge or disposal.

C. Provide all labor, tools, equipment and materials required to manage and dispose of soils in accordance with the Massachusetts Contingency Plan and all federal, state and local Laws and Regulations.

D. Complete, file and obtain all permits required for soil management and disposal.
PART 3 – EXECUTION

3.01 GENERAL

A. Work, when applicable, shall be conducted under the direction of a Licensed Site Professional (LSP) approved by the Owner, licensed in the state where the Project is located and in good standing with the Board of Registration of Hazardous Waste Site Cleanup Professionals (LSP Board).

B. Comply with Paragraph 4.06.D. of the General Conditions and Supplementary Conditions (if any) if soil materials or water scheduled for removal within an excavation is suspected to be contaminated.

C. Notify the Owner and Engineer immediately of unexpected and undocumented environmental subsurface conditions that will impact the quality and installation of the Work. Owner and Engineer will inspect the conditions and evaluate options with Contractor. If directed, discontinue Work in impacted area and proceed with other Project Work. Claims associated with delays or mobilization to other area of Work shall not be considered for payment.

D. If notification conditions under applicable Laws and Regulations are required, LSP shall notify the Owner or Engineer immediately such that the Owner or their designee can notify DEP within the appropriate regulatory timeframe.

E. Review available boring and test pit logs, records of explorations and other publicly available (municipal and state environmental records) and pertinent data for the Project. Use this information to prepare an accurate change order price for Work.

F. Perform Work where contaminated materials are discovered over consecutive Work days unless precipitation and severe weather prevent the safety of the Work or exacerbates site conditions. Do not perform work during severe weather (i.e., thunder and lightning). In the event that precipitation occurs during conduct of Work that would present safety concerns or exacerbate site conditions, cease Work immediately and cover soil/material stockpiles, and soil/material storage locations with polyethylene liners.

G. Pay for costs and fees arising from mishandling, improper disposal or use of faulty equipment associated with the removal of contaminated material and water at no additional cost to Owner.
H. Contractor shall be responsible for overweight fines, fees, demurrage charges at the Site and receiving facility, and any other extra costs associated with the transport and disposal of Contaminated Soil and Water, Non-Impacted Soil, and material generated in support of the removal and disposal of contaminated soil and water during normal requirements for excavation including materials, waste liquids, demolition debris, and miscellaneous construction derived waste associated with handling, stockpiling, transportation, and disposal of contaminated soil, non-impacted soil, and contaminated water.

I. Contractor is responsible for the decontamination of transports (trucks, trailers, containers, etc.) and equipment, prior to departure from the Site.

J. All profiles shall be approved by the Engineer prior to submittal of the profile to the disposal facility, and a completed copy of the shipping document (without the applicable weights) shall be approved by the Engineer, or designated representative prior to the loading and shipment of materials off-site.

K. Selection of the receiving disposal facilities must be approved by the Engineer. The names, locations, EPA ID numbers, and facility contacts for the proposed disposal facilities shall be submitted to the Engineer at least two (2) weeks prior to the intended start of shipment, so that adequate time is given to conduct compliance checks and provide approvals of the proposed disposal facilities.

L. Provide all labor, tools, equipment and materials required to manage and dispose of soils in accordance with the Massachusetts Contingency Plan and all federal, state and local Laws and Regulations.

3.02 CONTAMINATED SOIL AND MATERIAL

A. Provide excavation, temporary on-Site stockpiling, laboratory characterization, loading, and transportation (including stockpile management) of contaminated soil from each area of Work to a central stockpile location within the jurisdiction of Owner as specified by Owner.

B. Cover contaminated soil and material stockpiles and storage containers at the end of each day, during periods of non-use, when transported on public ways or as needed to minimize release of dust, or erosion from storm events.

C. Provide laboratory characterization required for soil management facility approval, soil management facility approval, handling, and transportation and disposal of contaminated material.

D. Arrange for legal disposal of the contaminated soil material at an authorized facility in accordance with Laws and Regulations.
E. Transport contaminated soil and material to the approved disposal facility within the timeframes provided in Laws and Regulations.

F. Temporary Stockpiling

1. The approved LSP shall coordinate sampling and analysis of soil and materials stockpiled or stored in containers.

2. Coordinate and schedule Work such that the movement of soil and materials at the Work zone and between the Work zone and central stockpile/storage location is minimized. Revise soils management practices at no additional cost to the Owner, if, in the Owner’s opinion, more efficient management practices can be implemented.

3. Temporary on-Site stockpiles shall be segregated into reusable soil and soil for disposal, to be moved to the central stockpile

4. Place contaminated soil generated from each area of Work into separate stockpiles at the central stockpile location. Mark each stockpile with location where contaminated soil was removed.

5. Place stockpiled contaminated soil and materials on polyethylene sheeting of at least 6 mils in thickness. Immediately cover stockpiles with polyethylene sheeting of at least 6 mils in thickness or other suitable impermeable material with physical properties capable of resisting tearing. Properly secure cover at the base and across the stockpile to protect the pile from the elements and prevent wind from moving the cover.

6. Provide that slopes comply with OSHA Regulations and local codes and Laws and Regulations.

7. Maintain stockpiles at the central stockpile location. Check stockpiles daily during normal working hours and repair, replace or re-secure the sheeting to the satisfaction of the Engineer and Owner.

3.03 CONTAMINATED WATER

A. Dewatering activities are required to lower and control groundwater table levels and hydrostatic pressures to permit excavation, backfill, and construction in the dry. Control of surface water runoff shall be considered as part of this work.

B. The Contractor shall provide, at his own expense, adequate pumping and drainage facilities to keep excavated areas sufficiently dry from groundwater and/or surface runoff so that it does not adversely affect construction procedures or cause excessive disturbance of underlying natural ground.
C. Contractor shall be responsible for managing any water collected by excavation dewatering activities in accordance with applicable Federal, State, and local regulations. Contractor shall be responsible for costs associated with off-site transport and/or disposal of the water. Contractor shall dispose of water removed from the excavations in such a manner as will not endanger portions of work under construction or completed, will cause no inconvenience to the City of Quincy or to others near the Work area, and will comply with the stipulations of required permits for disposal/discharge of water.

D. The Contractor shall be responsible for control of runoff in all work areas including but not limited to: excavations, access roads, parking areas, laydown and staging areas. The Contractor shall provide, operate, and maintain all ditches, basins, sumps, culverts, site grading, and pumping facilities to divert, collect, and remove all water from the work areas. All water shall be removed from the immediate work areas and shall be disposed of in accordance with applicable permits.

E. The Contractor’s dewatering procedures shall prevent loss of ground from negatively impacting adjacent building structures, retaining walls and/or utilities to remain. Any damage caused by the Contractor’s dewatering activities shall be repaired at the Contractor’s sole expense.

F. Contractor shall control surface and subsurface water as part of dewatering requirements. Contractor shall maintain adequate control such that: the stability of excavated and constructed slopes are not adversely affected by saturate soil, including water entering prepared subbase and subgrades where underlying materials are not free draining or are subject to swelling or freeze-thaw action; erosion is controlled; flooding of excavations or damage to structures does not occur; surface water drains away from excavations; and excavations are protected from becoming wet from surface water, or insure excavations are dry before additional work is undertaken.

G. Contractor shall provide dewatering equipment to remove and dispose of all surface and groundwater entering excavations, trenches, or other parts of the work during construction. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe to be installed therein, is completed to the extent that no damage from hydrostatic pressure, flotation or other cause will result. Use pumps and hoses of oil and solvent resistant material used for transfer of contaminated water. Ensure pumps and hoses are well maintained and allow examination by the Engineer. Replace or repair leaking pumps and hoses at no additional cost to the Owner.

H. Provide all necessary means to prevent erosion and the discharge of any associated soil matter into neighboring surface water bodies, adjacent wetlands, or catch basis.
I. If dewatering requirements are not satisfied due to inadequacy or failure of the dewatering system (loosening of the foundation strata, or instability of slopes, or damage to foundations or structures) Contractor shall perform work necessary for reinstatement of foundation soil and damaged structure or damages to work in place resulting from such inadequacy or failure by Contractor, at no additional cost to the Owner.

J. Contractor shall insure compliance with all conditions of regulating permits and provide such information to the Engineer. Contractor shall obtain approval from Engineer prior to discontinuing the operations of the dewatering system.

K. Contractor shall prepare one Dewatering Plan for the entire contract Work, including Bid Alternates, accounting for all treatment methods for anticipated contaminated materials encountered. The Plan shall be supplied to the Engineer, a minimum of two (2) weeks prior to the start of work. The Plan shall present the Contractor’s means and methods to remove, treat as necessary, and dispose of water generated during dewatering activities conducted to support construction. In addition, the Dewatering Plan shall include, but not be limited to, a written report outlining control procedures to be adopted if dewatering problems arise, design calculations proving adequacy of system and selected equipment, a detailed description of the dewatering procedure and maintenance method, a detailed description of the water treatment procedure(s) and maintenance method(s), discharge analytical sampling requirements, and all required permits. The Contractor is directed to groundwater information included in Section 00 31 00 K for additional information. The groundwater data are considered a part of this Section.

L. LSP shall coordinate sampling and analysis of water accumulated in excavations and appropriately characterize and measure thickness of any non-aqueous phase liquid.

M. Contractor shall provide a groundwater extraction, management, and treatment system necessary to meet applicable discharge requirements, permits, Laws and Regulations. Replace or repair equipment at no additional cost to the Owner.

N. Off-Site Water Disposal

1. Manage contaminated water in accordance with applicable Laws and Regulations.

2. Pump contaminated water into either a vacuum truck operated by a licensed hazardous waste transporter (for volumes of water up to 3,000 gallons) or into portable, bulk liquid storage tank(s) for larger volumes and transport to an approved off-Site location for disposal.
3. Coordinate and prepare necessary documentation for legal disposal of the contaminated water at an authorized facility in accordance with Laws and Regulations.

4. Handle and transport contaminated water in accordance with applicable Laws and Regulations, including the DEP of the state where the Project is located.

END OF SECTION
1.01 SUMMARY
A. Section Includes

1. Removal and legal disposal of asbestos cement (AC) pipe encountered by a licensed asbestos abatement contractor in accordance with this Section and applicable reference standards listed in Article 1.03.

1.02 PRICE AND PAYMENT PROCEDURES
A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES
A. Reference Standards


4. Commonwealth of Massachusetts
   a. 453 CMR 6.00, Current Asbestos Regulations
   b. MGL Chapter 149, Sections 6A-6G
   c. MGL Chapter 21E, Massachusetts Oil and Hazardous Material Release Prevention and Response Act

5. Massachusetts Department of Environmental Protection (Mass DEP)
   a. 310 CMR 7.00, 7.09, 7.15, 19.00, 22.00, 33.00, 40.00 and all related amendments and policy statements
   b. Asbestos Cement Pipe Guidance Documents latest version
1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Submit Asbestos Notification Form, ANF-001 10 working days prior to beginning abatement activities to Owner and Mass DEP (see instructions at http://www.mass.gov/eea/agencies/massdep/air/programs/asbestos.html).

C. Asbestos Work Plan prior to commencement of removal of AC pipe including the following:
   1. Notification procedures when asbestos concrete pipe is encountered
   2. Worker training, certifications, personal protective equipment, and monitoring
   3. Sequence of work and operating procedures for the excavation, removal, handling, storage and disposal of asbestos concrete pipe
   4. Description of containment systems
   5. Emergency response procedures
   6. Name, location and certification of proposed disposal location

D. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Qualifications: per statutory requirements for licensed asbestos works.

C. Regulatory approvals: per statutory requirements and Department of Environmental Protection.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.
1.08 SITE CONDITIONS

   A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

   A. Provide that Work is performed by and under the direction of an asbestos abatement Subcontractor duly licensed per Laws and Regulations.

   B. Provide that exposed asbestos cement pipe is handled in accordance with Laws and Regulations.

   C. Provide that personnel handling AC pipe are trained and certified. Provide personal protective equipment to handle such material per Laws and Regulations.

   D. Legally dispose of AC pipe per Laws and Regulations.

3.02 FIELD QUALITY CONTROL

   A. Provide in accordance with Division 01 General Requirements.

3.03 CLOSEOUT ACTIVITIES

   A. Provide in accordance with Division 01 General Requirements.

3.04 ATTACHMENTS

   A. Mass DEP Asbestos Cement Pipe Guidance Documents

END OF SECTION
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SECTION 03 11 00

CONCRETE FORMING

PART 1 – GENERAL

1.01 SUMMARY

A. The Work of this section comprises all materials, tools, equipment and labor required for the design, preparation and cleaning, construction, and removal of all concrete formwork, and the installation of all concrete embedments furnished under other sections, necessary for the proper completion of the Work in accordance with this Section and applicable reference standards listed in Article 1.03.

B. Related Requirements

1. Section 03 30 20 – Concrete Placing, Curing and Finishing

C. General Work Scope: Portions of the proposed sewer and drain are supported upon piles. No details of the piles or pile cap are available. Once the pile cap is exposed, it will be inspected for soundness and structural integrity. The entirety of the pile cap exposed to complete the work will be replaced as necessary as per Engineer. Pile cap replacement shall meet this and related specifications.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Concrete Institute International (ACI)
   a. ACI 117 Specifications for Tolerances for Concrete Construction and Materials and Commentary
   b. ACI 301 Specifications for Structural Concrete
   c. ACI 347 Guide to Formwork for Concrete

2. ASTM International (ASTM)
   a. ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field
   b. ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens

3. U.S. Army Corps of Engineers (USACE)
1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product Data

1. Form Release Agent

C. Manufacturer's Instructions

1. Form Release Agent

D. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General

1. Formwork, where used, shall conform dimensionally to the existing concrete pile cap, or as additionally specified after pile cap inspection. To minimize the number of panel joints, formwork panels shall be of the largest practicable sizes.

2. Undamaged smooth form facing materials such as plywood, hardboard, metal, and plastic, that will produce a smooth form finish, shall be used. Formwork shall not result in fins or offsets exceeding 1/8 inch. If used, aluminum forms with un-oxidized surfaces shall be pretreated with a paste
made of calcium hydroxide and water, followed by water rinsing, repeated until hydrogen bubbles do not form.

B. Form Release Agent

1. Form release agent shall be non-grain raising, non-staining, and shall not leave a residue on the concrete nor adversely affect bonding of materials to be applied.

2.02 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 TECHNICAL REQUIREMENTS

A. The Contractor shall design, erect, shore, brace, and maintain formwork in accordance with ACI 301 to support all loads, including construction loads, until the concrete structure can support such loads.

3.02 CONSTRUCTION

A. Tolerances

1. Tolerances shall be in accordance with ACI 117 for minimum pile cap dimensions and Top of Concrete Elevation. Formwork larger than minimum dimensions (excluding excluding Top of Concrete) will be generally allowed as approved by the Engineer.

B. Form Alignment

1. At locations where continuous surfaces are formed in successive units, forms shall be tightly fitted over the hardened concrete surface to obtain accurate surface alignment and to prevent leakage of mortar and the formation of fins, ridges, and other defects.

C. Form Release Agent

1. Forms shall be coated with the approved form release agent before placement of reinforcing steel. Do not apply form release agent at locations of monolithic construction joints, which are construction joints with all the reinforcement continuous through the joint. Excess agent applied to the forms, and on the reinforcing steel and other surfaces requiring a concrete bond, shall be removed.
2. Forms for unexposed surfaces may be thoroughly wetted in lieu of the approved form release agent immediately before concrete is placed. However, form release agent shall be used in freezing weather.

3. Steel anchors 6 inches on center. Fasten vertical leg of waterstop to reinforcement with wire ties every 12 inches prior to concrete placement.

3.03 REMOVAL

A. Form Removal

1. Form removal per ACI 347, as modified herein.

2. Forms shall be removed while ensuring the complete safety and serviceability of the structure. Forms or shoring for slabs, beams, and other suspended members shall not be removed until members are of sufficient strength to safely support their own weight and the weight thereon.

3. Newly unsupported portions of the structure shall not be subjected to heavy construction or material loading. Additional shores or re-shores shall be provided as required to adequately support the members during the construction period.

4. The Contractor shall be responsible for the proper removal of forms, shores, and bracing.

5. Spalling of concrete surfaces shall be prevented.

6. When forms are removed before the specified curing period (as specified in Section 03 30 20) is complete, measures shall be taken to continue curing and to continue providing thermal protection for the concrete.

7. Forms may be removed when the cumulative time during which the temperature of the air surrounding the concrete is above 50 degrees F are as follows

   a. Walls, columns, sides of beams and girders, and similar parts of the Work not supporting the weight of the concrete: 24 hours.

   b. Alternatively to the stripping times specified, additional concrete cylinders shall be made using representative concrete, witnessed and approved by the Engineer, and tested at no additional cost to the Owner. Such specimens shall be field cured in accordance with ASTM C31 under conditions that are not more favorable than the most unfavorable conditions for the portions of the concrete that the test specimens represent. The supporting forms and shores may be removed when the concrete strength as tested per ASTM C39 is a
minimum of 70 percent of the specified design strength, as determined by the field-cured cylinders according to ACI 301.

3.04 CLEANING AND REPAIR OF FORMS

A. Parts of forms reserved for reuse shall be inspected, cleaned, and repaired. Any parts dented, deformed, or otherwise rendered unfit for reuse shall be discarded.

3.05 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

3.06 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
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SECTION 03 20 00

CONCRETE REINFORCING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide all materials, tools, equipment, and labor necessary for the fabrication and installation of all reinforcement as shown on the Drawings, as specified, and as necessary for the proper completion of the Work in accordance with this Section and applicable reference standards listed in Article 1.03.

B. Related Requirements

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Concrete Institute (ACI)
   a. ACI 117 Specifications for Tolerances for Concrete Construction and Materials and Commentary
   b. ACI SP-66 ACI Detailing Manual

   a. ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

3. American Welding Society (AWS)
   a. AWS D1.4 Structural Welding Code – Reinforcing Steel

4. Concrete Reinforcing Steel Institute (CRSI)
   a. CRSI 10MSP Manual of Standard Practice

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.
1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product Data

1. Certified mill reports, including chemical and physical analyses
2. Dowel bar splicers and dowel inserts

C. Shop Drawings

1. Reinforcement Drawings: Comply with ACI SP-66, and include the following information
   a. Sizes, dimensions, and locations for reinforcement and supports
   b. Bending diagrams and schedules
   c. Splices
   d. Cover and clearances
   e. Class designation and details of bar supports
   f. Pertinent reinforced concrete details with dimensions and elevations
   g. Items furnished by other trades or under other sections of the Specification that are to be cast in concrete where interference with reinforcement may occur
   h. Reinforcement shall be shown on plan views of slabs with required sections. Provide plan details where walls intersect.

D. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Fabricate reinforcement in accordance with ACI 117.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Deliver reinforcement in bundles with tags indicating size, length, and identification mark.

C. Store materials off the ground to prevent soiling and to facilitate subsequent inspection and handling.
1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 STEEL REINFORCEMENT

A. General: Steel reinforcement shall include all bars, anchorages, stirrups, dowels, ties, tie-wire, chairs and other steel supports, and spacers as noted on the Drawings, specified, and as required for the proper completion of the Work.

B. Materials

1. Reinforcement bars shall be formed from new billet steel conforming to ASTM A615, Grade 60 except as otherwise specified.

C. Tie Wire

1. 16-gauge minimum

2. FS QQ-W-461 annealed black, except for architectural concrete.

D. Bar Supports

1. Chairs, bolsters, spacers and other supports to properly position reinforcement shall conform to the bar support recommendations of CRSI 10MSP, and shall be of adequate strength and design to prevent displacement of reinforcement and discoloration of concrete.

2. Supports shall be Class 1 - plastic protected.

3. Supports for bottom reinforcement of slabs on soil shall be chairs with integral plates, or precast concrete blocks not less than 4-inches square with a compressive strength equal to that of the surrounding concrete. Precast blocks may only be used to support reinforcement not more than 3-inches from the bottom of the slab.

E. Fabrication

1. Steel reinforcement shall be fabricated to the sizes, shapes and dimensions shown on the Drawings, details and schedules. All bending shall be in accordance with CRSI 10MSP. All steel shall be bent cold and shall not be bent or straightened in a manner that will injure the metal. Bars with kinks or bends not so detailed shall not be used.

2. Bends for stirrups and ties shall be made around a pin having a diameter not less than 4 times the diameter of the bar. Bends for other bars shall be made
around a pin having a diameter not less than 6 times the diameter of the bar, except for bars larger than 1-inch, the pin shall be not less than 8 times the diameter of the bar.

F. Dowel Bar Splicers and Dowel Inserts (DBS/DI)

1. Dowel bar splicers shall be a 2-component threaded rebar splice system. The internally threaded component shall be forged from Grade 60 deformed rebar material free of external machining or welding. It shall contain an integral flange with nailing holes and be threaded with Unified National Coarse (UNC) or UN (unified) threads to a depth equal to the nominal diameter of the threads plus 1/4 inch. The externally threaded splice component shall be fabricated from Grade 60 deformed rebar material and supplied with rolled threads corresponding with the internally threaded component. The root diameter of the threads shall provide a minimum cross sectional area equal to the cross sectional area of the nominal bar size. Manufacturer testing shall indicate ultimate tension failure occurring in the nominal bar diameter, not at the mechanical splice.

2.02 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Reinforcement

1. Tolerances shall conform to ACI 117.

2. Placement

a. Reinforcement shall be accurately positioned both horizontally and vertically, and shall be properly secured and sufficiently rigid to prevent displacement during concrete placement.

b. Reinforcement shall be securely tied at intersections with tie wire or clips in a manner that will keep all metal away from exposed concrete surfaces.

3. Splices

a. Reinforcement splices shall be as shown on the Drawings. Where not shown, splices shall be located away from areas of maximum stress, and shall be approved by the Engineer.

b. Welding shall only be permitted by written approval of the Engineer, and shall be in accordance with AWS D1.4.
4. All reinforcement within an area of a continuous concrete placement shall be installed, supported, and secured before beginning the concrete placement.

5. Reinforcement Adjustment
   a. Adjust to within allowable tolerances to avoid interference with other reinforcement, conduits, or embedded items.
   b. Reinforcement shall not be moved beyond allowable tolerances without the Engineer's approval.
   c. Reinforcement shall not be heated, bent or cut without approval Engineer's approval.

B. All reinforcement shall be entirely free from flaking rust, loose mill scale, grease, dirt, etc. that might reduce its bond with the concrete.

C. Concrete cover for reinforcement shall conform to the dimensions shown on the Drawings.

D. Notify the Engineer at least 24 hours before placing concrete. All reinforcement within the area of 1 day's concrete placement shall be tied in place and observed by the Engineer or Owner’s representative, prior to commencing concrete placement.

3.02 FIELD QUALITY CONTROL
   A. Provide in accordance with Division 01 General Requirements.

3.03 CLOSEOUT ACTIVITIES
   A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
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SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide cast-in-place concrete in accordance with this Section and applicable reference standards listed in Article 1.03.

B. ACI 301 is hereby made a part of this Specification, except as otherwise modified by the Contract Documents.

C. Related Requirements

1. Section 03 11 00 – Concrete Forming
2. Section 03 20 00 – Concrete Reinforcing
3. Section 03 30 20 – Concrete Placing, Curing and Finishing

D. General Work Scope: Portions of the proposed sewer and drain are supported upon piles. No details of the piles or pile cap are available. Once the pile cap is exposed, it will be inspected for soundness and structural integrity. The entirety of the pile cap exposed to complete the work will be replaced as necessary as per Engineer. Pile cap replacement shall meet this and related specifications and include all labor, materials, tools, testing, and equipment detailed per this and referenced specifications. Demolition of the existing pile cap (assumed of equal volume) shall also be included.

1. Typical section showing estimated pile cap arrangement and size. Section shall be used for the purposes of developing a unit price bid only.
1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Concrete Institute International (ACI)
   a. ACI 117 Specifications for Tolerances for Concrete Construction and Materials and Commentary
   b. ACI 301 Specifications for Structural Concrete

2. ASTM International (ASTM)
   a. ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field
   b. ASTM C33 Standard Specification for Concrete Aggregates
   c. ASTM C40 Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
d. ASTM C88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

e. ASTM C94 Standard Specification for Ready-Mixed Concrete


g. ASTM C143 Standard Test Method for Slump of Hydraulic-Cement Concrete

h. ASTM C150 Standard Specification for Portland Cement

i. ASTM C173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method

j. ASTM C231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

k. ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete

l. ASTM C295 Standard Guide for Petrographic Examination of Aggregates for Concrete

m. ASTM C494 Standard Specification for Chemical Admixtures for Concrete


o. ASTM C586 Standard Test Method for Potential Alkali Reactivity of Carbonate Rocks as Concrete Aggregates (Rock-Cylinder Method)

p. ASTM C595 Standard Specification for Blended Hydraulic Cements

q. ASTM C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

r. ASTM C989 Standard Specification for Slag Cement for Use in Concrete and Mortars

s. ASTM C1105 Standard Test Method for Length Change of Concrete Due to Alkali-Carbonate Rock Reaction

t. ASTM C1116 Standard Specification for Fiber-Reinforced Concrete

u. ASTM C1157 Standard Specification for Hydraulic Cement

w. ASTM C1293 Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction

x. ASTM C1567 Standard Test Method for Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)

y. ASTM C1602 Standard Specification for Mixing Water Used in Production of Hydraulic Cement Concrete

z. ASTM E329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with the Division 01 General Requirements.

1. Test Reports

a. Provide reports by testing agencies meeting ASTM E329.

2. Design Data for Each Concrete Mixture

a. Submit for mix designs for each concrete mixture specified in the Concrete Mix Design Schedule, located at the end of this Section. Submitted mix designs shall use the same, or similar, names as indicated in the Concrete Mix Design.

b. Submit at minimum 14 days before initial placement of concrete.

c. Proportions for all ingredients, 28-day design compressive strength, water to cementitious materials ratio, admixture dosages, slump, and air content.

d. Test data supporting proportions based upon laboratory trial batches or field test records per ACI 301 Section 4, Concrete Mixtures.

1) Field test data used to determine the standard deviation used for establishing the required average design strength shall be from within the previous 12 months, per ACI 301.

2) Field test data documenting that the proposed concrete proportions will produce an average compressive strength equal to or greater than the required average compressive strength shall be from within the 12 months.

3) Laboratory trial batch data shall be from within the previous 24 months.
3. Cement: Certified mill reports, not older than 90 days.

4. Supplementary cementitious materials: Source and test reports for actual material to be used in the Work, not older than 90 days.
   a. Fly ash
   b. Ground granulated blast-furnace slag

5. Aggregate
   a. Data not older than 90 days, except test data for soundness, abrasion, and alkali reactivity - not older than 1 year.
   b. Fine and coarse aggregate data, except as noted
      1) Sources
      2) Specific gravity
      3) Sieve analyses per ASTM C33 (including fineness modulus of fine aggregate)
      4) Organic impurities for fine aggregate per ASTM C40
      5) Potential alkali reactivity (not required if a cement containing less than 0.60 percent alkalis is used, per ASTM C33, or if 50% of the cement/slag content is slag) per ASTM C1260, ASTM C1293, or ASTM C1567
      6) Soundness per ASTM C88
      7) Abrasion for coarse aggregate per ASTM C131 and ASTM C535

6. Product Data and Instructions
   a. Admixtures

7. Sample Batch Ticket
   a. Sample blank batch ticket from concrete batch plant

B. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.
1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 SOURCE

A. Provide concrete supplied from a single commercial ready-mix plant, mixed and delivered in accordance with the requirements of ASTM C94.

2.02 CONCRETE MATERIALS

A. Concrete mixture design

1. Per ACI 301, Section 4, Concrete Mixtures.

2. 28-day design compressive strength: 4,000 pounds per square inch, except as otherwise specified.

3. Water to cementitious materials ratio: not to exceed 0.45 except as otherwise specified.

4. Provide designs of required strength, water to cementitious materials ratio, slump, and workability for placing conditions and specified finishes without segregation.

5. Slump

   a. Per ASTM C143.
   
   b. Specified Slump Range: 3 inches to 5 inches
   
   c. Specified Slump Range (mixes with mid-range water reducer):

      1) 2 inches to 4 inches, before admixture is added

      2) Maximum 6 inches, after admixture is added

   d. Specified Slump range (mixes with high-range water reducer)

      1) 2 inches to 4 inches, before admixture is added

      2) Maximum 8 inches, after admixture is added

B. Cement: per ASTM C150, Type II or ASTM C595 IP(MS), IS (less than 70)(MS). Do not use ASTM C595 cements that contain ASTM C1157 cement. If equivalent alkali content is greater than 0.60 percent, submit aggregate reactivity testing as required by Article 2.02.D.3.
C. Supplementary cementitious materials

1. Fly ash (optional)
   a. ASTM C618, Class F
   b. Maximum loss of ignition: 3.0 percent
   c. Not less than 15 percent or more than 25 percent of weight of cement plus fly ash
   d. Maximum available alkalis: 5 percent

2. Ground-granulated blast furnace (GGBF) slag (optional)
   a. ASTM C989
   b. Activity classification: Grade 100 or 120
   c. Not less than 25 percent or more than 50 percent of weight of cementitious material

3. Fly ash plus GGBF slag
   a. Maximum 50 percent of total cementitious materials
   b. Fly ash portion maximum 25 percent of total cementitious materials
   c. Minimum portland cement: 337 pounds per cubic yard of concrete

D. Aggregate

1. Meet ASTM C33, as amended herein. Evidence of a satisfactory service record in lieu of testing for alkali reactivity is not permitted.

2. Do not use crushed hydraulic cement concrete for aggregate.

3. Aggregate reactivity testing: per ASTM C1260. Do not use aggregate having a 14 day expansion greater than 0.10 percent (considered potentially reactive), except if tested per ASTM C1567, the 14 day expansion is not greater than 0.10 percent, or if tested per ASTM C1293, the 2-year expansion is not greater than 0.04 percent, or if cement containing less than 0.60 percent alkalis is used per ASTM C33. In lieu of the above, Alkali-Silica Reactivity (ASR) mitigation may be by substitution of a minimum 25% fly ash or 50% GGBF slag for cement by weight.

4. Fine aggregates: Sand or screenings of gravel or crushed stone, well graded from fine to coarse; clean and free from soft particles, clay, loam and organic matter, with the volume removed by sedimentation not more than 3 percent.
   a. Organic impurities testing: per ASTM C40. Color of the supernatant liquid above the test Sample, not darker than organic plate No. 3.
b. Grading

<table>
<thead>
<tr>
<th>U.S. Standard Sieve</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 3/8 inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>95 - 100</td>
</tr>
<tr>
<td>No. 8</td>
<td>80 - 100</td>
</tr>
<tr>
<td>No. 16</td>
<td>50 - 85</td>
</tr>
<tr>
<td>No. 30</td>
<td>25 - 60</td>
</tr>
<tr>
<td>No. 50</td>
<td>5 - 30</td>
</tr>
<tr>
<td>No. 100</td>
<td>0 - 10</td>
</tr>
</tbody>
</table>

c. Not more than 45 percent retained between any 2 consecutive sieves listed above. Fineness modulus, not less than 2.3 nor more than 3.1.

5. Coarse Aggregates: Crushed stone or washed gravel of clean, hard, durable, uncoated particles, free from dust, dirt, or other deleterious substances, and free from thin, flat, or elongated particles.

a. Nominal maximum aggregate size for slabs poured on ground, at least 15 inches thick, except where clear spacing between reinforcing bars is less than 2 inches: 1-1/2 inches.

b. Nominal maximum aggregate size at all other locations, except as specified otherwise or approved: 3/4 inch.

c. Nominal maximum aggregate sizes per grading in Table 2 of ASTM C33: No. 467 (1-1/2 inches), No. 57 (1 inch), No. 67 (3/4 inch), No. 7 (1/2 inch), and No. 8 (3/8 inch).

E. Admixtures

1. Air-entraining admixture

a. Per ASTM C260 and chloride free

b. Provide air entrainment, except as noted below, per manufacturer's directions and this Specification to produce the following total entrained air content determined per the procedure in ASTM C173 or ASTM C231.

<table>
<thead>
<tr>
<th>Nominal Maximum Size Coarse Aggregate (inches)</th>
<th>Air Content By Volume (percent plus or minus 1.5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>7.5</td>
</tr>
<tr>
<td>1/2</td>
<td>7.0</td>
</tr>
</tbody>
</table>
3/4
1
1-1/2

3.0 percent.

2. Mid-range water reducing agents: per ASTM C494, Type A, and with consideration of the air entraining effect of the water reducing agent.

3. Water reducing-retarding agents: For use when ambient temperature above 70 degrees F, replace water reducing agent in whole or part with water reducing-retarding agent meeting ASTM C494, Type D. Use amounts to produce concrete with set time equal to that at 70 degrees F without the retarder.

4. Set accelerator: Non-chloride type conforming to ASTM C494, Type C or E where allowed under Section 03 30 20.

5. High-range water reducing agent: ASTM C494, Type F or G (added in plant or field).

F. Water

1. Meet ASTM C1602.

2. Fresh and free from oil, acid, salt, alkali, sewage, organic matter, and other deleterious substances.

3. The amount of water carried on the aggregate and the effect of admixtures is included in the water content. Provide that water carried on the aggregate is determined periodically by test and the amount of free water on the aggregate subtracted from water added to the mixture.

4. Residual, wash, or other water in drums: Completely discharged prior to concrete batching (drums backed out).

5. Maximum amount of water required to produce a plastic mixture of the strength and water to cementitious materials ratio specified and the required density, uniformity and workability. Consistency of mixture required for the specific placing conditions and methods.

6. Slump adjustment: Not made at wash down, slump rack, or by any other means prior to arrival at point of delivery at the Site.

7. Water added after arrival at Site: Accurately metered and recorded on the batch ticket.
2.03 SOURCE QUALITY CONTROL
   A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 FIELD QUALITY CONTROL
   A. Provide in accordance with Division 01 General Requirements.
   B. Advise testing laboratory and field observers minimum 24 hours in advance of placing concrete to allow for scheduling observation and testing.
   C. Assist testing laboratory and Engineer in obtaining and handling Samples at the Site and other sources of material.
   D. Provide space and electrical power at the Site for facilities provided by testing agency for proper initial curing and storage of concrete test cylinders to be lab-cured as required by ASTM C31 for 48 hours after casting. For cylinders to be field-cured: per Section 03 30 20.
   E. Contractor’s testing agency to store cylinders to be lab-cured at 60 degrees F to 80 degrees F in an environment preventing moisture loss from the specimens such as storage in wooden boxes, and placement in damp sand pits. Shield specimens from direct sunlight and radiant heating devices. Control storage temperature by use of heating and cooling devices as necessary and record temperature with a maximum-minimum thermometer.

3.02 CLOSEOUT ACTIVITIES
   A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
CONCRETE MIX DESIGN SCHEDULE

The following table provides a list of concrete mixtures required for the project. The concrete supplier shall submit a concrete mix design for each of the concrete mixtures listed in accordance with “Part 1.05 Submittals” of this specification.

<table>
<thead>
<tr>
<th>Concrete Mixture</th>
<th>Min Comp Strength (psi)</th>
<th>Max W/C Ratio</th>
<th>Air Entrained</th>
<th>Description of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Mix Design w/ air</td>
<td>4,000 at 28 days</td>
<td>0.45</td>
<td>Yes</td>
<td>Use for all concrete below grade pile caps</td>
</tr>
</tbody>
</table>
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SECTION 03 30 20

CONCRETE PLACING, CURING, AND FINISHING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide placing, curing and finishing of cast-in-place concrete accordance with this Section and applicable reference standards listed in Article 1.03.

2. Concrete sampling and field testing by an independent technician certified in accordance with the requirements of ACI Concrete Field Testing Technician – Grade 1 certification program, or the requirements of ASTM C1077. Paid for by Contractor.

3. Laboratory testing of concrete cylinders by an independent, accredited and certified testing laboratory. Paid for by Contractor.

B. Related Requirements

1. Section 03 11 00 – Concrete Forming
2. Section 03 20 00 – Concrete Reinforcing
3. Section 03 30 00 – Cast-In-Place Concrete

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Concrete Institute International (ACI)
   a. ACI 117 Specifications for Tolerances for Concrete Construction and Materials and Commentary
   b. ACI 301 Specifications for Structural Concrete
   c. ACI 306.1 Standard Specification for Cold Weather Concreting
   d. ACI 308.1 Standard Specification for Curing Concrete
   e. ACI 306R Cold Weather Concreting

2. ASTM International (ASTM)
a. ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field
b. ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
c. ASTM C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
d. ASTM C143 Standard Test Method for Slump of Hydraulic-Cement Concrete
e. ASTM C144 Standard Specification for Aggregate for Masonry Mortar
f. ASTM C171 Standard Specification for Sheet Materials for Curing Concrete
g. ASTM C172 Standard Practice for Sampling Freshly Mixed Concrete
h. ASTM C173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
i. ASTM C231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
j. ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
k. ASTM C881 Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
l. ASTM C1064 Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
n. ASTM C1315 Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete

B. Definitions

1. Construction joint refers to a monolithic construction joint in which the surface between successive placements is prepared to enhance bond and shear transfer and reinforcement is continuous.
1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product Data and Manufacturer’s Instructions

1. Delivery Tickets
   a. Provide duplicate delivery tickets at time of delivery for each truckload of concrete delivered
   b. Serial number of ticket
   c. Date and Project location
   d. Name and location of ready mixed concrete plant
   e. Truck number, time loaded, cubic yardage delivered
   f. Dispatcher's name
   g. Mixture design, cement type, and admixtures with brand names
   h. Types and quantities of cement, fly ash and/or slag (if included in approved mix design) and admixtures. Quantities of water and fine and coarse aggregate including moisture content, and nominal maximum aggregate size
   i. Water added subsequent to plant batching, if any. (Only applicable if total water per mixture design is not added at plant. Addition of water such that the water content of the approved mixture design is exceeded will be strictly prohibited.)
   j. Concrete temperature upon delivery
   k. Unloading time and location

2. Epoxy Bonding Compound

3. Evaporation Retardant

4. Curing Compound

5. Preformed Joint Filler

C. Source and Field Quality Control Submittals
1. Methods to be used to protect concrete placed during cold weather. The Engineer's review shall not constitute approval as the Contractor shall be responsible for the protection of concrete placed during cold weather.

2. Methods to be used to protect concrete placed during hot weather. The Engineer's review shall not constitute approval as the Contractor shall be responsible for the protection of concrete placed during hot weather.

D. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Concrete sampling and testing per Article 3.11.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Protection

1. Provisions shall be made for maintaining new concrete in a continuously moist condition for at least seven days after placement

2. Fresh concrete shall be protected from freezing, premature drying, flowing water, and mechanical injury

3. Concrete shall not be placed while rain, sleet, or snow is falling unless acceptable protection is provided. Precipitation shall not be allowed to enter into the concrete mix or damage concrete surfaces

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 PREFORMED JOINT FILLER

A. Preformed joint filler: Conform to ASTM D4819, closed cell polyethylene foam isolation joint material, 1/2” thick unless noted otherwise on drawings. Joint filler shall be X-Tech by C2 Products, Inc., or approved equal.
2.02 CURE AND SEAL COMPOUND

A. Water Based Cure and Seal Compound: Conform to ASTM C309, Type 1, and ASTM C1315, Type 1 with minimum 25 percent solids, non-yellowing, non-staining, and UV light resistant.

1. MasterKure CC 1315WB, by Master Builders; Vocomp-25, by W.R. Meadows; Dress & Seal WB 25, by L&M Construction Chemicals, Inc.; or approved equal shall be provided.

2. Approved Use: Water based products are preferred and approved for application to surfaces with a surface temperature above 50F for interior or exterior surfaces.

3. Limitations: Not permitted for Cold weather application to surfaces temperatures less than 50F.

B. Solvent Based Cure and Seal Compound: Conform to ASTM C309, Type 1, and ASTM C1315, Type 1 with minimum 25 percent solids, non-yellowing and non-staining, and UV light resistant.


2. Approved Use: Exterior surfaces with surface temperature above 40F.

3. Limitations: Not permitted for surfaces with a surface temperature less than 40F.

2.03 EPOXY BONDING COMPOUND

A. Epoxy Bonding Compound: Conform to ASTM C881, contain 100 percent solids, and be moisture tolerant. Sikadur 32 Hi-Mod or Sikadur 32 Hi-Mod LPL, by Sika Corporation; Sure-Bond (J-58, or J-58 LPL), by Dayton Superior; or approved equal shall be provided.

B. Where larger placements require open times greater than 2 hours: Sika Armatec 110 EpoCem or approved equal for larger placements.

2.04 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.
PART 3 – EXECUTION

3.01 CONCRETE PLACEMENT AND JOINTING

A. Tolerances: Tolerances shall conform to all requirements of ACI 117 except as modified.

1. Minimum dimensions (existing) shall be maintained.

2. All reinforcement shall be 3” clear of the exterior concrete surface.

B. Cold Weather Requirements

1. Cold weather concreting provisions shall be followed during cold weather: any and all periods when for more than three consecutive days the average daily outdoor temperature drops below 40 degrees F. (The average daily temperature is the average of the highest and lowest temperature during the period from midnight to midnight.) When temperatures higher than 50 degrees F occur during more than half of any 24-hour duration, the period shall not be regarded as cold weather.

2. When freezing temperatures may occur during periods not defined as cold weather, concrete surfaces shall be protected against freezing for at least the first 24 hours after placing.

3. Concrete shall not be placed on frozen subgrade. Insulate or heat subgrade to ensure temperature above 32 degrees F when concrete is placed.

4. All embedment’s having a cross sectional area of 1.0 square inch or greater, and including #9 reinforcing bars, shall be at a temperature not less than 10 degrees F at time of concrete placement.

5. Thermal protection must be provided immediately after concrete placement. Procedures for covering, insulating, housing, and/or heating concrete shall be prearranged. Except when supplemental heat is provided, the R-value of the insulation shall be per the recommendations of chapter 9 of ACI 306R.

6. Accelerating admixtures shall be approved at the Engineer's discretion, however those containing calcium chloride shall not be permitted.

7. When combustion heaters are used, glue gases shall be vented to the exterior of enclosures.

8. Concrete shall be placed and maintained at the following minimum concrete placement temperatures (measured at concrete surface).

a. Sections of less than 12-inch minimum dimension: 55 degrees F.
b. Sections of 12 to 36 inches minimum dimension: 50 degrees F.

9. The concrete placement temperature shall not be higher than the minimum concrete placement temperature by more than 20 degrees F.

10. The minimum concrete temperature as mixed shall be: 5 degrees F higher than the minimum concrete placement temperature when the air temperature is above 30 degrees F; 10 degrees F higher when the air temperature is between 0 and 30 degrees F; and 15 degrees F higher when the air temperature is less than 0 degrees F.

11. The temperature shall be monitored at the surface of the concrete, including at corners and edges, which are more vulnerable to freezing. The concrete surface temperature and the corresponding outside air temperature shall be recorded a minimum of twice per each 24 hour period.

12. Concrete shall be maintained at the minimum specified temperatures for a protection period of 6 days. When an approved accelerating admixture is used the protection period may be reduced to 4 days.

13. Slabs, regardless of air content, shall not be exposed to freezing temperatures when exposed to rain, snow or other water sources, prior to reaching a compressive strength of 3,500 psi. For hard-troweled slabs (which have a maximum air content of 3.0 percent) see Article 3.07, paragraph D.3 for additional requirements.

14. Concrete shall be cooled gradually at the end of the protection period. The maximum allowable temperature drop at the concrete surface during the first 24 hours after the protection period shall be: 50 degrees F for concrete sections of less than 12 inch minimum dimension; and 40 degrees F for concrete sections of 12 to 36 inch minimum dimension.

C. Hot Weather Requirements

1. The temperature of the concrete when placed shall not exceed 90 degrees F. When the air temperature is 90 degrees F and above, procedures to cool mixture ingredients may be warranted. These include: providing shaded storage for aggregate, frequent sprinkling or fog spraying of coarse aggregate, and using chilled batch water and/or ice. Forms and reinforcement shall be sprinkled with cold water just prior to concrete placement. When possible, placement of slabs should be scheduled after walls and roof structure are in place in order to minimize problems associated with direct sunlight and/or drying winds. Newly placed concrete shall be protected from the direct sunlight.

2. Records shall be maintained of: time and location of concrete placement, air temperature, weather conditions (i.e. calm, windy, clear, and/or cloudy),
relative humidity, and concrete temperature as delivered and after placement.

3. When the air temperature is 90 degrees F and above: the time between the addition of water to cement or cement to aggregate (whichever occurs first) and the time of concrete placement shall not exceed 60 minutes, except upon approval of the Engineer when all tests for air content, slump and temperature are acceptable.

D. Placing

1. Concrete shall be handled from the truck to the place of final deposit as rapidly as practicable by methods preventing segregation and/or loss of ingredients.

2. The time between the addition of water to cement, or cement to aggregates (whichever occurs first), and the placement of concrete shall not exceed 90 minutes. When air temperature is 90 degrees F and above, this time shall be reduced to 60 minutes. These times may be exceeded only upon approval of the Engineer, and only if all tests for air content, slump, and temperature are also acceptable.

3. Water shall be removed from all forms and excavations and the Work shall be kept dry during placement. No water shall be thrown on, allowed to flow over, or rise upon the concrete until it is thoroughly set.

4. Prior to placement of slabs on soil, the subgrade shall be moist with no free water and no muddy or soft spots.

5. The concrete shall be directly deposited as close as possible to its final location, and shall be deposited in such manner so as to maintain a homogeneous, plastic, approximately horizontal surface.

6. Where concrete may contact soil while being placed, free fall shall be limited to a maximum of 3 feet. Concrete that has been contaminated by soil and/or other foreign matter shall be rejected. The accumulation of concrete on the forms and/or on reinforcement above the level of placement shall be avoided. The splashing of concrete upon formwork that is set for a subsequent concrete placement shall be prevented due to the resulting marks on the finished concrete.

7. Re-tempering of concrete and concrete placement against partially hardened concrete shall not be permitted. A concrete placement, once started, shall be carried out as a continuous operation until the placement of the entire section between construction joints is complete.
E. Runways: Runways shall be provided for wheeled concrete handling equipment which shall not be wheeled over reinforcement. Runways shall not be supported upon reinforcement that is part of the Work.

F. Chuting

1. Minimum slope shall be 3 horizontal to 1 vertical and maximum slope shall be 2 horizontal to 1 vertical. Between these limits, the slope shall be that which will prevent segregation and ensure continuous flow.

2. A baffle shall be provided at the end of the chute to prevent segregation. If the end of the chute is more than 3 feet above the surface of deposit, a spout shall be used. The spout shall be kept full of concrete with the end kept as near as practical to the surface of deposit.

3. The chute shall be steel or steel lined, and sections shall have the same slope throughout. Aluminum chutes are not permitted.

4. The chute shall be thoroughly flushed with water before and after each use, the water discharged outside the forms.

G. Pumping: The inside diameter of pipes and hoses used to convey the concrete shall be a minimum of three times the maximum size aggregate of the mixture. In order to minimize altering the concrete properties, long vertical sections at the end of the pump line shall be avoided. A horizontal hose run, a hose loop, or a slide gate at the end of the hose may be used to reduce loss of entrained air.

H. Compaction

1. Provide at least one standby vibrator, and at least one for each three in use.

2. Concrete may be deposited in one or multiple layers. Each layer shall be compacted by mechanical internal vibrating equipment supplemented by hand spading, rodding, and tamping as required. The depth of each layer shall not exceed the smaller of 36 inches and the depth that can be properly vibrated with the equipment used. When deposited in multiple layers, the vibrator shall penetrate the previous layer approximately 6 inches. Ensure initial setting of the previous layer does not occur prior to placement of subsequent layer.

3. Vibrators shall be relocated frequently, and over-vibration resulting in segregation shall be prevented. Vibrators shall not be used to move concrete within the forms. Concrete shall be thoroughly consolidated around reinforcement, embedments, and into the corners of the forms.

4. Ensure that vibrator is kept several inches clear of waterstops.
5. Where internal vibration is impractical, the use of form vibrators will be considered, and will be allowed only with the Engineer's written approval. When allowed, the vibrator shall be placed so that motion is horizontal.

I. Construction Joints

1. Construction joints shall be located where shown on the Drawings, or, if not shown, locations shall be approved by the Engineer.

2. Horizontal construction joints: laitance shall be removed immediately after initial set and the surface shall roughened in an acceptable manner that exposes the aggregate uniformly and doesn't leave laitance or loose aggregate. After the concrete has set to a degree that precludes laitance removal by shovels or scrapers, the Contractor shall remove it, and create a roughened surface, by water jetting or other effective method. The use of pneumatic hammers is not permitted.

3. Before concrete is placed against set concrete, the surface shall be thoroughly wetted with standing water removed. Horizontal construction joints shall be in a saturated surface dry condition: saturated for a minimum of 6 hours, with standing water removed.

4. Where noted on the Drawings, and as approved by the Engineer where an unplanned interruption within a concrete placement has occurred, epoxy-bonding compound shall be used in accordance with the manufacturer's instructions.

5. Reinforcement shall be continuous at construction joints unless otherwise shown on the Drawings.

3.02 CURING AND PROTECTION

A. Temperature

1. When the ambient temperature falls below 40 degrees F or rises above 95 degrees F, a record shall be kept of concrete temperatures and of protection given to concrete during placement and curing.

2. The temperature of in-place concrete shall be the surface temperature of the concrete. The surface temperature may be determined by placing temperature sensors in contact with concrete surfaces or between concrete surfaces and covers used for curing, such as insulation blankets or plastic sheeting.

B. Curing

1. Provide curing per ACI 308.1 except as modified.
2. During cold weather, as previously defined, the application of water shall not be required. Curing shall be accomplished by the use of curing paper, curing compounds, cure and seal compounds, or other approved methods. Thermal blankets are not an approved curing method and shall be used in conjunction with curing provisions previously stated.

3. Provisions shall be made for maintaining new concrete in a continuously moist condition for a minimum of 7 days. Curing shall commence as soon as possible after final finishing when it will not mar, erode, or stain the concrete surface.

4. Curing shall be accomplished by the use of curing paper, curing compounds (except as noted below), wet methods (ponding, fog spray, damp sand or burlap, sprinkling, soaker hoses) or other methods.

5. Water used for curing shall be no more than 20 degrees F cooler than the concrete surface temperature.

6. Where used, curing compound shall be applied immediately following the disappearance of the surface water sheen after the final finishing pass for slabs, and immediately upon removal of forms for formed concrete. Apply two coats per manufacturer’s installation instructions. Apply each coat uniformly with no gaps in coverage. If applied by spray, provide additional spray tank and spray nozzles as required to provide uninterrupted application of product. Cure and seal compounds have high solid content and shall be applied by trays and rollers, if application by spray tanks is not completed in a timely manner and to the satisfaction of the engineer.

7. Soaker hoses shall be used at tops of walls and columns before forms are removed. Wood forms shall be kept continuously wet in hot weather.

3.03 DEFECTIVE CONCRETE

A. The Engineer may direct the Contractor to remove and replace, at no additional cost to the Owner, concrete Work that is not formed as shown and/or specified in the Contract Documents, or that contains a defective surface.

B. Upon the Engineer's approval, minor imperfections may be patched as specified herein.

3.04 FINISH OF FORMED SURFACES

A. General

1. Surface tolerance classes indicated herein are specified in ACI 117, and include abrupt surface irregularities that are measured within 1-inch of the irregularity, and gradual surface irregularities measured as the maximum
gap between the concrete and the near surface of a 5-foot straight-edge, measured between contact points.

B. Surface Finish – 1.0 (SF-1.0)

1. SF-1.0 shall be provided for formed surfaces not exposed to view for concrete not containing liquids and/or gases, and not below design groundwater elevation.

2. Patch voids larger than 1 1/2-inch wide or 1/2-inch deep.

3. Remove projections larger than 1-inch.

4. Tie holes need not be patched.

5. Surface tolerance Class D, with formed surface irregularities not more than 1-inch.

3.05 FIELD QUALITY CONTROL

A. General:

1. Provide in accordance with Division 01 General Requirements.

2. During the progress of the Work, an independent, accredited and certified testing laboratory shall conduct concrete testing as specified herein, including the preparation and testing of concrete cylinders. All testing shall be paid for by the Contractor.

3. Field technicians in charge of sampling concrete; testing for slump, unit weight, air content, and temperature; and making and curing test specimens shall be certified in accordance with the requirements of ACI Concrete Field Testing Technician – Grade 1 certification program, or the requirements of ASTM C1077.

4. Scheduling: Contractor to advise testing laboratory and field technician(s) a minimum 24 hours in advance of placing concrete to allow for scheduling observation and testing.

5. Test Cylinder Storage: Provide space and electrical power at the Site for temperature controlled storage of concrete laboratory test cylinders to be standard cured per Specification 03 30 00. Temperature controlled storage containers to be provided by testing agency.

B. Field Testing and Sampling Procedures

1. Concrete samples shall be taken in accordance with ASTM C172 for slump, entrained air, unit weight, and strength tests.
2. Entrained air content and slump requirements are listed in Specification 03 30 00.

3. Air Content: Test in accordance with ASTM C173 or ASTM C231. Prior to pumping initial delivery of concrete each day, air content and slump shall be verified at point of delivery. Thereafter, pumped concrete shall be sampled and tested for air content at the point of delivery, as opposed to at the point of delivery. Upon the Engineer's approval: once the slump loss and the loss of entrained air due to pumping is established, correlated acceptance limits at the point of delivery, where sampling and testing may then be performed, shall be made applicable. When the pump line configuration is changed significantly, sampling and testing shall again be performed at the point of placement until new acceptance limits at the point of delivery may be determined.

4. Slump: Measured in accordance with ASTM C143 at the point of delivery.

5. Temperature shall be measured in accordance with ASTM C1064 at the point of delivery

6. Test Cylinders: Concrete cylinders shall be prepared in accordance with ASTM C31 and be 4 inches diameter by 8 inches tall. Refer to Article 3.11, part D for number of cylinders required.
   
   a. Lab-Cured (Standard Cured) Cylinders: Filed cured in temperature controlled storage per Specification 03 30 00. Cylinders shall be transported to the testing lab within 48 hours of forming, but not sooner than 8 hours after final set.
   
   b. Field Cured Cylinders: Cured in the field under conditions that are not more favorable than the most unfavorable conditions for the portions of the concrete that the cylinders represent.

C. Laboratory Testing of Test Cylinders:

1. Cylinders shall be tested for compressive strength in accordance with ASTM C39

2. Test concrete cylinders per Section 3.11, Part D.

3. The compressive strength shall be the average strength of three cylinder breaks per ASTM C39 and tested at 28-days.

4. Test Results: Submit test results to Engineer and concrete supplier within 24 hours of laboratory testing.

D. Field and Laboratory Testing Frequency:
1. Minimum field testing frequency for each day concrete is delivered and placed at the project site shall be as follows.

   a. Take concrete test cylinders at frequency stated herein from truckload determined by technician, contractor, or engineer.
   b. 1st truck load: Test air content, slump, and temperature.
   c. 2nd and 3rd truck load: No testing unless noted otherwise.
   d. 4th truck load: Test air content, slump, and temperature.
   e. 5th and 6th truck load: No testing unless noted otherwise.
   f. 7th truck load: Test air content, slump, and temperature.
   g. Repeat test frequency for additional truckloads of concrete delivered during each day of concrete placement.
   h. Concrete temperature shall be tested for each truckload of concrete during cold weather or hot weather as defined within this specification.
   i. Contractor, Owner’s representative, or Engineer shall increase testing frequency as required to verify mix designs, address workability concerns, and to ensure all concrete placed complies with specifications.

2. Lab-Cured (Standard Cure) Cylinders:

   a. Lab-cured cylinders are required for all concrete on the project and shall be in addition to field-cured cylinders, where provided.
   b. One set of 5 cylinders shall be prepared for each 100 cubic yards, or fraction thereof, of each different mix placed in each single day; or for each 5,000 square foot of slab or wall surface area placed each day.
   c. Test one cylinder at 7 days, three at 28 days, and reserve one cylinder for 56-days.
   d. Test 56-day cylinder as needed or requested by Contractor or Engineer.

3. Field-Cured Cylinders:

   a. Contractor is responsible for taking additional field-cured test cylinders to verify concrete compressive strength prior to tightness testing concrete tanks, backfilling concrete basement walls, or early removal of formwork.
   b. One set of 3 field-cured cylinders shall be prepared for each 100 cubic yards, or fraction thereof, of the concrete placed in each single day.
c. Test field cured cylinders at 14 days or as requested by Contractor or Engineer.

E. Acceptance Criteria and Additional Testing Requirements:

1. Concrete strength shall be evaluated in accordance with ACI 301 Section 1.6.5, "Evaluation of concrete strength tests", and Section 1.6.6, "Acceptance of concrete strength"

2. Construction will be considered potentially deficient if concrete fails to meet any requirements that affect the strength and durability of the structure, including but not necessarily limited to

   a. Low strength concrete per ACI 301, Section 1.6.5, "Evaluation of concrete strength tests", and Section 1.6.6, "Acceptance of concrete strength"

   b. Water-to-cementitious materials ratio higher than that of the specified mix

   c. Reinforcing steel size, quantity, strength, position or arrangement that does not meet the requirements of the Contract Documents

   d. Reinforced concrete that differs from the dimensions or locations shown on the Drawings

   e. Curing that does not meet the requirements of the Contract Documents, including premature formwork removal

   f. Hot or cold weather concreting that doesn't meet the requirements of the Contract Documents

   g. Mechanical damage from accidents or fire

   h. Poor construction practices

F. The Engineer may order load and/or core tests in accordance with ASTM C42. Such testing shall be paid for by the Owner if the concrete is proven to meet the requirements specified.

3.06 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
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SECTION 31 00 00

EARTHWORK

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Excavating, filling, backfilling, stockpiling, bedding, compacting, grading, hauling, disposal of on-Site soils, processing of on-Site soils for reuse, testing of soils, engaging an independent Geotechnical Testing Agency to perform required quality assurance/quality control inspection and testing, protection and other Work necessary for construction of pipelines, structures, subsurface structures, foundations, pavements, earthen embankments and appurtenant Work in accordance with this Section and applicable reference standards listed in Article 1.03.

B. Related Requirements

1. Section 01 50 00 - Temporary Facilities and Controls
2. Section 01 57 13 – Temporary Erosion and Sedimentation Controls
3. Section 31 10 00 – Site Clearing
4. Section 31 50 00 – Excavation Support and Protection

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Association of State Highway and Transportation Officials (AASHTO)
   a. AASHTO M85 Standard Specification for Portland Cement
   b. AASHTO M 295 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
d. AASHTO T27 Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates

e. AASHTO T96 Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

2. ASTM International (ASTM)


b. ASTM D422 Standard Test Method for Particle-Size Analysis of Soils

c. ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft^3 (600 kN-m/m^3))

d. ASTM D1556 Density and Unit Weight of Soil in Place by the Sand-Cone Method

e. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort

f. ASTM D2167 Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method

g. ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

h. ASTM D2922 Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)

i. ASTM D2937 Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method

j. ASTM D3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

k. ASTM D3740 Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

l. ASTM D6938 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

m. ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

n. ASTM C131 / AASHTO T-96 (Los Angeles Abrasion Test)
3. MassDOT Standard Specifications and Supplements and Construction Details

B. Definitions

1. Unsuitable material: soft clay or silt, organic clays or silts, peats, debris, concrete, pavement, stones or boulders over 6 inches in diameter, wet or frozen material, and material deemed unsuitable by Owner or Engineer that will not provide suitable foundation or structural support for pipe and associated drainage structures, buildings, or other structures, and is unsuitable for use in backfill.

2. On-Site material: suitable material from on-Site excavation.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1. Pre-installation conference: conduct at Project Site at least 30 days prior to start of Work.
   a. Required attendees: Owner and Engineer, Owner’s independent testing firm and geotechnical consultant, Contractor’s Superintendent, Support of Excavation (SOE) Installer, Dewatering Installer and Contractor’s independent testing firm
   b. Review methods and procedures related to earthmoving including, but not limited to, the following.
      1) Work hours
      2) Personnel and equipment needed to maintain proposed construction schedule and avoid delays
      3) Work procedures
      4) Establishing and maintaining Site access
      5) Coordination of Work with utility locator service
      6) Stockpiling area and temporary access points
      7) Site logistics for hauling and stockpiling
      8) Coordination of Work and equipment movement with support of excavation systems installation
9) Construction phasing, anticipated daily and weekly progress and conformance to construction schedule

10) Methodology for field quality control

2. Make provisions for observations and testing of Work by Owner’s independent testing and inspection agency and geotechnical consultant.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product Data
   1. Provide for each on-Site and borrow soil material or aggregate
      a. Name of each material Supplier, specific type and source of each material
      b. Bills of Lading documenting materials source, including Supplier name and relationship to source, location where materials were obtained; including street, town, lot and block, country and state. Include present and past usage of source Site.
      c. Supplier’s statement that material is not contaminated and is free of extraneous debris or solid waste, and description of steps taken to confirm
      d. Product weight shipping tickets certified by Supplier

C. Samples and Mockups: as specified in Article 1.06.

D. Certificates
   1. Certification stating materials are virgin materials from a commercial or non-commercial source.

E. Design Data/Submittals
   1. Materials gradation

F. Source and Field Quality Control Submittals
   1. Field compaction testing
   2. Material testing reports for each on-Site and borrow soil material proposed for fill and backfill in accordance with ASTM D2487
   3. Laboratory compaction curve in accordance with ASTM D1557
4. Backfill moisture-density relationships

5. Submit daily field reports documenting earthwork activity and field-testing for each day. At minimum, reports shall include
   a. Description of day’s activities
   b. Results of in-place density testing including in-place dry density, moisture content, percent compaction, elevation of test and description of soil
   c. Sketch indicating extent of each day’s Work and location of testing

6. Daily records of over-excavated volumes including
   a. Beginning and end station of over-excavation
   b. Proposed elevation of subgrade
   c. Actual elevation of subgrade
   d. Calculated volume of additional excavation in bank cubic yards (BCY)

G. Qualification Statements

1. Contractor’s independent testing agency: qualified for testing specified in ASTM E329 and ASTM D3740.

H. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Qualifications: per Division 01 General Requirements and as follows for geotechnical testing.

1. Geotechnical testing agency to monitor earthwork: qualified per ASTM 329 and ASTM D3740.

C. Independent Testing

1. Minimum of 50 pounds of material in an airtight container to testing laboratory.
D. Samples

1. Each type of soil or aggregate proposed for use on Project, a minimum of 14 days prior to Work.

2. Submit additional material Samples at least every 500 cubic yards throughout course of Work, if requested by Engineer to evaluate consistency of source or process.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Waste Management and Disposal

1. Legally dispose of excess or unsuitable material.

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General

1. Obtain approval of Owner and Engineer for changes in material sources.

2. Off-Site sources of materials and testing of materials to verify compliance with Specifications may be inspected by Owner.

B. Crushed stone: 3/4-inch sized, durable, clean angular rock fragments obtained by breaking and crushing rock material meeting MassDOT M2.01.4 criteria, free of ice, snow, sand, silt, clay, loam, shale, or other deleterious matter.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-inch</td>
<td>100</td>
</tr>
<tr>
<td>3/4-inch</td>
<td>90-100</td>
</tr>
<tr>
<td>1/2-inch</td>
<td>10-50</td>
</tr>
<tr>
<td>3/8-inch</td>
<td>0-20</td>
</tr>
<tr>
<td>#4</td>
<td>0-5</td>
</tr>
</tbody>
</table>
C. Sand: clean inert, hard, durable grains of quartz or other hard durable rock, free from loam or clay, surface coatings and deleterious materials.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8-inch</td>
<td>100</td>
</tr>
<tr>
<td>#4</td>
<td>95-100</td>
</tr>
<tr>
<td>#16</td>
<td>50-85</td>
</tr>
<tr>
<td>#50</td>
<td>10-30</td>
</tr>
<tr>
<td>#100</td>
<td>2-10</td>
</tr>
<tr>
<td>#200</td>
<td>0-3</td>
</tr>
</tbody>
</table>

D. Suitable backfill: well-graded granular material. Retain at least 25 percent by weight on #4 sieve and contain less than 35 percent finer than a #200 sieve by weight, predominantly free from organic matter, man-made materials, ice, snow or other deleterious material.

E. Gravel borrow for trench backfill: hard, durable stone and course sand inert material, free from loam and clay, surface coatings and deleterious material, MassDOT Division III, subsection M1.03.0, Type b. Gradation requirements: AASHTO T11 and T27.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 inch</td>
<td>50-85</td>
</tr>
<tr>
<td>#4</td>
<td>40-75</td>
</tr>
<tr>
<td>#50</td>
<td>8-28</td>
</tr>
<tr>
<td>#200</td>
<td>0-10</td>
</tr>
</tbody>
</table>

Type b: maximum stone size = 3-inches in largest dimension

F. Gravel borrow for roadway subbase: processed gravel for backfill per MassDOT Section M1.03.1, consisting of hard, durable stone and course sand inert material, free from loam and clay, surface coatings and deleterious materials. Coarse aggregate percentage of wear: maximum 50 by ASTM C131 and AASHTO T 96.
G. Dense graded crushed stone: crusher-run coarse aggregates of crushed stone and fine aggregates of natural sand or stone screenings, uniformly pre-mixed with a predetermined quantity of water per MassDOT M2.01.7.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 inch</td>
<td>100</td>
</tr>
<tr>
<td>1-1/2 inch</td>
<td>70-100</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>50-85</td>
</tr>
<tr>
<td>#4</td>
<td>30-60</td>
</tr>
<tr>
<td>#200</td>
<td>0-10</td>
</tr>
</tbody>
</table>

H. Refill material: 3/4-inch crushed stone for below grade or rock excavation unless otherwise directed.

I. Common fill: friable material with no objects greater than 6 inches in diameter, no more than 30 percent by weight finer than No. 200 sieve, free from ice, snow, roots, sod, rubbish and other deleterious or organic matter. Excavated material from on-Site sources meeting these Specifications may be used for common fill.

J. Select backfill: as specified for gravel borrow with stones maximum 3 inches in diameter.

K. Compacted structural fill: suitable bank run sand and gravel, free of clay, organic material, snow, ice, or other unsuitable materials, well-graded.

<table>
<thead>
<tr>
<th>Sieve Designation</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 inch</td>
<td>100</td>
</tr>
<tr>
<td>#4</td>
<td>30-90</td>
</tr>
<tr>
<td>#40</td>
<td>10-50</td>
</tr>
<tr>
<td>#200</td>
<td>0-8</td>
</tr>
</tbody>
</table>
L. Drainage stone: 1-1/2-inch crushed stone per MassDOT Section M2.01.1 of durable, clean angular rock fragments obtained by breaking and crushing rock material.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 inch</td>
<td>100</td>
</tr>
<tr>
<td>1-1/2 inch</td>
<td>95 - 100</td>
</tr>
<tr>
<td>1 inch</td>
<td>35 - 70</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>0 - 25</td>
</tr>
</tbody>
</table>

M. Controlled density fill (CDF): excavatable and used to limit settlement, lateral movement, undermining, washout and other hazards created by earthwork operations as shown on Drawings and when excavating around structures, utilities, sidewalks, pavements, and other facilities. Batch CDF at concrete plant.

2. Fly ash: AASHTO M295. Class F
5. Air entraining admixture: MassDOT M4.02.05.
6. Compressive strength: 28 day = 30-80 psi, 90 day = 100 psi.
7. Slump: 10 - 12 inches.

N. Riprap stone: sound, durable rock that will not disintegrate due to exposure to water or weather, angular in shape such as rough, unhewn quarry stone or fragments obtained by blasting, breaking or crushing natural rock. Do not use rounded boulders or cobbles; flat, platy stones; shale or slate rock with its largest length dimension 3 times greater than its shortest dimension.

O. Riprap gradation: stone size corresponding to inch dimension indicated on Drawings. $D_{50}$ stone size represents 50 percent of stone passing $D_{50}$ dimension sieve screen. $D_{20}$ stone size, 20 percent passing: 1/2 $D_{50}$ dimension. Maximum size limit: $D_{100}$: twice the $D_{50}$ stone size dimension.

P. Special Pipe Bedding Material: The special pipe bedding material shall consist of a geotextile fabric installed on the trench bottom before backfilling with crushed stone as specified and as shown on the contract drawings.
2.02 GEOTEXTILE FABRIC
   A. Geotextile Fabric shall be Mirafi Non-Woven 160N, or approved equivalent.

2.03 SOURCE QUALITY CONTROL
   A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 EXAMINATION
   A. Verification of Conditions
      1. Check and verify governing dimensions and elevations before starting Work. Survey condition of adjoining properties with Engineer. Take digital video recording of any prior settlement or cracking of structures, pavements and other improvements. Provide list of damages, verified and signed by Contractor and Engineer.
      2. Coordinate survey. Establish exact elevations at fixed points to act as benchmarks. Identify benchmarks and record existing elevations. Locate datum level used to establish benchmark elevations so it will not be affected by excavation operations.
      3. Verify subsurface utilities have been marked prior to performing excavation or earthwork and provide sufficient notification to the local Dig Safe agency.

3.02 PROTECTION
   A. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
   B. Protect and maintain erosion and sedimentation controls during earth moving operations.
   C. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost. Remove temporary protection before continuing Work.
   D. Prevent surface water and groundwater from entering excavations, ponding on prepared subgrades, and flooding Project Site and surrounding area.
   E. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
1. Excavation will occur below water level. Complete Work in-the-dry to maintain undisturbed condition of bearing soil.

2. Reroute surface water runoff away from excavated area. Do not allow water to accumulate in excavations to ensure bottoms and sides of excavations remain firm and stable throughout construction operations. Do not use excavated trenches as temporary drainage ditches.

3. Install a dewatering system in accordance with Section 01 50 00 to keep subgrades dry and convey groundwater away from excavations. Maintain until dewatering is no longer required.

4. Recharge water from excavations on-Site avoiding injury to public health, public and private property, existing Work, Work to be completed or in progress, roads, walks and streets, or causing any interference with the public.

5. Do not place concrete or fill in excavations containing free water.

3.03 GENERAL EXCAVATION

A. Ensure sequence of excavation operations provides efficient use of excavated materials into embankments and minimum use of borrow.

B. Dispose of excavated materials including unsatisfactory soil materials, cobbles, boulders, and obstructions and replace with suitable backfill materials. Urban fill may be screened to remove unsatisfactory material, and used requirements of suitable backfill are met.

C. Remove and legally dispose of pavements, curbing and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, and other materials encountered that are not classified as rock excavation or unauthorized excavation. Legally dispose of surplus materials resulting from excavation not needed for use on Project as determined by Engineer. Obtain necessary permits for legal disposal of surplus material.

D. Unclassified excavation: excavating to subgrade elevations regardless of surface and subsurface conditions.

E. Classified excavation: excavating to subgrade elevations. Material excavated: classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Engineer.

1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
2. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions.
   a. 24 inches outside of concrete forms other than at footings
   b. 12 inches outside of concrete forms at footings
   c. 6 inches outside of minimum required dimensions of concrete cast against grade
   d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments
      1) 6 inches beneath bottom of concrete slabs-on-grade
      2) 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide

F. Remove materials encountered to limits shown on Drawings, as specified or required.

G. Do not perform excavation below normal grade to remove and replace unsuitable materials until approved by Engineer.

H. Unauthorized excavation: removal of materials beyond indicated subgrade elevations or dimensions without specific direction.
   1. Refilling Unauthorized Excavation
      a. Trenches: use 3/4-inch crushed stone or compacted structural fill and stabilization fabric as separator material as directed.
      b. Backfill and compact unauthorized excavations as specified for authorized excavations, of same classification, unless otherwise directed.
      c. Excavation below normal grade
         1) Notify Engineer to observe conditions when excavation has reached required subgrade elevations. Carry excavations deeper and replace excavated material with compacted structural fill or crushed stone if unsuitable materials are encountered at required subgrade elevations as directed.
2. Excavation Above Normal Grade
   
a. Remove from Site and dispose of legally if unsuitable materials are encountered above normal grade. Do not use unsuitable materials as backfill on any portion of Project unless approved.

   b. Use approved suitable stockpiled material to replace unsuitable material to backfill trenches to dimensions for pipe and structure bedding and backfill as shown on Drawings. Use gravel borrow to complete trench backfills to elevation shown for pipe and structure backfill if suitable stockpile material is not sufficient to backfill trenches to required dimensions.

I. Site Clearing
   
1. Clear site in accordance with Section 31 10 00.

3.04 EXCAVATION IN ASPHALT PAVEMENT AREAS

   A. Saw cut or mill to full depth through existing pavement for pipe or structure placement prior to excavation. Minimize disturbance of remaining pavement.

   B. Use shoring and bracing where sides of excavation will not stand without undermining pavement.

   C. Remove and legally dispose of existing pavements during course of Work. Avoid mixing existing pavement material with excavation material intended for backfill.

3.05 EXCAVATION FOR TRENCHES

   A. Excavate to widths shown on Drawings.

   B. Produce an evenly graded flat trench bottom at subgrade elevation required for installation of pipe and bedding material.

   C. Load excavated material directly into trucks unless otherwise approved.

   D. Place backfill material directly into trench or excavation. Do not stockpile material to be used as backfill in traffic areas.

3.06 EXCAVATION FOR STRUCTURES

   A. Excavate to indicated elevations and dimensions within tolerance of plus or minus 1 inch. Extend excavations sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and inspections.
1. Excavate footings, foundations, and structures to final grade by hand just before concrete reinforcement placement. Do not disturb bottom of excavation. Trim bottoms to required lines and grades to leave solid base to receive other Work.

2. Do not excavate to final subgrade level until geotextile and compacted structural fill or crushed stone layer can be placed immediately to avoid softening or deterioration of formation. Leave a minimum depth of 3 feet overlying the final subgrade level in place where geotextile and compacted structural fill or crushed stone layer are not immediately placed.

3. Do not allow trafficking on final subgrade or upper surface of crushed stone layer without prior placement of approved sacrificial haulage layer.

B. Approval of Subgrade

1. Notify Engineer when excavations have reached required subgrade. Remove last 6 inches just prior to inspection.

2. Clear subgrade of soft, spongy or other material unsuitable for founding. Continue excavation and replace with compacted structural fill as directed if independent inspection and testing agency or geotechnical consultant determines presence of unsatisfactory soil.

3. Finished subgrade tolerance: plus or minus 1 inch.

4. Seal subgrade and protect from degradation.

5. Re-compact exposed surfaces prior to placing compacted structural fill or constructing foundations in accordance with Article 3.11, with a minimum 4 passes with double-drum vibratory roller compactor following excavation to foundation bearing levels in natural soils, using Bomag BW 60S or equivalent. Engineer may waive re-compaction if integrity of subgrade soils is compromised. Do not proof-roll wet or saturated subgrades.

6. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water or construction activities affecting final subgrade.

7. Seal formations within 4 hours of inspection with specified geotextile and compacted structural or crushed stone fill.

8. Install geotextiles as directed and shown on Drawings.

9. Protect formations from loosening by traffic or resulting from high groundwater table.
C. Provide monitoring of geotechnical instrumentation against predefined target performance values.

3.07 PROCESSING OF ON-SITE URBAN FILL USED FOR BACKFILL

A. Excavate urban fill where encountered in Work to designated depths and stockpile until processed.

B. Pass on-Site cohesionless soils excavated from trench through mechanical screen to remove particles larger than 3 inches.

C. Reuse only processed urban fill containing maximum of 5 percent by dry weight of roots, plants, sod, clay lumps or other organic or cohesive soils.

3.08 ROCK REMOVAL

A. Notify Engineer immediately of change in classification. Expose bedrock surface to allow Engineer to perform an elevation survey and take cross-sectional measurements if bedrock is encountered above trench bottom grade or above subgrade elevation.

B. Perform rock excavation by mechanical methods only. Do not blast.

C. Remove or partially remove boulders exposed on sides or bottom of excavations as directed. Remove boulders to:

1. minimum 2 feet outside structure walls;
2. minimum 12 inches outside footings;
3. minimum 6 inches below under-slab subgrade;
4. minimum lateral trench width line limits indicated; and
5. minimum 12 inches below underside of pipes.

D. Refill depressions resulting from removal of boulders and rock with approved compacted bedding.

E. Refill unauthorized rock excavations, or excavations made beyond or below indicated or directed excavation limits, with compacted bedding.

F. Remove and legally dispose of unused rock and boulders off-Site.

G. Remove and legally dispose of residual solids to limits shown on Drawings, as specified, or needed to complete Project in accordance with Laws and Regulations.
3.09 SHORING AND BRACING
   A. Provide in accordance with Section 31 50 00.

3.10 BACKFILL AND FILL
   A. General
      1. Suspend operations when weather conditions are unsatisfactory for placing
         backfill and avoid disturbing placed material and approved excavations.
      2. Remove and replace excavation or material previously placed that have
         softened or eroded, soft and yielding material, or other unsuitable or
         damaged areas with compacted backfill as specified.
      3. Do not backfill excavations and trenches until new utilities and structures
         have been inspected and tested satisfactorily for conformance with
         Drawings and Specifications unless directed. Place soil material in layers
         to required elevations as shown on Drawings or specified. Fill, backfill,
         and compact in accordance with this Section to produce minimum
         subsequent settlement of material. Provide support for surface treatment or
         structure to be placed on material. Place material in approximately
         horizontal layers beginning at lowest area, maintaining drainage. Replace
         frozen or saturated fill in stockpiles with suitable off-Site fill.
   B. Provide compacted structural fill or backfill for structure, placed beneath the
      structures’ foundations and slabs-on-grade where unsuitable soil has been over
      excavated below design subgrades, and against below grade walls.
   C. Do not reuse excess excavated on-Site soils as compacted structural fill below
      foundations.
   D. Ground Surface Preparation
      1. Remove asphalt and concrete pavements, granular base course, existing
         sandy and gravelly fills, existing organic silty clay soils, organic peat,
         vegetation, debris, unsatisfactory soil materials, obstructions, and
         deleterious materials from ground surface to excavation subgrade prior to
         placement of fills.
      2. When existing ground surface has a density less than specified for a
         particular area classification, break up ground surface, pulverize,
         moisture-condition to optimum moisture content, and compact to required
         depth and percentage of maximum density.
E. Placement

1. Place backfill and fill materials in layers of maximum 6 inches in loose depth for material compacted by heavy compaction equipment or hand-operated tampers. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

2. Place backfill and fill materials evenly, adjacent to structures, to required elevations. Prevent wedging action of backfill against structures by carrying material uniformly around structure to approximately same elevation in each lift.

3. Do not allow heavy machinery within 5 feet of structure during backfilling and compacting.

F. Backfilling Excavations

1. Backfill excavations promptly as Work permits and after completion of the following.
   a. Inspection and recording locations of underground utilities and structures
   b. Removal of concrete formwork
   c. Removal of shoring and bracing, and backfilling of voids with satisfactory materials
   d. Removal of trash and debris

2. Backfill under existing utility pipes crossed by new utility pipes with CDF. Extend CDF continuously from bedding of new pipe to utility pipe crossed, including a 6-inch thick envelope around existing utility pipes.

3. Backfill with CDF when clearance between proposed structure and existing structure is 18 inches or less and sufficient clearance is not provided to obtain suitable compaction.

4. Backfill with CDF for trenches within impervious surfaces with pipes containing less than 3 feet of cover.

5. Provide that 3/4 inch crushed stone backfill stands at its own angle of repose. Do not haunch or form with common fill.

G. Backfilling Trenches

1. Place pipe and structure bedding, and gravel bedding to extent and dimensions shown on Drawings so pipes and structures have complete and uniform bearing.
2. Grade, compact, and shape pipe and structure bedding so full length of pipe barrel has complete and uniform bearing. Dig bell holes and depressions for joints after bedding has been graded and compacted, at proper clearance for jointing pipes.

3. Carefully hand place and compact additional approved bedding to limits shown on Drawings following inspection and approval of pipe installation by Engineer. Perform hand or mechanical tamping on sides of pipe.

4. Place 6 inches of suitable backfill (having stones maximum 3 inches in diameter) in trenches above pipe crown; 6 inches above crown of highest pipe around structures and up to underside of pavement. Spread in layers of maximum 6 inches in loose thickness and compact in accordance with Article 3.11, and compact each layer by minimum 4 passes using approved vibratory compactor. Avoid disturbance of Work and existing structures. Adjust moisture content of backfill for proper compaction.

5. Bed pipe in 3/4-inch crushed stone pipe and structure bedding as shown on Drawings. Remaining trench backfill: as shown on Drawings.

6. Restore surface of trenches in cross-country runs to pre-existing conditions as shown on Drawings, mounding trench 6 inches above existing grade or as directed.

H. Earthen Embankment Fill

1. Strip organic topsoil, trees, shrubs and roots of other vegetation along length and breadth of areas having fill material placed on top. Fill depressions left by grubbing and stripping with same type material and compact to a density at least equal to surrounding foundation material.

2. Replace unsuitable soil with compacted fill material identified by independent inspection and testing agency or Engineer.

3. Proof roll subgrades as directed prior to placement of fill. Excavate soft areas and replace with appropriate compacted fill.

4. Do not place embankment over porous, wet, frozen, or spongy subgrade or previous embankment surfaces. Excavate and remove unsuitable material prior to placing additional fill.

5. Dewater to maintain groundwater levels a minimum of 1 foot below bottom of excavations or subgrades. Place fill in-the-dry.

6. Bench existing slopes prior to placing horizontal fill layers on existing slopes greater than 6H:1V.
7. Place materials in continuous horizontal layers in loose lift thickness of maximum 8 inches.

8. Compact soil materials in accordance with ASTM D1557, with water content of plus or minus 2 percent moisture content. Remove and replace with drier fill if wet fill cannot be compacted as specified.

9. Uniformly water fill that is too dry for proper compaction with sufficient water to allow compaction to required density.

10. Compact impervious and semi pervious materials with more than 15 percent passing the #200 sieve, with a tamping sheep-foot roller or rubber-tired roller. Scarify surface before placement of next lift if compaction results in smooth surface on top of lift.

11. Remove and replace fill that is disturbed after compaction and re-compact to specified degree of compaction.

12. Place and compact soil material on embankment in a direction parallel to embankment top.

3.11 COMPACTION

A. Use approved methods that produce required degree of compaction throughout entire depth of material placed without damage to new or existing facilities. Adjust moisture content of soil as required. Remove and replace material that is too wet to compact to required density. Compact each layer as Work progresses.

B. Place compacted structural fill for support of footings and foundations and against below grade walls in loose lift thicknesses not exceeding 10 inches. Compact to minimum 95 percent maximum dry density in accordance with ASTM D1557.

C. Place backfill in open areas with self-propelled vibratory rollers, and hand-guided equipment in confined areas. Loose lift thickness: maximum 6 inches.

D. Perform a minimum 4 systematic passes to compact each lift with specified compaction equipment.

E. Place backfill and fill soil materials evenly on sides of structures to required elevations, and uniformly along full length of each structure.
### Compaction Method

<table>
<thead>
<tr>
<th>Compaction Method</th>
<th>Maximum Stone Size</th>
<th>Maximum Loose Lift Thickness</th>
<th>Minimum Number of Passes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Below Pavement</td>
<td>Less Critical Areas</td>
<td>Below Pavement</td>
</tr>
<tr>
<td>Hand-operated vibratory plate or light roller in confined areas</td>
<td>4 inches</td>
<td>6 inches</td>
<td>8</td>
</tr>
<tr>
<td>Hand-operated vibratory drum rollers weighing at least 1,000 pounds in confined areas</td>
<td>6 inches</td>
<td>10 inches</td>
<td>12 inches</td>
</tr>
<tr>
<td>Light vibratory drum roller minimum weight at drum 5,000 pounds, minimum compaction force 10,000 pounds</td>
<td>8 inches</td>
<td>6 inches</td>
<td>18 inches</td>
</tr>
<tr>
<td>Medium vibratory drum roller min. weight at drum 10,000 pounds, minimum compaction force 20,000 pounds</td>
<td>8 inches</td>
<td>6 inches</td>
<td>24 inches</td>
</tr>
</tbody>
</table>

### F. Degree of Compaction

<table>
<thead>
<tr>
<th>Fill and Backfill Location</th>
<th>Minimum Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 3 feet under pavement grade</td>
<td>95 percent of maximum</td>
</tr>
<tr>
<td>Below slabs and foundations</td>
<td>95 percent of maximum</td>
</tr>
<tr>
<td>Below top 3 feet under pavement grade</td>
<td>92 percent of maximum</td>
</tr>
<tr>
<td>Pipe Bedding</td>
<td>92 percent of maximum</td>
</tr>
<tr>
<td>Beside structure foundation walls</td>
<td>95 percent of maximum</td>
</tr>
<tr>
<td>Maximum density</td>
<td>ASTM D698, modified</td>
</tr>
<tr>
<td>Field density tests</td>
<td>ASTM D1556 (sand cone) or ASTM D6938 (nuclear methods)</td>
</tr>
</tbody>
</table>

### G. Disc harrow or dry fill material that is too wet for compaction to specified moisture content and to required density. Remove and replace with drier fill that cannot be dried within 48 hours of placement.
3.12 GRADING

A. Uniformly grade areas, including adjacent transition areas. Smooth finished surface within specified tolerances. Compact with uniform levels or slopes between points where elevations are shown, or between points where elevations are shown and existing grades.

B. Grade areas adjacent to structure lines to drain away from structures and prevent ponding.

C. Finish surfaces: free from irregular surface changes and as follows.
   1. Finish lawn or other unpaved areas to receive topsoil to within a maximum 0.10 feet above or below required subgrade elevations.
   2. Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than plus or minus 1 inch above or below required subgrade elevation.

3.13 RIPRAP

A. Place riprap to full depth of 1.5D<sub>50</sub> in one operation without special handwork, measured perpendicular to face of slope to obtain uniform appearance true to line and grade. Place larger stones at bottom of slope. Place stones in close contact with interlocking of face stones and backing stones. Fill openings between stones with smaller stones. Embed, re-orient or discard loose stones or excessively large stones projecting above surface.

3.14 EROSION CONTROL

A. Provide erosion control measures in accordance with Section 01 50 00.

3.15 PROTECTION

A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

B. Scarify surface, re-shape, and compact to required density prior to further construction where completed compacted areas are disturbed by subsequent construction operations or adverse weather. Immediately repair any subsequent settling and provide maintenance for remainder of Work.
C. Remove soft or unsuitable material and replace with suitable backfill material prior to paving on sub-grade. Bring low sections, holes, or depressions to required grade with approved material. Shape sub-grade to line, grade, and cross section, and thoroughly compact.

D. Keep roads free of debris. Use watertight vehicles for hauling wet materials over roads and streets. Promptly clean materials dropped or spread by vehicles or when directed by Engineer.

### 3.16 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

B. Owner may engage a qualified special inspector to perform the following special inspections in addition to the Contractor’s independent testing.

1. Confirm specified fill and backfill are used.

2. Confirm preparation of Site.

3. Observe removal of existing unsuitable foundation materials from footing and slab areas and confirm character of material encountered at bearing levels.

4. Confirm compliance of fill material and maximum lift thickness.

5. Confirm compliance of in-place density of compacted fill with required frequency.

6. Observe preparation of footing bearing surfaces.

7. Confirm suitability of excavated soils for reuse as fill, including reuse of on-Site soils as common fill.

C. Perform at least 1 test of each soil stratum at foundation subgrades to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on visual comparison of subgrade with tested subgrade when approved.

D. Engage an independent testing agency to test compaction of soils in place in accordance with ASTM D1556, ASTM D2167, ASTM D2922, and ASTM D2937.

1. Tests
   a. Paved and structure areas: at subgrade and each compacted fill and backfill layer, at least 1 test for every 2,000 square feet or less of paved area or concrete slab, with minimum 3 tests.
b. Foundation walls backfill: at each compacted backfill layer, at least 1 test for every 100 feet or less of wall length, with minimum 2 tests.

c. Trench backfill: at each compacted initial and final backfill layer, at least 1 test for every 150 feet less of trench length, with minimum 2 tests. On streets where paving is to occur in the same season as noted in Section 01 11 00 Summary of Work, Contractor shall perform at least 1 test every 75 feet less of trench length at each compacted initial and final backfill layer.

2. Scarify and moisten or aerate, or remove and replace soil materials to depth required when testing agency reports subgrades, fills, or backfills have not achieved degree of compaction specified. Re-compact and re-test until specified compaction is obtained.

3. Determine actual in-place densities using field tests as directed.

4. Perform additional Work to obtain proper compaction if in-place densities do not meet specified densities. Retest if directed by Engineer.

5. Tests for Pipe Backfill

   a. Suitable backfill: compact backfill in maximum loose lifts per table above. Conduct 1 field density test every 50 linear feet for each lift for utility lines.

   b. Pavement sub-base: minimum 1 field density test of sub base for every 50 linear feet of paved area.

3.17 CLOSEOUT ACTIVITIES

   A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
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SECTION 31 10 00
SITE CLEARING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide Site clearing and grubbing in accordance with this Section.

B. Related Requirements

1. Section 32 90 00 – Planting and Seeding

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Definitions

1. Clearing: cutting and disposing of trees, downed timber, stubs, brush, bushes, snags, rubbish, debris, and other objectionable matter and materials, and removal and storage of fences, signs, walks, guard rails, curbs and items to be restored.

2. Grubbing: removal and disposal of stumps, roots, duff, foundations and other objectionable matter, and materials to a minimum of 6 inches below original ground surface.

3. Topsoil: friable loam surface soil found in a depth of not less than 4 inches from original ground surface. Satisfactory topsoil: reasonably free of subsoil, clay lumps, stones, and objects over 2 inches in diameter, and free of weeds, roots, and other objectionable material.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.
B. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE
A. Provide in accordance with Division 01 General Requirements.

1.07 DELIVERY, STORAGE AND HANDLING
A. Provide in accordance with Division 01 General Requirements.
B. Store trees, plants and shrubs in protected areas and provide water to keep them in thriving condition for replanting.
C. Store slate and flagstone walk sections, granite and stone curbs, fences, signs, guard rails and other items removed for reinstallation at approved locations.
D. Do not obstruct roads, driveways, sidewalks, gutters and drainage ditches, swales and channels with stored materials.

1.08 SITE CONDITIONS
A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 EXAMINATION
A. Verification of Conditions
1. Verify Site conditions. Trees, plantings, vegetation, sidewalks, curbs and other living and nonliving item locations shown on Drawings were determined by actual surveys and conditions may have changed.
2. Verify limiting boundaries, such as permanent and temporary easements, property lines, rights-of-way and grading limits, have been located and marked.
3. Verify pipeline routings and other items of Work have been located and marked.
3.02 PREPARATION

A. Mark trees, plantings and other items to be removed, trimmed, cut, or removed and preserved. Inspect items with Engineer prior to start of Work. Do not remove or trim unmarked items unless approved by Engineer.

B. Protect existing trees and vegetation indicated to remain in place against cutting, breaking or skinning of roots, skinning and bruising of bark, smothering by stockpiling construction or excavated materials within drip line, excess foot or vehicular traffic, or vehicle parking within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

C. Protect existing objects. Avoid interference with use of, and passage to and from adjacent buildings, facilities, driveways, walks, drainage systems and road.

D. Remove highway signs, guard rails and other control, safety, and warning devices just prior to installation of Work.

E. Notify affected property owners at least 4 days in advance of fence removal. Do not remove fencing more than 48 hours in advance unless written permission is received from property owner.

F. Leave items affecting traffic, safety, containment of humans and animals, and essential to protection of property or operation of a business, in place until Work is ready to be installed. Restore items immediately after installation.

3.03 IMPLEMENTATION

A. General

1. Use of explosives for clearing and grubbing operations is not allowed.

2. Limit clearing and grubbing to preserve plantings and natural vegetation. Perform Work so present growth will blend with limits of construction and attain natural appearance.

3. Confine clearing and grubbing operations within grading limits as shown on Drawings, and within Owner easements and property lines.

4. Provide measures to avoid erosion.

5. Do not disturb property markers unless absolutely necessary. If necessary to disturb or remove a property marker, employ a professional land surveyor licensed in the state where the Project is located to establish property marker location; mark area, and replace property marker immediately, in compliance with Division 01 General Requirements.
B. Stripping Topsoil

1. Strip topsoil within limits indicated on Drawings, or as required to prevent mixing with underlying subsoil or objectionable material.

2. Prevent damage to main root system of trees indicated to be left standing.

3. Stockpile topsoil in areas shown on Drawings, or where directed, and provide for drainage of surface water. Protect stockpiles to prevent windblown dust and erosion.

4. Stockpile surplus material on-Site. Surplus loam and topsoil not required for completion of Work will remain on Owner’s property. Maintain and protect until Work is complete.

C. Trees and Plantings

1. Remove only items marked for removal in grassed, planted and open areas.

2. Trees
   a. Notify property owners 1 month in advance of tree trimming or removal to allow property owner to cut and remove trees and retain debris, unless otherwise directed.
   b. Remove or trim trees in wooded areas only as required. Minimize damage to trees left standing. Immediately remove and legally dispose of debris.
   c. Take possession of timber and wood removed.
   d. Trim trees evenly to achieve neat appearance with least possible damage to trees.
   e. Apply wet burlap to prevent drying where roots are cut or damaged.

D. Pavements, Walks, Curbs and Guard Rails

1. Remove existing pavements, walks, and curbs to limits shown on Drawings, or if not shown, to minimum extent possible to complete the work.

2. Saw-cut pavements to be removed, including highways, driveways and walks. Remove when Work is ready to be installed.

3. Remove slate and flag stone walks, granite and stone curbs, and guard rails to minimum extent possible. Terminate removals at joint or guard rail post. Store and protect for reuse.

E. Walls, Fences, and Other Obstructions
1. Remove walls, fences, signs, sheds and other obstructions and store for replacement after verification with Owner and Engineer.

2. Protect existing structures during Work.

F. Remove and legally dispose of materials not specified to be stored or reused. Do not burn debris unless approved and required permits obtained.

G. Comply with Section 32 90 00 for replanting and restoring surfaces.

H. Replace and restore items and materials removed to original conditions.

I. Replace items damaged during removal, storage or re-installation.

3.04 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

3.05 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
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SECTION 31 23 16.26

ROCK REMOVAL

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes
   1. Provide rock excavation in accordance with the Drawings, this Section and applicable reference standards listed in Article 1.03.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards
   1. National Institute of Standards and Technology (NIST)

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.
PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

A. Comply with applicable laws, rules, ordinances and regulations of the federal government, the state where the Project is located and local authorities.

B. During excavation, protect existing pipelines, structures and appurtenant facilities.

C. Notify Engineer immediately of change in classification. Should bedrock be encountered above the trench bottom grade or above the subgrade elevation, expose the bedrock surface and to allow the Engineer to perform the necessary elevation survey and take cross-sectional measurements.

D. Perform Rock Excavation by mechanical methods. Blasting is not permitted.

E. Boulders: remove or partially remove boulders exposed on the sides of or in the bottom of excavations as directed by the Engineer. Remove boulders to not less than 2 feet outside structure walls, not less than 12 inches outside footings, not less than 6 inches below underslab subgrade, not less than the lateral trench width payment lines indicated, and not less than 12 inches below the underside of pipes. Depressions resulting from the removal of boulders and rock shall be refilled with approved compacted bedding. Bedding for refilling will not be paid for separately.

F. Refill unauthorized rock excavations, or excavations made beyond or below the indicated or directed excavation pay limits, with compacted bedding.

3.02 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

3.03 CLEANING

A. Remove rock fragments from excavations as directed. Remove all unsuitable material, breakage, and slides, even if located beyond the payment lines it shall be removed as directed.

B. All rock that is loose, hanging or creating a dangerous situation shall be removed or stabilized.

C. Reuse, crush, or screen and reuse as fill fragmented rock: may be reused or crushed and/or screened and reused as fill provided such materials meeting the requirements for fill of Section 31 00 00.

D. Remove and dispose of unused rock and boulders off-Site.
3.04 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
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SECTION 31 50 00

EXCAVATION SUPPORT AND PROTECTION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide excavation support and protection in accordance with this Section and applicable reference standards listed in Article 1.03, including shoring and bracing necessary to protect existing buildings, sidewalks and streets, utilities, all existing improvements, and excavation against movement due to caving, to meet OSHA safety requirements of shoring and bracing, and to cofferdams.

   a. Installation of shoring and bracing
   b. Maintenance of shoring and bracing
   c. Removal of shoring and bracing, as required

2. Shoring and bracing systems include permanent and temporary measures.

B. Related Requirements

1. Section 31 00 00 - Earthwork

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Institute of Steel Construction (AISC)
   a. Steel Construction Manual

2. ASTM International (ASTM)
   a. ASTM A36 Standard Specification for Carbon Structural Steel
   b. ASTM A307 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 PSI Tensile Strength
c. ASTM A328 Standard Specification for Steel Sheet Piling

d. ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

e. ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

f. ASTM A690 Standard Specification for High-Strength Low-Alloy Nickel, Copper, Phosphorus Steel H-Piles and Sheet Piling with Atmospheric Corrosion Resistance for Use in Marine Environments

g. ASTM A992 Standard Specification for Structural Steel Shapes

3. American Welding Society (AWS)
   a. D1.1 - Structural Welding Code, Steel

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

B. Pre-installation Conference

1. Review existing utilities and subsurface conditions.

2. Review coordination for interruption, shutoff, capping, and continuation of utility services.

3. Review instrumentation and monitoring program, and dewatering program. Confirm coordination with instrumentation and monitoring, and dewatering activities.

4. Review proposed excavations and equipment, monitoring of excavation support and protection system and abandonment or removal of excavation support and protection system.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

1. Do not begin excavation requiring support until submittals are approved.

B. Product Data

1. Construction details, material descriptions, performance properties, dimensions of individual components and profiles, and calculations for excavation support and protection system for each type of product.
C. Shop Drawings
   1. Plans, elevations, sections, and details for excavation support and protection system, by professional engineer licensed in the state where Project is located
   2. Arrangement, locations, and details of soldier piles, sheet piling, lagging, tiebacks, bracing, and other components of excavation support and protection system by professional engineer licensed in the state where Project is located
   3. Written plan for excavation support and protection, including sequence of construction of support and protection coordinated with progress of excavation
D. Calculations and analysis data for excavation support and protection system by professional engineer licensed in the state where Project is located
E. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.
   1. Identify locations and depths of capped utilities, abandoned-in-place support and protection systems, and other subsurface structural, electrical, or mechanical conditions on record documents.

1.06 QUALITY ASSURANCE
   A. Provide in accordance with Division 01 General Requirements.
   B. Qualifications: per Division 01 General Requirements for Installer and professional engineer.

1.07 DELIVERY, STORAGE, AND HANDLING
   A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS
   A. Existing Conditions: per Division 01 General Requirements.
   B. Verify dimensions and elevations before starting Work. Survey condition of adjoining properties with Engineer. Take photographs, recording any prior settlement or cracking of structures, pavements, and other improvements. Prepare list of existing damages, verified by dated photographs, signed by Contractor, Engineer and others conducting the investigation.
C. Survey adjacent structures and improvements, establishing exact elevations at fixed points to act as benchmarks. Identify benchmarks and record existing elevations. Locate datum level where it will not be affected by excavation operations.

D. Interruption of Existing Utilities
   1. Do not interrupt any utility serving facilities without Owner's written permission. Provide temporary utility if required.
   2. Provide minimum 5 days advance notice of proposed interruption of utility.

PART 2 – PRODUCTS

2.01 MATERIALS
   A. Provide shoring and bracing materials, in serviceable condition and adequate for intended purpose.
   B. Steel sheet piling and shapes: continuous interlocking type; section modulus, type of section specified, in accordance with ASTM A328, ASTM A572, and ASTM A690, with continuous interlocks.
   C. Provide movable box where shoring system is required, and where sheet piling is not specified.
   D. Bracing members: wood timbers or steel members in accordance with ASTM A36.
   E. Provide bolts in accordance with ASTM A307.
   F. Provide structural steel in accordance with ASTM A36, ASTM A690, and ASTM A992.
   G. Wood lagging: lumber, mixed hardwood, pressure-treated.
   H. Provide reinforcing bars in accordance with ASTM A 615, Grade 60, deformed.

2.02 DESIGN CRITERIA
   A. Provide services by professional engineer licensed in the state where Project is located, including preparation of Shop Drawings.
B. Design excavation support system in accordance with earth pressures and other criteria indicated, for construction of permanent structures without excessive movement or settlement of adjacent buildings, roadways, structures, or utilities, as shown on Drawings and as specified. Include analysis by professional engineer licensed in the state where Project is located.

C. Earth support design: coordinated dewatering design incorporating lowest anticipated excavation depths and full differential water head during dewatering.

D. Consult official records of both surface and subsurface existing utilities and connections to verify existing conditions and limitations as they apply to this Work and its relation to other construction work. Proceed with caution in areas of utility facilities. Excavate by hand, or other methods acceptable to utility owner. Protect existing utilities to remain within and adjacent to Work area in accordance with requirements of authorities having jurisdiction.

2.03 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 GENERAL

A. Anchor and brace system to resist earth and hydrostatic pressures, including surcharges from surface loads. Support excavation to prevent undermining or disturbance to foundations of existing structures and utilities, or of ongoing or previously completed Work. Shore, support, and protect utilities encountered.

B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or adjacent occupied or used facilities without approval. Provide alternate routes around closed or obstructed traffic ways if required.

C. Maintain shoring and bracing while excavation is open.

D. Check base stability.

E. Prevent surface water from entering excavations.

F. Monitor vibrations, settlements, and movements to ensure stability of excavations and constructed slopes to prevent damage to permanent structures.
3.02 STEEL SHEET PILING

A. Install 1-piece sheet piling lengths and interlock vertical edges to form a continuous barrier before starting excavation.

B. Place piling using templates and guide frame unless otherwise specified by sheet piling manufacturer. Limit vertical offset of adjacent sheet piling to 60 inches. Align exposed faces of sheet piling to vary not more than 2 inches from a horizontal line, and not more than 1:120 out of vertical alignment.

C. Cut off sheet piling to be left in place at least 5 feet below finish grade. Indicate location of sheet piling cut off and left in place on record documents.

D. Remove steel sheet piling following completion of Work where shown on Drawings or directed by Engineer. Obtain approval for steel sheet piling to be left in place.

3.03 BRACING

A. Locate bracing to clear columns, floor framing construction, and other permanent Work. Install new bracing before removing original brace if moved. Do not place bracing where it will be cast into permanent concrete Work unless approved by Engineer.

B. Install internal bracing if required to prevent spreading or distortion of braced frames.

C. Maintain bracing until structural elements are supported by other bracing, or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.04 REPAIR/RESTORATION

A. Remove excavation support and protection systems in stages to avoid disturbing underlying soils and rock, or damaging structures, pavements, facilities, and utilities.

B. Fill voids immediately with approved backfill compacted to density specified in accordance with Section 31 00 00.

C. Repair or replace adjacent Work damaged or displaced by removing excavation support and protection systems.

3.05 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

B. Promptly correct detected bulges, breakage, or other evidence of movement to ensure that excavation support and protection system remains stable.
C. Promptly repair damages to adjacent facilities caused by installation or faulty performance of excavation support and protection systems.

3.06 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
SECTION 32 12 16

ASPHALT PAVING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Furnish and install tack prime coat, hot mix asphalt pavement base and surface courses, temporary trench paving, permanent trench paving, pavement reclamation, structure protection and adjustments, sidewalks, driveways, bituminous concrete berm and curb, and miscellaneous patching in accordance with this Section and applicable reference standards listed in Article 1.03.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Association of State Highway and Transportation Officials (AASHTO)

a. AASHTO M320 Standard Specifications for Performance-Graded Asphalt Binder

b. AASHTO T166 Standard Method of Test for Bulk Specific Gravity (Gmb) of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface-Dry Specimens

c. AASHTO T209 Standard Method of Test for Theoretical Maximum Specific Gravity (Gmm) and Density of Hot Mix Asphalt (HMA)

d. AASHTO TP 68 Standard Method of Test for Density of In-Place Hot-Mix Asphalt (HMA) Pavement by Electronic Surface Contact Devices

2. MassDOT

a. Standard Specifications and Supplements, and Construction Standard Details
1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Certificates: manufacturer's certificate verifying conformance.

C. Mix design: for each grade of pavement used, at least 20 days prior to start of paving.

D. Source and field quality control submittals
   1. Certified weigh slips for each truck load of bituminous material if required by Owner.

E. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Comply with road opening permits.

C. Establish and control pavement (aggregate or asphalt base course and asphalt surface course) alignments, grades, elevations, and cross sections as shown on Drawings.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 BITUMEN FOR TACK PRIME COAT

A. Provide in accordance with MassDOT Section 460, M3.11.06.

2.02 HOT POURED RUBBERIZED ASPHALT SEALANT

A. Provide in accordance with MassDOT Section 460.
2.03 HOT MIX ASPHALT SURFACE COURSE STANDARD TOP
   A. Provide in accordance with MassDOT Section 460, M3.11.03.

2.04 HOT MIX ASPHALT BASE COURSE
   A. Provide in accordance with MassDOT Section 460, M3.11.03.

2.05 BITUMINOUS CONCRETE BERM
   A. Provide in accordance with MassDOT Section 460.

2.06 HOT MIX ASPHALT FOR MISCELLANEOUS WORK
   A. Provide in accordance with MassDOT Section 472.

2.07 SOURCE QUALITY CONTROL
   A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 GENERAL
   A. Minimize area of pavement removed to suitable width for installation of Work. Legally dispose of existing pavements.

   B. Place hot mix asphalt between April 1 and November 15, unless otherwise specified by Owner.

   C. Do not place hot mix asphalt mixture unless breakdown and intermediate rolling can be completed by time material has cooled to 175 degrees F, and provided density of completed pavement attains at least 92.5 percent of maximum theoretical density as determined by AASHTO T209.

   D. Do not place mix on wet or damp surfaces, or when ambient temperature is 40 degrees F and falling, unless otherwise specified by Owner.

   E. When air temperature falls below 50 degrees F, take extra precaution drying aggregates, controlling temperatures of materials, placing, and compacting mixtures.

   F. Use straightedge to check compacted surfaces and obtain Engineer’s approval.
G. Utilize approved dial type thermometer and infrared piston thermometer for each paving machine. Retain thermometer upon completion of Project.

1. Fahrenheit or Celsius selectable
2. Portable and battery operated
3. Repeatability: plus or minus 5 degrees F.
4. LCD display: to nearest 1 degree.
5. Accuracy: plus or minus 2 percent.
6. Emissivity: present at 0.95.
7. Temperature operation range: 0 degrees F to 750 degrees F.

3.02 INSTALLATION

A. Place hot mix asphalt base and top courses on roadways, sidewalks and other areas to maintain traffic access and egress to properties abutting Work, and for safe passage of pedestrian and vehicular traffic in accordance with MassDOT Section 460 and Construction Standard Details.

1. Provide minimum compacted thickness depth of hot mix asphalt base course indicated on Drawings or as directed by Engineer to achieve necessary base course grade in support of finish grade pavement elevations.

2. Apply bitumen for prime and tack coat at a rate of 0.07 gallons per square yard over milled areas immediately prior to installation of top course, as shown on Drawings or directed by Engineer. Clean surface of sand and foreign matter, and dry before applying prime coat.

3. Apply bitumen for prime and tack coat at a rate of 0.05 gallons per square yard over hot mix asphalt base course immediately prior to installation of top course, as shown on Drawings or directed by Engineer. Clean surface of sand and foreign matter, and dry before applying prime coat.

4. Provide minimum compacted thickness depth of hot mix asphalt surface course indicated on Drawings or as directed by Engineer to achieve finish grades.

5. Apply hot poured rubberized asphalt sealant to longitudinal and transverse joints.
6. Remove and replace defective mix not conforming to specified mix formula within stipulated tolerances on basis of testing. Samples of mixture in use will be taken as many times daily as necessary, and mixtures maintained uniform as specified. Owner may suspend further approval of plant mixtures in related Work if mixtures are not uniformly furnished as specified, until necessary changes have been made so mixtures conform to specified requirements.

7. Irregularities which may develop before completion of rolling, and while material is still workable, may be remedied by loosening surface mixture and removing or adding material as necessary. If irregularities or surface defects remain after final compaction, defective Work will be corrected by minor surface projections, joints, and minor honeycombed surfaces ironed out smoothly to grade, and as directed.

8. If any soft, imperfect places or spots develop on surface before final acceptance of Work, remove and replace with new materials and compact until edges of new Work seamlessly connect with old Work.

B. Install hot poured rubberized asphalt sealer on roadway cracks less than or equal to 1-inch width. Clean and dry crack to minimum depth of twice the crack width with a high-pressure air blast prior to placing sealer. Apply sealer according to manufacturer’s recommendations.

C. Install hot mix asphalt for miscellaneous Work and handwork on roadway surfaces that cannot be installed mechanically, or as directed by Engineer, in accordance with MassDOT Section 472 and Construction Standard Details.

D. Set manhole covers and water gate boxes flush with finish grade of top course.

E. Vehicular traffic or loads are not permitted on newly completed pavement until adequate stability has been attained and material has cooled sufficiently to prevent distortion or loss of fines. If climatic or other conditions warrant it, time-period for opening to traffic may be extended at discretion of Owner.

3.03 BITUMINOUS CONCRETE BERM

A. Provide foundation for bituminous concrete berms as shown on Drawings or as directed by Engineer, conforming to requirements for type of berm.

B. Place mixture and compact with machine approved by Owner for type of berm required.

3.04 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.
B. Perform in-place density testing of applicable hot mix asphalt pavement courses using 6-inch diameter cores in accordance with AASHTO T166 or AASHTO TP 68. Do not obtain cores from bridge protective course or bridge surface course. Determine degree of compaction from each core by comparing bulk density of core pavement layer to average maximum theoretical density of same day’s production.

C. Test plane of base and binder course finished surfaces, and top course of compacted mixtures with a 16-foot straightedge. Use of a 10-foot straight edge is allowed on vertical curves. Apply straightedge immediately after first compaction by rolling, and as necessary until and after final compaction of material in place. Hold straightedge in successive positions parallel to road centerline in contact with road surface, and check entire area from 1 side of pavement to the other. Correct irregularities which vary 1/4-inch from true surface in base or binder course.

3.05 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
SECTION 32 16 14

GRANITE CURBS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Remove and reset, or provide new granite curbs in accordance with this Section and applicable reference standards listed in Article 1.03.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. ASTM International (ASTM)

a. ASTM C144 Standard Specification for Aggregate for Masonry Mortar

b. ASTM C150 Standard Specification for Portland Cement

c. ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes

d. ASTM C615 Standard Specification for Granite Dimension Stone

2. MassDOT

a. Standard Specifications and Supplements, and Construction Details

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.
1.05 SUBMITTALS
   A. Submit in accordance with the Division 01 General Requirements.
   B. Product Data
   C. Certificates: manufacturer's certification that products meet Specification requirements.
   D. Manufacturer Instructions
   E. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE
   A. Provide in accordance with Division 01 General Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING
   A. Provide in accordance with Division 01 General Requirements.
   B. Storage and Protection
      1. Protect curb against staining, chipping, and other damage. Cracked, badly chipped, or stained units will be rejected.
      2. Store granite curbing pallets on pavement or other hard, durable surface that will not compact from the weight. Prevent pallet steel strapping from rusting and staining pavement. Remove and replace pavement stained by rusting steel strapping.

1.08 SITE CONDITIONS
   A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GRANITE CURBS
   A. Type VA-4 in accordance with MassDOT Supplemental Specifications Section 501 and MassDOT Construction Standard Details.

2.02 MORTAR
   A. Provide mortar composed of 1-part Type II portland cement in accordance with ASTM C150, 2-parts sand in accordance with ASTM C144, well graded with no
grain larger than will pass #8 sieve, and 20 percent hydrated lime conforming to ASTM C207, Type S.

2.03 SOURCE QUALITY CONTROL
A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 INSPECTION
A. Verify that earthwork is completed to correct line and grade.
B. Confirm subgrade is smooth, compacted, and free of frost or excessive moisture.

3.02 REMOVAL AND RESETTING
A. Remove and reset curbs, curb inlets and curb corners at locations where required in accordance with MassDOT Supplemental Specifications Section 580, and MassDOT Construction Details. Incorporate existing curbs, curb inlets and curb corners before installation of new curb.
B. Remove existing curb in areas indicating remove, stack and reuse, and reinstall prior to installation of curb delivered to Site.

3.03 INSTALLATION
A. Install new curbs in accordance with MassDOT Supplemental Specifications Section 501, and Drawings.
B. Install ends of curbs vertically forming a flush joint when 2 curb stones are placed adjacent to each other.
   1. Maximum joint space; not to exceed 3/4 inches.
   2. Top 6 inches of curb stone: uniform thickness and surface finish.
   3. Radii of curved curb stone: per Drawings.

3.04 FIELD QUALITY CONTROL
A. Provide in accordance with Division 01 General Requirements.

3.05 CLOSEOUT ACTIVITIES
A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
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SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide epoxy pavement markings in accordance with this Section and applicable reference standards listed in Article 1.03.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. MassDOT Standard Specifications and Supplements, except for Compensation sections

2. MassDOT Construction Details


4. Applicable portions of City of Quincy Code of Ordinances and Zoning Ordinances

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with the Division 01 General Requirements.

1. Product Data

2. Manufacturer Instructions

B. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.
1.06 QUALITY ASSURANCE
A. Provide in accordance with Division 01 General Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS
A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 PAVEMENT MARKINGS
A. General: The two-component, 100 percent solids paint shall be formulated and designed to provide a simple volumetric mixing ratio (e.g., 2-part component A to 1 part component B) specifically for service as a hot-spray applied binder for glass beads in such a manner as to produce maximum adhesion, refraction, and reflection. The material shall be composed of epoxy resins and pigments only and meet the following minimum requirements:

1. Color: White - the color (after drying at the specified thickness) shall be a flat white, free from tint, furnishing good opacity and visibility under both daylight and artificial light, and shall match Chip No. 17925 of Federal Standard 595. Yellow - the color (after drying at the specified thickness) shall match Chip No. 13538 of Federal Standard 595.

The paint shall be well mixed in the manufacturing process and shall be free from defects and imperfections that may adversely affect the serviceability of the finished product. The paint shall not liver, thicken, curdle, gel, settle excessively, or otherwise display any objectionable properties after storage. Individual components shall not require mixing prior to use when stored for a maximum of twelve months.

2. Composition: The overall paint composition shall be left to the discretion of the manufacturer, but shall meet the following requirements:

White: Titanium Dioxide Rutile 20 ±2 percent, by weight ASTM D476 Type III Epoxy Resin 80 ±2 percent, by weight

Yellow: Titanium Dioxide Rutile 14 ±3, Organic Yellow 8 ±2 percent, by weight ASTM D211 Type III Epoxy Resin 75 ±2 percent, by weight
3. Epoxy Content (Component A): The epoxy content of the epoxy resin will be tested in accordance with ASTM D1652 and calculated as the weight per epoxide equivalent (WPE) for both white and yellow. The epoxy content will be determined by a pigment free basis. The WPE shall meet a target value provided by the manufacturer within a tolerance of ±50.

4. Amine Value (Component B): The amine value shall be tested in accordance with ASTM D2074 to determine its total amine value. The total amine value shall meet a target value provided by the manufacturer within a tolerance of ±50. The manufacturer may specify an alternate test method for determining the amine value subject to the approval of the Engineer.

5. Toxicity: Upon heating to application temperature, the material shall not exude fumes which are toxic or injurious to persons or property. A certification stating such is required to be submitted to the Engineer. M-96

6. Abrasion Resistance (ASTM D4060): When the abrasion resistance of the material is tested with a CS-17 wheel under a load of 1,000 grams for 1,000 cycles, the wear index shall be no greater than 82.

7. Hardness (ASTM D2240): The Type D durometer hardness of the material shall be not less than 75 nor more than 100 after the material has been conditioned for not less than 72 hours nor more than 96 hours at 23° ±2°C.

8. Tensile Strength (ASTM D638): The tensile strength of the material shall not be less than 6,000 psi after 72 hours of conditioning at 23° ±2°C.

9. Compressive Strength (ASTM D695): The compressive strength of the material shall not be less than 12,000 psi after 72 hours of conditioning at 23° ±2°C.

10. Infrared Spectrophotometer Analysis (ASTM D2621): Samples of both Part A and Part B (and of that mixed to the proper ratio) shall be analyzed by infrared spectrography. The spectrum of each component and final product shall be a reasonable match to the spectrum of the original formulation submitted by the manufacturer.

11. Directional Reflectance (ASTM E1347): The daylight directional reflectance (without glass spheres) shall be not less than 84 percent for white and not less than 50 percent for yellow (relative to Magnesium Oxide).

12. Dry Time - Laboratory (ASTM D711): The epoxy resin compounds, when mixed in the proper ratio and applied to a uniform wet film thickness of 20
mils and immediately dressed with glass beads at the proper rate, shall exhibit a no-tracking drying condition in not more than 30 minutes at 72°F.

13. Dry Time – Field: The no-tracking condition for the field shall be considered as the condition where no visual displacement of the epoxy resin striping material is observed when a passenger car has passed over the stripe or handwork when viewed at a distance of 50 feet and shall be a maximum of 30 minutes at 70°F. Source Quality Control: per Division 01 General Requirements.

2.02 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Cleaning Pavement: All dirty pavements shall be swept or air blasted clean. The piles of dirt obtained by sweeping shall be picked up and disposed of by the Contractor. Oil, grease, and similar adherent matter shall be removed by washing with a suitable solvent. Excess solvent shall be wiped from the pavement and allowed to evaporate before applying pavement marking material. The Contractor shall be responsible for all pavement cleaning which may be required. Markings shall not be applied to any surface which has not been inspected and approved by the Engineer.

B. Apply and install pavement markings in accordance MassDOT Standard Specifications and Supplements Section 860, the MUTCD and Mass Amendments, and the Drawings.

1. The pavement surface temperature and the ambient temperature shall be a minimum of 2 degrees Celsius at time of application.

2. The individual epoxy components shall be heated to the temperatures recommended in the epoxy manufacturer’s written instructions for use or as stated in the FHWA Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (note maximum temperature of 60 degrees Celsius).

3. The ratio of the two components shall be monitored during the application, using the installed metering devices. Should the ratio fall outside the range of ±5 percent of the manufacturer’s specified mixing ratio for over 30 seconds or at any time fall outside the range of ±10 percent, the application shall be stopped and the cause of the problem determined and corrected before proceeding.
4. Epoxy pavement markings must be reflectorized for night visibility by adding reflective spheres before the paint dries or sets, by the double-drop method. The reflective spheres, Type I followed immediately by Type II, shall be evenly dispersed on a minimum wet film thickness of 20 mils on existing and new pavements at a minimum rate of 12 pounds per gallon for each type of glass sphere.

5. The Contractor shall place necessary spotting at appropriate points to provide horizontal control for striping and to determine necessary starting and stopping points. Longitudinal joints, pavement edges and existing markings shall serve as horizontal control when approved by the Engineer.

6. Epoxy reflectorized pavement markings shall be placed at the width, thickness, and pattern designated by the Contract Documents. Marking operations shall not begin until applicable surface preparation work is completed and approved by the Engineer, and the T-47 atmospheric conditions and pavement surface temperature are acceptable to the Engineer. The temperature of the mixed epoxy may be adjusted as required for prevailing conditions, including air temperature and pavement temperature to achieve the prescribed no-track time. The speed of the applicator truck shall not exceed the recommended rate for the combination of the truck rate, pressure in the lines, and the tip opening and height of the spray gun to insure the required thickness.

C. Defective Work: Unsatisfactory markings, resulting from the presence of dirt, oil, grease, scale, moisture, or other foreign substances, and all other traffic markings rejected by the Engineer shall be obliterated by a method approved by the Engineer and replaced by the Contractor at its own expense.

3.02 FIELD QUALITY CONTROL
A. Provide in accordance with Division 01 General Requirements.

3.03 CLOSEOUT ACTIVITIES
A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
SECTION 32 90 00

PLANTING AND SEEDING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide loam borrow, topsoil, seeding, and supporting materials in accordance with this Section and applicable reference standards listed in Article 1.03.

B. Related Requirements

1. Section 31 00 00 – Earthwork

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. MassDOT Standard Specifications and Supplements, except for Compensation sections

2. MassDOT Construction Details

3. ANSI Z60.1 Standard Nursery Stock

4. American Association of Nurserymen (A.A.N.)


6. United States Department of Agriculture (USDA)

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with the Division 01 General Requirements.
PLANTING AND SEEDING

1. Product Data

2. Manufacturer Instructions

B. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to supply and place planting soils as indicated on the Contract Documents and as specified. Supplying and placement of planting soils shall include, but not be limited to:

1. Sampling and testing of loam borrow.
2. Sampling and testing of existing on-site topsoil.
3. Modifying, screening, placing, spreading and grading of loam borrow.
4. Modifying, screening, placing, spreading and grading of existing, on-site topsoil.
5. Providing all other sampling, testing, supplying, placing, spreading and grading of planting soils as required by this Section.

C. Certificates

1. Submit manufacturers or vendors certified analysis for soil amendments and fertilizer materials. Submit other data substantiating that materials comply with specified requirements.

2. Submit seed vendor's certified statement for each grass seed mixture required, stating botanical and common name, percentage by weight, and percentages of purity germination, and weed seed for each grass seed species.

D. At least 30 days prior to ordering materials, the Contractor shall submit to the Owner's Representative representative samples, certifications, manufacturer's product data and certified test results for materials as specified below for approval in conformance with the requirements of the Division 01 General Requirements. No materials shall be ordered or delivered until the required submittals have been reviewed and approved by the Owner's Representative. Delivered materials shall closely match the approved samples. Approval shall not constitute final acceptance. The Owner's Representative reserves the right to reject, on or after delivery, any material that does not meet these Specifications.

1. Loam Borrow: The Contractor shall provide a one cubic foot representative sample per each 1,000 cubic yard of proposed stockpile of loam borrow for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes for securing samples from stockpiles.
a. Additionally, the Contractor shall provide 25, one cubic foot representative samples selected from on-site stockpiles of loam borrow for testing or from loam after it has been spread and amended. Samples from on-site stockpiles and from spread and amended loam borrow shall be taken from locations as directed by the Owner's Representative and packaged in the presence of the Owner's Representative.

b. Testing will be at the Contractor's expense. Contractor shall deliver all samples to testing laboratories via overnight courier and shall have the testing report sent directly to the Owner's Representative. Perform all tests for gradation, organic content, soil chemistry and pH by UMASS Soil and Plant Tissue Laboratory, West Experiment Station, North Pleasant Street, University of Massachusetts, Amherst, MA 01003, (413) 545-2311. Testing reports shall include the following tests and recommendations. Contractor shall deliver samples to testing laboratories and shall have the testing report sent directly to the Owner's Representative from the Soil and plant Tissue Laboratory. Testing reports shall include the following tests and recommendations.

c. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System. Sieve analysis shall be by combined hydrometer and wet sieving using sodium hexametaphosphate as a dispersant in compliance with ASTM D 422 after destruction of organic matter by H2O2. To facilitate review and approval of sieve analysis, provide a computer generated gradation curve from UMASS Soil & Plant Tissue Laboratory.

d. Percent of organics shall be determined by the loss on ignition of oven-dried samples. Test samples minus #10 material shall be oven-dried to a constant weight at a temperature of 450 degrees Fahrenheit.

e. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, extractable Aluminum, Lead, Zinc, Cadmium, Copper, Soluble Salts, and pH and buffer pH. A Conductivity Meter shall be used to measure Soluble Salts in 1:2 soil/water (v/v). Except where otherwise noted, nutrient tests shall be for available nutrients.

f. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish planting work as specified.
3. Peat Moss: Submit a one cubic foot sample and supplier's certification of contents.

4. Limestone: Submit supplier's certification that the limestone being supplied conforms to these Specifications.

5. Acidulant: Submit supplier’s certification that the acidulant being supplied conforms to these Specifications.

6. Fertilizer:
   a. Submit product data of seeding and planting fertilizer and certificates showing composition and analysis. Submit fertilization rates for fertilizer product based upon soil testing, analysis, and recommendations.
   b. Submit the purchasing receipt showing the total quantity purchased for the project prior to installation.

7. Gypsum: Submit manufacturer's product data and 2 pound sample.

8. All additives needed to amend a specific soil in order to meet these specifications.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Analysis and Standards: Package standard products with manufacturers certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Packing, Shipping, Handling, and Unloading

   1. Do not order or deliver material until submittals are approved.

C. Package products with manufacturers certified analysis.

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

B. Locate underground utilities. Perform Work in a manner that will avoid damage.
C. Plant or install materials during normal planting seasons for each type of landscape work required.

PART 2 – PRODUCTS

2.01 LOAM BORROW

A. Provide in accordance with MassDOT Standard Specifications and Supplements Section 751 and MassDOT Construction Details.

B. Type: MassDOT Standard Specifications and Supplements Section M1.05.0.

C. Furnish sufficient loam borrow to complete loaming operations required for Project and as directed by Engineer. Obtain loam borrow from the following sources and meet requirements specified after testing and addition of necessary soil additives.

1. Naturally well-drained areas that have never been stripped before and have a history of satisfactory vegetative growth. Comply with bylaws and Regulations regarding removal of topsoil.

2. Commercial processing facility specializing in manufacturing of loam.

2.02 TOPSOIL

A. Use topsoil stockpiled for re-use in landscape work, as specified in 31 10 00 Site Clearing. Provide additional topsoil required to complete landscape work if quantity of stockpiled topsoil is insufficient.

B. Furnish new topsoil, which is fertile, friable, natural loam surface soil found at a depth of not less than 4 inches from original ground surface, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps, debris, and stones larger than 2 inches in any dimension.

C. Obtain topsoil from local sources or from areas having similar soil characteristics as Site. Obtain topsoil only from naturally, well-drained Sites where topsoil occurs in a depth of not less than 4 inches. Do not obtain from bogs or marshes.

2.03 SEED AND SUPPORTING MATERIAL

A. Provide seed, limestone, fertilizers, plant materials, water for irrigation and soil conditioners in accordance with MassDOT Standard Specifications and Supplements Section 765.40 and MassDOT Construction Details, and ANSI Z60.1.
2.04 PLANTING TREES, SHRUBS AND GROUND COVER

A. Provide in accordance with MassDOT Standard Specifications and Supplements Section 771 and MassDOT Construction Details.

B. Type: per MassDOT Standard Specifications and Supplements Section M6.06.1

2.05 SEEDING

A. Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analyst of North America. Do not use seed that has become wet, moldy, or damaged. All seed mixtures listed are proportions by weight.

1. Germination: not less than 80 percent
2. Purity: not less than 85 percent
3. Weed content: not more than 1 percent

B. Roadside Mixture

1. 50% Creeping Red Fescue
2. 15% Kentucky Bluegrass
3. 2% Red Top Clover
4. 25% Annual Ryegrass
5. 3% Bird's Foot Trefoil, Variety Empire
6. 5% White Clover

C. Lawn Repair Mixture

1. 60% Kentucky Bluegrass
2. 20% Perennial Ryegrass
3. 20% Chewings Fescue

2.06 FERTILIZER

A. Bone meal: commercial, raw or steamed, finely ground; minimum of 4 percent nitrogen and 20 percent phosphoric acid.

B. Superphosphate: commercial, phosphate mixture, soluble; minimum of 20 percent available phosphoric acid.
C. Fertilizer: commercial grade complete fertilizer of neutral character, consisting of fast and slow release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition.

1. Nitrogen, phosphorous and potassium in amounts recommended in topsoil analysis reports from a qualified soil testing agency.

2. Minimum 1 pound per 1,000 square feet of actual nitrogen, 4 percent phosphorous and 2 percent potassium by weight.

2.07 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 GENERAL

A. Avoid damage to utilities, buildings and private property.

B. Do not disturb property markers.

C. Immediately report damage to Engineer.

D. Repair all grassed areas disturbed during performance of the Work. Where existing topsoil remains, provide seed to re-establish grass. Where necessary, provide additional topsoil.

E. Complete landscape work immediately as portions of Site become available, working within seasonal limitations for each kind work. Notify Engineer before planting if conditions detrimental to plant growth are encountered.

F. Plant or install materials during normal planting seasons for each type of landscape work required, and as specified in Section 32 72 00.

G. Use topsoil stockpiled for re-use as specified in Section 31 00 00.

3.02 LOAM BORROW

A. Place loam borrow at designated locations where plant material is to be installed or re-installed in accordance with MassDOT Section 751 and MassDOT Construction Details and Drawings, or as directed by Engineer.

B. Protect loam borrow delivered to Site from erosion and spread immediately. Cover material that sits on-Site for more than 24 hours with tarpaulin or other soil erosion system acceptable to Engineer, and surround with silt fence as shown on Drawings.
C. Do not handle, plant or use loam borrow if wet or frozen. Use moist loam borrow.

3.03 PLANTING TREES, SHRUBS AND GROUNDCOVER

A. Provide in accordance with MassDOT Standard Specifications and Supplements Section 771 and MassDOT Construction Details.

B. Type: per MassDOT Standard Specifications and Supplements Section M6.06.1.

C. Prune injured roots or branches to make clean-cut ends prior to planting, utilizing clean, sharp tools, removing only injured or diseased branching.

D. Remove planting containers, baskets, and non-biodegradable materials from root balls during planting. Cut natural fiber burlap from around trunk of trees and folded down against root ball prior to backfilling.

E. Position trees and shrubs at intended locations shown on Drawings and obtain Engineer’s approval prior to excavating pits, making necessary adjustments as directed.

F. Dig planting pits with level bottoms with width twice the diameter of root ball. Rest root ball on undisturbed grade. Backfill each plant pit in layers with thoroughly mixed, prepared soil; 1-part peat moss; 1-part composted cow manure by volume; 3 parts topsoil by volume.

1. Provide 21-gram planting tablets, acceptable level of quality: equivalent to Agriform.
   a. 2 tablets per 1-gallon plant
   b. 3 tablets per 5-gallon plant
   c. 4 tablets per 15-gallon plant
   d. Larger plants: 2 tablets per 1/2-inch caliper of trunk

G. Fill prepared soil around ball of plant halfway, and insert plant tablets. Complete backfill, and water thoroughly.

3.04 FINE GRADING

A. Clean subgrade of stones greater than 2 inches and all debris immediately prior to dumping and spreading loam borrow, and remove from Site. Do not rake to edges and bury. Obtain Engineer’s approval of subgrade conditions prior to spreading loam borrow.

B. Spread and thoroughly incorporate soil additives into layer of loam borrow by harrowing or other approved methods. Incorporate the following soil additives.
1. Ground limestone or acidulants: as required by soil analysis to achieve required pH specified. Spread limestone at rate required by soil analysis up to maximum limit of 200 pounds per 1,000 square feet. Make a surface application of limestone not in excess of 50 pounds per 1,000 square feet to established planting area during the season after Final Acceptance if recommendations of soil analysis require rates of application greater than 200 pounds per 1,000 square feet.

2. Fertilize at rate and analysis recommended by soil analysis.

3. Use biosolid compost, peat moss, sand or other soil amendments as required by soil analysis.

C. Prepare loam borrow by scarifying, harrowing, or tilling loam to integrate soil additives into top 6 inches of loam after loam borrow and required additives have been spread. Remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Remove all stones over 1-inch in diameter from top 6 inches of loam bed from unscreened soils. Remove smaller stones in excessive quantities as directed.

D. Set sufficient grade stakes for checking finished grades. Set stakes in bottom of swales and at top of slopes. Do not deviate more than one-tenth of foot from indicated elevations. Connect contours and spot elevations with an even slope. Finish grades: smooth and continuous with no abrupt changes at top or bottom of slopes.

E. Fill depressions caused by settlement or rolling during compaction process with additional loam borrow and regrade surface and roll until finish is smooth and even corresponding to required grades.

F. Install loam borrow in successive horizontal lifts no thicker than 6 inches in turf areas and 12 inches in plant bed areas to desired compaction as indicated. Install soil at a higher level to anticipate any reduction of loam borrow volume due to compaction, settling, erosion, and decomposition during Warranty Period. Obtain full depths of loam borrow for plant beds by digging holes in loam borrow at same frequency as for compaction testing.

1. Compact loam to specified density.

2. Maximum dry density for topsoil and loam: determined in accordance with ASTM D698. Achieve the following percentages of minimum to maximum dry densities for fill materials or prepared subgrades.

a. Fills within plant beds, tree pits and treeways: minimum 80 percent; maximum 85 percent for areas in top 18 inches of finished grade.
3. Scarify surface area of each lift by raking prior to placing next lift.

G. Compact each lift to reduce settling, but not enough to prevent movement of water and feeder roots through the soil in addition to range cited above. Loam borrow in each lift: firm underfoot and make only slight heel prints. Loam borrow at completion of installation: firm, even resistance when a soil sampling tube is inserted from lift to lift. Perform percolation tests after placement of each lift to determine if soil has been over compacted using the following percolation test procedure.

1. Dig a hole in installed soil minimum of 4 inches in diameter. Holes in 6-inch lift in turf areas: 4 inches deep. Holes in 12-inch lifts in plant beds: 8 inches deep. Do not penetrate through lift being tested.

2. Fill hole with water and let it drain completely. Immediately refill hole with water and measure rate of fall in water level.

3. Till soil to a depth required to break over compaction if water drains at a rate less than 1-inch per hour.

4. Perform a minimum of 1 soil percolation test per 10,000 square feet of turf area, and 2,500 square feet of tree and shrub planting area as directed.

H. Select equipment and phase installation of loam borrow so wheeled equipment does not travel over subsoil, placed fills or ordinary borrow, or already installed soil. Movement of tracked equipment over these soils will be reviewed and considered by Engineer for approval. If Engineer determines that wheeled equipment must travel over already installed soil, provide a written description of sequencing of Work that ensures compacted soil is loosened and uncompacted as Work progresses, or place 1-inch thick steel plate ballast or approved equivalent over length and width of any travel way to cover loam borrow to protect it from compaction.

I. Grade disturbed areas outside limit of Work, smooth and spread with minimum 4 inches of loam borrow to finished grade.

J. Maintain stockpiles of existing on-Site topsoil until final placement of existing on-Site topsoil and loam borrow is approved. Provide survey data plotted on a 20-scale plan of the Site prepared by a registered surveyor or civil engineer, showing volume of stockpiles of existing on-Site topsoil. Remove excess, unused existing on-Site topsoil from Site and legally dispose of upon approval.

3.05 SEED AND SUPPORTING MATERIAL

A. Install and apply seed and supporting materials at the rates of application and in accordance with MassDOT Standard Specifications and Supplements Section 765.40 and the Drawings.
3.06 HYDROSEEDING NEW AREAS

A. Mix specified seed and pulverized mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.

B. Apply slurry using an approved machine. Seed and suitable corn fiber mulch may be applied in one operation. Mix materials with water in machine and agitate to keep mixture uniformly suspended. Use spraying equipment that will distribute slurry uniformly at required rates.

C. Immediately following hydroseeding, mulch areas by means of mulch blower at rate of 1,200 pounds per acre on level grades, 2,000 pounds on slopes if mulch is not part of slurry. Use mulch specified in 2.04.A.

D. Seed only areas that can be mulched on same day.

3.07 SEEDING NEW AREAS

A. Sow seed using a spreader or seeding machine. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing equal quantity in 2 directions at right angles to each other.

B. Do not sow immediately following rain or when ground is too dry.

C. Seed application rate: 1 pound per 1,000 square feet.

D. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

3.08 PROTECTION OF SEEDED SLOPES

A. Protect seeded slopes against erosion with erosion netting or other acceptable methods.

B. Spread specified mulch after completion of seeding operations to form a continuous blanket not less than 1-1/2 inches’ loose measurement over seeded areas.

C. Anchor mulch by spraying with asphalt emulsion at rate of 10 to 13 gallons per 1,000 square feet. Prevent damage or staining of construction or other plantings adjacent to mulched areas.

D. Cover seeded slopes with jute matting where grade is 3:1 or greater. Roll matting down over slopes without stretching or pulling.

E. Lay matting smoothly on soil surface, burying top end of each section in narrow 6-inch trench. Leave 12-inch overlap from top roll over bottom roll. Leave 4-inch overlap over adjacent section.
F. Staple outside edges and overlaps at 36-inch intervals.

G. Lightly dress slopes with topsoil to ensure close contact between matting and soil.

H. Unroll matting in direction of flow in ditches. Overlap ends of strips 6 inches with upstream section on top.

3.09 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

B. Site/Field Tests and Inspections

1. Landscape work to be inspected and approved prior to completion of the Work.

2. Replace rejected Work, and continue specified maintenance until re-inspected by Engineer and accepted. Remove rejected plants and materials promptly from Site.

3.10 CLEANING

A. Keep pavement, sidewalks, and walkways clean. Maintain protection during installation and maintenance periods.

3.11 MAINTENANCE

A. Provide maintenance of grass seeded areas immediately after planting.

B. Maintain grass by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, re-grading, and replanting as required to establish smooth, acceptable lawn areas free of eroded or bare areas.

C. Maintain grassed areas to establish acceptable lawn areas until final completion, or for a minimum of 180 days after substantial completion, whichever is longer.

D. Maintain grass by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, re-grading, and replanting as required to establish a smooth, acceptable lawn, free of eroded or bare areas.

E. If seeded in the fall season and full 180 days of maintenance is not provided, or if not considered acceptable at that time, continue maintenance during the following spring season until acceptable lawn areas are established.

F. Maintain trees and shrubs until in accordance with Item C of this section.
3.12 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
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SECTION 33 01 30.10

TELEVISION INSPECTION AND CLEANING OF SEWERS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide cleaning and closed-circuit television (CCTV) inspection of sanitary and combined sewer pipes in accordance with this Section and applicable reference standards listed in Article 1.03.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. National Association of Sewer Service Companies (NASSCO)
   a. Jetter Code of Practice
   b. Pipeline Assessment Certification Program (PACP) Standards

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product data

1. Description of system and equipment proposed for pipe cleaning

2. Description of system and equipment proposed for CCTV inspection after cleaning

3. Documentation of PACP certification for CCTV software

4. Sample test reports and evaluations
TELEVISION INSPECTION AND CLEANING OF SEWERS

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1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.
B. Qualifications: per Division 01 General Requirements and as follows.

1. Firm with minimum 10 years’ experience in cleaning and CCTV inspection.

2. PACP certification required for on-Site operators and individuals performing PACP coding if inspection videos are coded separately from actual recording.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

A. Existing conditions: per Division 01 General Requirements.

B. Notify Engineer immediately if Site conditions prevent access to manholes or pipes identified as part of Work.

PART 2 – PRODUCTS

2.01 EQUIPMENT

A. Manufacturer recommended equipment to protect manholes and pipes.

B. Cleaning

1. High velocity jet and mechanically powered equipment based on NASSCO’s Jetter Code of Practice and field conditions.

2. Vactor truck or other mechanical means for removal of solid or semisolid material resulting from cleaning operation.

C. CCTV Inspection

1. CCTV equipment designed for pipe inspection, with high resolution color video and lighting to allow a clear picture with minimal reflective glare for entire periphery of pipe.

2. Equipment that displays and records the following minimum data.

   a. Project identification
   
   b. Date recorded
   
   c. Company and personnel conducting inspection
   
   d. Pipe identification
e. Size of pipe and material
f. Footage counter
g. Station and clock position of laterals
h. Location, severity and rate of observed infiltration or defects

3. Camera: remote controlled, color pan and tilt type lens with lighting system, capable of turning perpendicular to direction of flow and rotating 360 degrees while inside pipe, and capable of viewing minimum service connection length of 4 feet to determine whether connection is active or inactive.

D. Cutting Protruding Services

1. Protruding lateral removal equipment: remote controlled hydraulically driven cutters and reamers, and remotely operated robotic routers or grinders capable of cutting back concrete, vitrified clay, PVC and other pipe materials protruding into main line without damage to host pipe.

2.02 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 PREPARATION

A. Remove standing water to allow adequate cleaning and inspection. Pipe flow shall not exceed 1/4 full during cleaning, and bottom of pipe shall be visible during inspection.

B. Maintain sufficient flow to pass flash of storm flow in drainage ditches and prevent backwater flooding due to obstruction caused by cleaning and inspection equipment.

3.02 PIPE CLEANING

A. Perform pipe cleaning prior to CCTV inspection.

B. Qualified supervisory personnel must be on-Site during performance of services specified.

C. Review previous inspection logs if available, to identify areas that may require additional cleaning.
D. Consult with Engineer if damage is anticipated based on existing conditions and structural soundness of host pipe to determine if Work will be discontinued.

E. Maintain detailed documentation of cleaning efforts that will reduce hydraulic capacity of the pipe. Record type of debris removed from each segment of pipe.

F. Clean pipes to minimum 95 percent of carrying capacity of pipe diameter at point of debris, based on results of CCTV inspection. If results are unsatisfactory, repeat cleaning until acceptable to Engineer.

G. Remove debris from pipe, except for known pre-existing conditions, including debris washed up into service connections, drop connections, or bench wall of manholes that will reduce hydraulic capacity of pipe and limit future maintenance access of remote equipment.

H. Light cleaning: up to 4 passes.

I. Heavy cleaning: exceeds number of passes established for light cleaning.

J. Perform removal of protruding laterals. Work without excavation from existing ground surface.

K. Cut or grind flush protruding break-in service connection to main pipe without scouring or damaging main pipe or service connection. Screen, collect, remove, and legally dispose of pipe cuttings.

L. Grinding of break-in service connections will be determined by Engineer based on initial survey CCTV inspection.

M. Repair or replace damages to service laterals or host pipe during removal with new materials to existing condition.

3.03 TELEVISION INSPECTION

A. Perform CCTV inspection in accordance with PACP standards.

B. Begin each inspection, where possible, at footage 0.0 by panning upwards to view pipe connection with manhole, with both manhole and pipe visible in the same frame.

C. Visually inspect pipe using remote CCTV and record inspection in digital format. Pause, pan, and visually inspect service connections, pipe ends, and maintenance or structural defects. Center camera in pipe to provide accurate distance measurements to locations of features in pipe. Record observations via audio commentary and on PACP log in NASSCO PACP format.

D. Move camera through pipe in either direction at a uniform rate, pausing when necessary to ensure proper identification of pipe condition. Use manual winches,
power winches, TV cable and powered rewinds or other devices to move camera through pipe. Use appropriate speed to inspect each pipe joint, tee connection, structural deterioration, infiltration and inflow sources, and deposits, not to exceed 30 feet per minute.

E. If blockage hampers inspection of pipe in one direction, attempt to complete section by televising from another manhole to complete the section and report obstruction to Engineer.

F. Repeat survey if image quality is not adequate for post-inspection coding.

G. Deliver CCTV inspections, recording entire survey in electronic format with electronic links between data and video. Provide CCTV inspection reports within 2-feet of measured linear footage between manholes along existing pipe centerline from start to end of pipe. Enter Owner and PACP required header information on CCTV reports.

3.04 WATER AND WASTE MANAGEMENT

A. Discharge, bypass, or flooding of sewage, cleaning water, or debris to public or private property, including ground, surrounding residences, and downstream pipes is prohibited. Immediately clean and repair damage resulting from cleaning and inspection to satisfaction of Engineer.

3.05 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

3.06 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
SECTION 33 01 30.61

PACKER INJECTION GROUTING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide grouting and pressure testing of sewer pipe joints, joints in laterals connected to manholes and lateral connections to sewer mains using the packer injection method, including inspection, monitoring and recording pressure in voids, in accordance with the Section and applicable reference standards listed in Article 1.03.

B. Related Requirements

1. Section 33 01 30.10 – Television Inspection and Cleaning of Sewers

2. Section 33 01 30.72 – Cured in Place Pipe Lining

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) Standards

2. ASTM International (ASTM)

   a. ASTM F2304 Standard Practice for Sealing of Sewers Using Chemical Grout

   b. ASTM F2454 Standard Practice for Sealing Lateral Connections and lines from the mainline Sewer Systems by the Lateral Packer Method, Using Chemical Grout

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling per Division 01 General Requirements and as follows:

1. Provide 48-hour advance written notice to the Owner and Engineer prior to grouting Work.
1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product Data

1. Description of system, equipment, and materials proposed for grouting and pressure testing, including chemical grout materials and proposed additives

2. Manufacturer’s recommended procedures for storing, mixing, testing and handling of chemical grouts

C. Qualification Statements

1. Qualifications of the firm/personnel performing the Work including at least 10 similar reference projects

D. Upon completion of each pipe segment, submit to Engineer a report showing the following data for each lateral connection tested, grouted or attempted to be grouted as required by PACP.

1. Identification of the sewer pipe section tested by assigned sewer ID (if available) and length.

2. Type of pipe material, diameter & depth of pipe to the surface at manholes.

3. Test pressure used and duration of test.

4. Pass/fail results for each connection tested.

5. Location stationing of each connection tested and location of any connections not tested with an explanation for not testing.

6. Volume of grout material used on each connection.

7. Gel set time used (cup test results from tanks)

8. Grout mix record of the batches mixed including amount of grout and catalyst, additives, temperature of the grout solution in tanks.

9. Operator conducting testing and sealing shall be noted on the reports.

10. Video recordings

   a. Video recording shall include testing and sealing operations for each lateral (including inflation and deflation over the lateral) displaying the final air test of laterals.
b. Additional final recording, if specified, shall include inspection of the lateral after all grouting work is complete.

E. Closeout and maintenance material submittals per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Qualifications

1. Provide that Work specified be performed by a firm/personnel with a minimum of 10 years of experience performing the required services. Provide that supervisory personnel have a minimum of 5 years of experience in providing the required services and will be present at the Site when Work specified is performed.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Handle, mix, and store grouts in accordance with manufacturer’s recommendations. Deliver to Site in unopened original manufacturer’s containers.

C. Collect and legally dispose of cleaning materials used in cleaning of the grouting equipment.

1.08 SITE CONDITIONS

A. Existing conditions: per Division 01 General Requirements.

B. Notify Engineer immediately if Site conditions prevent access to manholes or pipes identified as part of the Work.

PART 2 – PRODUCTS

2.01 EQUIPMENT

A. Equipment for mainline pipe laterals connected to the mainline: remote operated color television camera capable of pan and tilt, joint testing device (or “packer”), and test monitoring equipment.

1. Provide means for introducing air under pressure into void area created by expanded ends of packer against host pipe and means for continuously measuring, viewing and recording actual static pressure of test medium and grout within the void area only.
2. **Packer:** low void space construction with void volume provided by packer manufacturer, sized less than diameter of host pipe, with cables at either end to pull it through line and allow a restricted amount of sewage to flow at all times, and expandable by air pressure.

B. **Testing device for lateral connections:** inflatable mainline end elements and lateral grouting plug that creates a void area extending beyond the main connection.

1. Use a lateral grouting plug sized to match the diameter of the lateral being grouted with an effective sealing length of at least 2 feet.

2. Use alternate lateral grouting plug or equipment sized for capped lateral where the lateral is capped.

3. Use 4-inch lateral grouting plug where lateral transition is from 6 inches to 4 inches in diameter.

4. Notify Engineer if lateral plug does not launch due to physical restrictions.

C. **Equipment for 4-inch and 6-inch laterals connected to manholes:** flexible push-type packer and mini-push camera.

1. Testing device for lateral pipe connected to the manhole: capable of testing joints within 2 feet of lateral or to cleanout, whichever comes first from manhole toward building.

2. Diameters of push packer or grout lateral may be changed out using a 4 inch push packer if lateral contains a transition.

D. **Transmit void pressure data from the void area to monitoring equipment or transmit video picture of pressure gauge mounted on the packer and connected to the void area.**

E. **Grouting equipment:** packer and appropriate pumping and hosing systems capable of supplying uninterrupted flow of sealing materials to completely fill the voids. Size grout pumping system to deliver a mixed volume of grout at minimum 3 gpm and 30 gallons of uninterrupted flow within 10 minutes.

1. Provide capability of measuring and recording volume of mixed grout pumped for each grouted joint/connection in sewers where flows do not exceed 25 percent of pipe diameter unless permitted by the Engineer.

F. **Connection and lateral service sealing:** lateral grouting plugs and push packers specified above. Provide back-up bladders on Site for each packer during grouting procedures.
G. Provide equipment for cleaning lateral blockages while lateral grouting Work is being performed.

2.02 GROUT

A. Grout material characteristics: non-biodegradable and have capability to react/perform in presence of water (groundwater).

1. Increasing grout mix viscosity, density and gel strength: accomplished by increased concentration of constituents or the use of approved additives.

2. Residual grout: easily removed from sewer line to prevent blockage of sewage flow.

3. Cured grout: capable of withstanding submergence in water without degradation and chemically stable and resistant to organics found in sewage.

4. Resultant grout formation: homogeneous and able to prevent the passage of water (infiltration) through the pipe joint.

5. Acceptable level of quality: equivalent to Avanti products meeting specified performance requirements.

B. Chemical grouts: designed for injection into the soil surrounding the pipe to stabilize the soil and form a permanent impermeable seal called “grout/soil ring”, and into the annular space between liners and host pipes.

C. Water based chemical grouts: minimum of 10 percent acrylamide base material by weight in the total grout mix. Use higher concentration of acrylamide base material to increase strength or offset dilution during injection.

1. Viscosity: approximately 2 centipoise, increased with approved additives.

2. Controllable reaction (curing) time: from 10 seconds to 1 hour to produce a homogenous, chemically stable, non-biodegradable, firm, flexible gel with ability to tolerate some dilution and react in moving water during injection.

3. Acceptable level of quality: equivalent to Avanti AV-100 or Avanti AV-118 or Picossa PC-100.

D. Acrylate base grouts: minimum of 10 percent acrylate base material by weight in the total grout mix.

1. Viscosity: approximately 1-3 centipoise, increased with approved additives.
2. Controllable reaction (curing) time: from 10 seconds to 1 hour to produce a homogenous, chemically stable, non-biodegradable, firm, flexible gel with ability to tolerate some dilution and react in moving water during injection.


2.03 ADDITIVES

A. Additives: selected and used within manufacturer’s recommended quantities based on field conditions.

B. Strengthening agents for joint grouting: latex or “diatomaceous earth” additive increase compressive and tensile strength. Quantity: as recommended by the manufacturer and approved by Engineer.

C. Add root inhibitor for lateral connection grouting to control root re-growth. Quantity: as recommended by the manufacturer and approved by Engineer.

D. Add manufacturer approved water-soluble dye without trace metals to the grout tank(s) for visual confirmation if desired.

E. Use gel time extending agent as necessary in accordance with manufacturer’s recommendations.

F. Use ethylene glycol or other approved additive in lines where the grouting material may be exposed to a freeze-thaw cycle to prevent chemical grout cracking once set.

G. Provide mechanical mixing devices in grout tanks to keep additives in suspension and maintain uniform solution of grout and additive when using non-soluble additives.

2.04 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 GENERAL

A. Test monitoring: above ground and in a location to allow for simultaneous and continuous observation of televising monitor and test monitoring equipment.
3.02 CONTROL TESTS

A. Perform packer tests to demonstrate acceptable performance of air test prior to mainline joint testing.

1. Perform demonstration test in an above-ground 8-inch nominal diameter test cylinder suitable of containing full length of packer and sustaining void test pressure, to ensure accuracy, integrity and performance capabilities of the testing equipment. Equip test cylinder with void release valve to exercise controlled release of pressurized air from void area to test packer under both sound and leaking conditions and local pressure gauge (0-25 psi) within the void space.

   a. With void release valve sealed, inflate packer and air test void at 7-10 psi. Observed void pressure at the test cylinder pressure gauge: plus or minus 1.0 psi of the reading in the control center/studio void pressure gauge and follow both up and down pressure changes (allowing time for pressure equalization).

   b. If above test is passed, crack release valve to simulate a small leak. Equip cylinder with a void release valve to exercise a controlled release of test media with the associated pressure drop to be equally displayed at plus or minus 1.0 psi of the cylinder gauge and test monitoring equipment.

2. After entering each pipeline segment with the test equipment but prior to the commencement of testing, position packer on a section of sound sewer pipe between pipe joints and perform test as specified.

3. Provide that equipment holds a 7-10 psi test pressure for a period of 15 seconds with a pressure drop of less than 1 psi. Repair defective equipment and re-test to verify proper operation of equipment at no additional cost to Owner if test is failed. Performance testing maybe waived or modified as determined by Engineer if surface or porosity conditions of the barrel of sewer pipe cannot meet the joint test requirements.

4. Repair or modify air test equipment and repeat tests if air testing fails or cannot be performed. Air testing may be required at any time during joint testing Work if Engineer suspects testing equipment is malfunctioning.

B. Perform pump test prior to application of grout to determine if proper ratios are being pumped from grout component tanks at proper rates and to measure pump rates. Use separate containers to capture discharges from each grout component hose, to simulate actual volumes of each component through the interconnect hoses, hose reel, and length of grout hose, and confirm accuracy of grout pump totalizer. Take corrective action if ratios or rates are not within manufacturer’s recommended standards.
C. Perform and record a grout gel test in Engineer’s presence prior to application of grout by recording grout tank solution temperature, catalyst tank solution temperature, ambient air temperature in truck, and gel time of sample for following conditions:

1. At the beginning of each day when material in hoses is recycled to tanks
2. When new batches of grout are mixed
3. When temperature in tanks or ambient temperature has changed by more than plus or minus 10 degrees F from the previous gel test

3.03 PIPE PREPARATION

A. Clean sewer designated to receive chemical grouting in accordance with Section 33 01 30.10. Remove and legally dispose of debris and obstructions that will inhibit proper seating of packer.

B. Remove roots and loose debris from laterals connected to manholes for length of lateral to be tested/grouted.

C. During mainline sewer cleaning or joint testing, document lateral connections containing roots, mineral deposits or obstructive conditions that are greater than fine roots or of a nature to prevent testing and sealing of connection. For each such connection, submit a screenshot image clearly showing the extent of roots or obstructive condition to Engineer.

1. Submit images in electronic format, labeled and organized to allow easy retrieval of image for lateral connection in question. Provide list of lateral connections with roots including upstream and downstream manhole numbers and stationing.

2. After reviewing the list of lateral connections containing roots and obstructions, Engineer will identify which laterals are to be cleaned and grouted or grouted without cleaning. Lateral connections with obstructive conditions will be excluded from warranty testing or may be removed from the Work.

D. Perform post-cleaning video inspection in accordance with Section 33 01 30.10 and provide Owner with a copy in digital format for review prior to application of grout and a suitable log.

3.04 GROUT PREPARATION

A. Follow the manufacturer’s recommendations for the mixing and safety procedures.
B. Adjust gel time as necessary to compensate for changes in temperature in grout component tanks or hoses. Do not add dilution water to extend gel times unless resulting base grout tank only material exceeds 20 percent by weight for solution grouts.

C. During the grouting process, provide that grouting technician monitors grout component tanks to ensure proper ratios are pumped. If unequal levels are noted in the tanks, repeat pump test as specified above and correct any defects.

D. Calculate gel times using the following formula unless experience or field conditions dictate otherwise. Alterations of gel time formula shall be approved by Engineer.

\[
\text{Gel Time} = \left( \frac{\text{Volume of Pipe / Packer Void Space (gal)}}{\text{Pumping Rate (gpm)}} \right) \left( \frac{60 \text{sec}}{1 \text{min}} \right) + 20 \text{sec}(+/-5 \text{sec})
\]

Where packer/pipe void is defined as the volume between inflated packer and inside pipe wall when packer is inflated per manufacturer recommendations. For example: an 8-inch pipe with a packer void space of 0.3 gallons and a 3 gpm pumping rate would provide:

\[
\text{Gel Time} = \left( \frac{0.3 \text{gal}}{3 \text{gpm}} \right) \left( \frac{60 \text{sec}}{1 \text{min}} \right) + (20 \text{sec}) = 26 \text{sec}(+/-5 \text{sec})
\]

3.05 TESTING AND GROUTING DEFECTS

A. Do not test or grout pipe with the following conditions or characteristics.

1. Longitudinally cracked, fractured or broken pipe
2. Brick Pipe
3. Irregularly shaped / non-circular pipe
4. Pipe with diameters greater than 30-inches
5. Sections of pipe or joints in such poor structural condition that significant structural damage of pipe would occur as a result of pressure test as determined jointly by Engineer and Contractor

B. Owner will repair structurally undamaged joints that structurally fail (break) during testing and grouting that are documented on video to have been done under normal pressure conditions.
C. Grout circumferential cracks and fractures or other defects as specified or as directed. Do not test or grout any other pipe defects unless specified or shown or directed.

1. Owner will repair structurally failed pipe and joints that are grouted at Engineer’s direction that further fail/break during testing and grouting and that are documented on video to have been done under normal pressure conditions.

D. Promptly repair other sewer damage caused by performance of Work at no additional cost to Owner.

3.06 JOINT TESTING PROCEDURE FOR MAINLINE SEWER AND LATERALS CONNECTED TO MANHOLES

A. Joint testing pressure: 5 psi or 0.5 psi per vertical foot of pipe depth plus 2 psi, not to exceed 10 psi without approval, whichever is higher.

B. Test joints in laterals directly connected to manholes to edge of right-of-way where applicable. Test transition where transitions in the laterals connected to manholes exist. Use direct visual observation and measured cable lengths to position lateral packer for laterals directly connected to manholes.

C. Individually air test each sewer pipe joint at above-specified pressure (and retest after sealing) in accordance with the following.

1. Position packer within the pipe to straddle joint to be tested.

2. Expand packer ends to isolate joint from remainder of pipe and create a void area between packer and pipe joint. Expand ends of testing device against pipe per manufacturer’s recommendations. If attempts to isolate joint fail, pump grout to seal leak around packer end elements.

3. Stop air flow when void pressure is observed to be equal to or greater than required test pressure. Test failure: if void pressure decays by more than 1.0 psi within 15 seconds. Seal joint and retest upon test failure.

D. Deflate packer with void pressure meter continuing to display void pressure upon completion of testing each individual joint. If void pressure meter fails to drop to 0.0, plus or minus 0.5 psi, clean test equipment of residual grout material and make necessary equipment repairs to provide for an accurate void pressure reading.

3.07 LATERAL CONNECTION TESTING PROCEDURE

A. Lateral connection joint testing pressure: 5 psi or 0.5 psi per vertical foot of pipe depth plus 2 psi, not to exceed 10 psi without approval, whichever is higher.
B. Conduct lateral connection air testing by isolating area to be tested with lateral connection packer and applying positive pressure into the isolated void area. Use a pan and tilt camera to position the lateral packer for laterals directly connected to mainline sewer. Invert lateral bladder from mainline assembly into lateral pipe and inflate, then inflate mainline elements to isolate lateral connection and portion of lateral to be tested. Use a sensing unit to monitor pressure of packer void and will accurately transmit a continuous readout of void pressure to control panel at grouting truck or to pressure gauge on packer and recorded by CCTV camera.

C. Apply controlled air pressure into each isolated void area. Slowly introduce air into void area until pressure equal to or greater than required test pressure, not to exceed 2 psi above the required test pressure, is observed on pressure monitoring equipment. Stop application of air pressure when designated pressure in isolated void is displayed on meter of control panel. Commence a 15-second waiting period and observe void pressure. Air test failure: if void pressure drop is greater than 2.0 psi within 15 seconds. Grout and retest connection upon test failure.

D. After completing the air test for each individual lateral specified herein, deflate the lateral packer, with the void pressure meter continuing to display void pressure. If the void pressure does not drop to 0.0 +/- 0.5 psi, the equipment shall be adjusted to provide a zero void pressure reading at the monitor.

3.08 GENERAL GROUTING

A. Grout joint and lateral connections that fail pressure test by injection method forcing grout through a system of pumps and hoses into and through joints of sewer from packer within the sewer pipe. Remove excess grout from pipe and laterals. Excess grout shall be defined as a thickness of grout that could cause a blockage given location, size and geometry. Flush or push forward to next downstream manhole, remove from sewer system, and legally dispose of excess grout.

3.09 PIPE JOINT SEALING BY PACKER INJECTION GROUTING FOR MAINLINE SEWERS AND LATERALS CONNECTED TO MANHOLES

A. Position mainline packer over joint or defect to be sealed with CCTV camera in the line. Position push/pull packer over joint or defect to be sealed by visual observation, marked push rod, or, through CCTV camera in lateral where a cleanout is available.

1. For push packers, start at most distant point to be grouted. Take accurate measurement of location of defect to be sealed using a portion of packer as a point of reference for positioning the injection area of packer over the defect. Pneumatically expand packer sleeves to create a seal against the inside periphery of pipe to form a void area at the joint now completely isolated from remainder of pipeline.
B. Pump grout materials in stages, if needed, into the isolated area to refusal or until the void and surrounding soil is filled or solidified with the goal of applying 0.25 to 0.5 gallons of grout per inch-diameter per pipe joint.

C. Refusal:
1. when packer void pressure during grout pumping instantaneously rises or “spikes” by 4 to 5 psi or more above normal void pressure experienced during grout pumping operation or when pumping void pressure exceeds holding pressure of packer end elements as evidenced by “blow-by” past packer sealing end elements; or
2. when joint will not accept any more grout because it has flowed throughout the void, through any joint failure and into the surrounding soil, gelled or filled available void space, and formed a cohesive seal stopping further grout flow.

D. Joint is considered sealed upon refusal. Record the amount of grout pumped on sealing log.

E. Deflate packer to break away from ring of gel formed by packer void upon completion of the injection. Re-inflate packer and retest joint at a pressure equal to initial test pressure.

F. If void pressure meter fails to read 0.0, plus or minus 0.5 psi, clean test equipment of residual grout material and make necessary equipment repairs to provide for an accurate void pressure reading. The equipment shall be adjusted to provide a zero void pressure reading at the monitor.

G. If joint fails test, repeat grouting procedure at no additional cost to the Owner, except for additional grout used. Repeat sequence of air testing, grouting and subsequent air testing until joint is sealed or grout consumption to be too high as jointly determined by Engineer and Contractor.

H. If a mainline or lateral joints require more than 0.5 gallon of grout per inch-diameter per pipe joint, modify grouting procedure to perform stage grouting by pumping additional grout in maximum 4-gallon increments, waiting 1 gel set cycle time or 1 full minute, whichever is greater, between stages. Maximum number of stages: not to exceed two stages of 4 gallons each unless approved.

3.10 LATERAL CONNECTION SEALING FROM THE MAINLINE BY PACKER INJECTION GROUTING

A. Begin lateral connection sealing if lateral connection does not pass air test, shows evidence of leakage, has been successfully cleaned to remove roots, or where directed. Keep lateral packer in position during the pressure test to maintain
isolated void. Pressure inject grout through lateral packer into the annular space between lateral grouting plug and lateral pipe.

B. Pump grout until mixed grout flows through joint failure, through annular space, and into surrounding soil; gelled or filled available void space; formed a cohesive seal stopping further grout flow; and minimum of 8 psi backpressure is achieved while pumping. Void pressure will slowly rise to a range of approximately 2 to 4 psi. Continue pumping until there is a sudden increase in void pressure, for example, when an increase from 2 to 4 psi to over 8 to 10 psi takes place in a few seconds.

C. Significant voids on outside of pipe or improper sealing of packer may be indicated if grout pumped exceeds 1 gallon per foot of lateral bladder plus 3 gallons. If it is so verified, reseal packer and modify grouting procedure to stage grouting. Pump additional grout at 1 gallon plus 0.25 gallon per foot of lateral bladder, waiting 1 full minute, and retesting, not exceeding 2 stages unless authorized.

D. Upon completion of the lateral connection sealing procedure, deflate lateral bladder, re-inflate and air test lateral connection a second time to confirm sealing of connection in accordance with the air testing procedure. If lateral connection fails air test, repeat grouting procedure at no additional cost to the Owner, except for additional grout used.

E. Air testing after grouting laterals containing roots is not required.

F. Confirm lateral flow after sealing of each lateral connection and clear lateral if grout blockage exists. Notify Owner if blockage exists not resulting from grouting.

G. A thin residual grout film may be present inside the lateral wall after grouting lateral connections with appropriate size lateral bladder, depending on the lateral bladder used, geometry of lateral and positioning of packer. This thin layer of cured grout is considered normal and expected to eventually peel off sidewall of pipe. Residual chemical grout film that is not “sandwiched” between two structures, will eventually peel off sidewall of pipe, and will not be considered excess grout.

3.11 JOINT SEALING VERIFICATION

A. Record grouting of joints in conjunction with testing of joints. Record void pressure drop continuously on video and in writing, immediately before sealing and immediately after grouting. Record visual inspection of joint on video after the packer is deflated and moved.

B. Use of standardized test and seal data sheets and PACP data codes is recommended.
3.12 WATER AND WASTE MANAGEMENT

A. Discharge, bypass, or flooding of sewage, cleaning water, or debris to public or private property, including ground, surrounding residences, and downstream sewer lines, is prohibited.

3.13 WARRANTY INSPECTION

A. Warranty Inspection must commence within 45 calendar days prior to expiration of the Warranty Period or within 10 days of receipt of notice from Owner to commence Warranty Inspection. Within 14 calendar days prior to expiration of the Warranty Period (351 days from Substantial Completion), perform CCTV inspection of 10 percent of rehabilitated pipes and lateral connections in accordance with Section 33 01 30.10 in the presence of the Engineer. Specific locations will be selected by Owner.

B. If abnormalities and defects are discovered after inspection of a portion of rehabilitated pipes and lateral connections, perform CCTV inspection of all rehabilitated pipes and lateral connections at no additional cost to Owner.

C. Repair and replace abnormalities and defects discovered during the Warranty Inspection as recommended by manufacturer and as specified.

3.14 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

B. Post-Construction Inspection

1. Conduct post-construction CCTV inspection and documentation of pipe sections containing lateral grouting in accordance with Section 33 01 30.10 after grouting is complete. This inspection is incidental to the Work.

3.15 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
SECTION 33 01 30.72
CURED IN PLACE PIPE LINING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide cured-in-place pipe (CIPP) within existing, deteriorated sewer pipe in accordance with this Section and applicable reference standards listed in Article 1.03.

B. Design Requirements

1. CIPP system design life and corrosion resistance to typical chemicals found in domestic sewage: minimum of 50 years.

2. Design as structurally sound, fully stand-alone pipe-within-a-pipe. Meet or exceed physical properties specified, fit tightly within existing pipe and within tolerances specified. Provide that installed CIPP withstands applicable surcharge loads, such as soil overburden and live loads, and external hydrostatic pressure, if present, for each specific installation location.

C. Related Requirements

1. Section 01 51 40 – Temporary Sewage Bypass
2. Section 33 01 30.10 – Television Inspection and Cleaning of Sewers
3. Section 33 01 30.61 – Packer Injection Grouting

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. ASTM International (ASTM)

b. ASTM D5813 – Standard Specification for Cured-In-Place Thermosetting Resin Sewer Piping Systems

c. ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube

d. ASTM F1743 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)

e. ASTM F2019 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled-in-Place Installation of Glass Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP)

2. National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) Standards

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling per Division 01 General Requirements and as follows:

1. Coordinate work activities and any potential discharge of wastewater from the installation of a CIPP liner, as part of a sewer rehabilitation project, into the MWRA sewerage system with the MWRA. Wastewater discharged from the CIPP liner into a pipeline operation must comply with MWRA Sewer Use Regulations, 360 C.M.R. 10.021-10.024, prior to mixing with any other streams.

2. Affix written notice of anticipated service interruption to door of each building that has sewer service through pipe being lined 1 week prior to lining installation and again 24 hours before lining installation.

3. Distribute written notice following service connection reinstatement notifying occupants that service connection has been restored, or include start and end time of service disruption on notice distributed 24 hours prior to lining installation.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product Data

1. Proposed manufacturers technology data for CIPP lining and products

2. Description of CIPP materials
3. Manufacturer of and description of fabric tube components, and certified information on void volume in fabric to be filled with resin

4. Flexible membrane coating material data

5. Raw resin data including manufacturer and description of product components

6. Manufacturer’s data on hydrophilic rubber gasket to be placed between host pipe and CIPP

7. Material Safety Data Sheets (MSDS) for materials used during preparation and installation of CIPP system

C. Design Data/Submittals

1. Engineering design calculations, in accordance with ASTM F1216, for each length of liner installed including thickness of each proposed CIPP. Design for most severe line condition may be submitted and applied to line sections. Calculations: performed and certified by Professional Engineer licensed in the state where the Project is located. Submit design calculations for maximum allowable pulling force on liner tube for pulled in CIPP liners.

D. Manufacturer Instructions

1. Recommended patching procedure for flexible membrane material

2. Manufacturer’s shipping, storage and handling recommendations for products and components of CIPP system

3. Manufacturer’s recommended cure method for each diameter and thickness of CIPP to be installed, including curing medium and method of application

4. Blockage removal procedures

5. Description of methods and equipment proposed for repairs of uncured areas, defects, test sample section repairs or other deformities in completed liner pipe.

E. Source and Field Quality Control Submittals

1. Independent laboratory testing results of CIPP samples outlined in Article 3.06.

2. After lining is completed, provide a completed Cured-In-Place Pipe Lining Installation & Service Lateral Reinstatement Form included as an attachment to this Section.
F. Manufacturer Reports
   1. Description of proposed wet-out procedure for proposed CIPP lining technology and example wet out report

G. Detailed plan for identifying active service connections and maintaining service during mainline installation to each building connected to section of pipe being lined, including temporary service if required

H. Proposed locations of inversion manholes

I. Flow handling and bypass pumping plan in accordance with Section 01 51 40

J. Public notification plan including example notification to building occupants affected by CIPP installation

K. Description of odors anticipated as result of curing process and detailed odor control plan ensuring Project specific odors are minimized at Site and surrounding area.

L. Procedures and details on methods to obtain water if required for installation.

M. Qualification Statements
   1. For firm and lead personnel in accordance with Article 1.06.

N. Closeout and Maintenance Material Submittals per Division 01 General Requirements

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Qualifications: per Division 01 General Requirements and as follows for the firm:
   1. Minimum 5 years’ continuous experience in cured in place lining.

C. Qualifications: per Division 01 General Requirements and as follows for lead personnel:
   1. Minimum 5 years’ total experience with proposed CIPP technology, and have demonstrated competency and experience to perform resin wet-out, CIPP liner installation, liner curing and robotic service reconnections.

D. Certifications
   1. Confined Space Entry certifications for Contractor’s personnel entering pipeline or access structures.
1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Packaging, Shipping, Handling and Unloading

1. Ship materials with test reports certifying material conforms to applicable ASTM standards specified.

1.08 SITE CONDITIONS

A. Existing conditions: per Division 01 General Requirements.

B. Notify Engineer immediately if Site conditions prevent access to manholes or pipes identified as part of Work.

PART 2 – PRODUCTS

2.01 PRELINER TUBE

A. Reinforced plastic sheet formed to fit host pipe being lined, continuous from manhole to manhole.

2.02 FABRIC TUBE

A. One or more layers of absorbent non-woven felt fabric, felt/fiberglass or fiberglass

B. Capable of absorbing and carrying resins, constructed to withstand installation pressures and curing temperatures, have sufficient strength to bridge missing pipe segments, and stretch to fit irregular pipe sections.

C. Provide wet-out fabric tube with uniform thickness and excess resin distribution to meet or exceed design thickness after cure when compressed at installation pressures.

D. Manufacture to size and length for tight fit to internal circumference of original pipe when installed, meeting or exceeding ASTM D5813, F1216, F1743 and F2019. Make allowance for circumferential stretching during installation and provide ability to stretch to fit irregular pipe sections and negotiate bends.

E. Determine minimum tube length necessary to effectively span designated runs between manholes. Verify lengths in field prior to ordering and prior to impregnation of tubes with resin to ensure tube will have sufficient length to extend entire length of run.

F. The tube length shall include sufficient amount of material for sealing at manholes and product sampling for test coupons in accordance with Section 3.06.
G. Coat outside and inside layer of fabric tube before inversion/pull-in, with impermeable, flexible membrane to contain resin and facilitate vacuum impregnation and monitoring of resin saturation during wet-out procedure.

H. Do not include material in fabric tube that causes de-lamination in cured CIPP. Dry and unsaturated layers visually evident by color contrast between tube fabric and activated resin containing colorant are not acceptable.

I. Provide light reflective wall color on interior pipe surface of CIPP, after installation, to ensure clear detailed examination with closed circuit television inspection equipment. Hue: dark enough to distinguish contrast between fully resin-saturated felt fabric and dry or resin lean areas.


K. Mark outside of fabric tube every 5-feet with name of manufacturer or CIPP system, manufacturing lot, and production footage.

L. Installer shall determine minimum length of fabric tube to span distance from starting to terminating manhole or access point, plus mount required to run-in and run-out for installation process.

M. Construct nominal fabric tube wall thickness to minimum nearest 0.5-mm increment, rounded up from design thickness for that section of installed CIPP. Fabricate wall thickness transitions into fabric tube between installation entrance and exit access points in 0.5-mm increments or greater.

N. Impregnate sufficient quantity of resin to fill voids for nominal fabric thickness.

2.03 RESIN

A. Provide corrosion resistant polyester or vinyl ester resin and catalyst system or epoxy and hardener system to:

1. produce CIPP that will comply with or exceed structural and chemical resistance requirements specified;

2. meet ASTM F1216, ASTM F1743 or F2019 when properly cured within tube composite;

3. meet physical properties specified; and

4. meet properties utilized in design of CIPP.

B. Resin to tube ratio, by volume: as recommended by manufacturer.
2.04 HYDROPHILIC COMPRESSION GASKET

A. Acceptable level of quality: equivalent to Hydrotite from Greanstream Group Inc., or Insignia from LMK Technologies.

2.05 STRUCTURAL REQUIREMENTS

A. Cured-in-place liner shall have sufficient structural strength to support loads imposed with assumption that existing pipe is fully deteriorated and cannot support any loading or contribute to structural integrity of liner.

B. Physical properties and characteristics of finished liner: varied and dependent on types and mixing proportions of materials used, and degree of cure executed. Control variables to provide that CIPP system meets or exceeds minimum properties specified.

1. Design in accordance with ASTM F1216 and assume no bonding to original pipe wall.

2.06 MINIMUM PHYSICAL PROPERTIES

A. Meet following minimum physical properties.

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Cured Composite per ASTM F1216</th>
<th>Cured Composite Per Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexural Modulus of Elasticity (Short Term)</td>
<td>ASTM D790</td>
<td>250,000 psi</td>
<td>Contractor Value</td>
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<td>(Felt Tubes) Felt/Fiberglass, Fiberglass as</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>recommended by manufacturer</td>
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<td>Flexural Strength (Short Term) (Felt Tubes)</td>
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<td>Contractor Value</td>
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<tr>
<td>recommended by manufacturer</td>
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</tr>
</tbody>
</table>
B. Provide required structural CIPP wall thickness based, at minimum, on physical properties of cured composite, in accordance with design by Engineer, design equations contained in appendices of applicable ASTM standards, and design parameters below.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Safety Factor</td>
<td>2.0 (1.5 for pipes 36-inches or larger)</td>
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<tr>
<td>Creep Retention Factor</td>
<td>50 percent</td>
</tr>
<tr>
<td>Ovality Correction Factor</td>
<td>2 percent or as measured by field inspection</td>
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<tr>
<td>Modulus of Soil Reaction E</td>
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<tr>
<td>Depth of Groundwater Above Pipe</td>
<td>At Ground Surface</td>
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<tr>
<td>Depth of Cover</td>
<td>Varies. As indicated on record drawings</td>
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<tr>
<td>Wheel Load</td>
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<tr>
<td>Specific Weight of Soil</td>
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<td>Minimum Service Life</td>
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<tr>
<td>Design Temperature</td>
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<tr>
<td>Shape Factor</td>
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<tr>
<td>Bedding Deflection Coefficient</td>
<td>0.103</td>
</tr>
</tbody>
</table>

2.07 ACCEPTABLE MANUFACTURERS

A. Insituform Technologies

B. National Liner

C. Perma-Liner

D. Or equal

2.08 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 PREPARATION

A. Clean interior of existing host pipe prior to installation of CIPP liner in accordance with Section 33 01 30.10. Remove debris and obstructions that will affect installation and long-term performance of CIPP.

B. Perform pre-cleaning video inspection in accordance with Section 33 01 30.10 and submit pre-cleaning video and data in digital format within 1 week after pre-cleaning and prior to installation of CIPP.
C. Review existing conditions data prior to commencement of construction, including CCTV logs provided.

D. Verify lengths and pipe sizes in field prior to liner installation.

E. Verify all active sewer service locations to be reinstated as part of pre-CCTV inspection prior to the CIPP mainline installation.

F. Confirm locations of branch service connections prior to installation of CIPP.

G. Complete internal grinding of protruding sewer services prior to cured-in-place pipe lining work in accordance with Section 33 01 30.10.

H. Provide bypass pumping in accordance with Section 01 51 40.

I. Discharge of wastewater from the installation of a CIPP liner, as part of a sewer rehabilitation project, into the Municipal or MWRA sewerage system is prohibited, unless authorized by the MWRA. Wastewater discharged from the CIPP liner into a pipeline operation must comply with MWRA Sewer Use Regulations, 360 C.M.R. 10.021-10.024, prior to mixing with any other streams. Comply with Section 00 73 10 to obtain authorization to discharge wastewater from the CIPP liner into a pipeline operation at least thirty (30) calendar days prior to beginning the discharge. Test, treat, and dispose of inversion water at no additional cost to the Owner.

3.02 INSTALLATION OF CIPP

A. Perform CIPP with minimal excavation or demolition of existing structures.

B. Commence CIPP operations at beginning of anticipated 3-day minimum period of dry weather.

C. Install and cure continuous and jointless CIPP liner from manhole to manhole or access point to access point, forming to internal circumference of host pipe when cured, in accordance with manufacturers’ specifications, applicable ASTM standards, and as specified in this section.

D. Install pre-liner tube in presence of Engineer.

E. Provide sewer service without interruption during CIPP installation. Do not request abutters to limit water usage for more than a period of 12-hours during installation and curing of the CIPP, unless approved by the Owner and Engineer. Commercial and multi-family properties shall have sewer service without interruption throughout regular business hours. Identify lateral connections requiring bypass service per Paragraph 1.05.G and plans for bypass submitted as required in the Contract Documents. In the event of a sewage backup of any property as a result
of CIPP installation, any costs associated with the sewage backup are the responsibility of the Contractor.

F. Provide for bypass pumping of existing mainline and service connection effluent around sections of pipe designated for CIPP installation. After notifying occupants, plug pipelines and connections and monitor regularly to prevent backup of sewage into adjacent buildings. Do not allow plugs to remain overnight. Begin installation after required plugs or sewage bypass system have been installed, and pumping facilities have been installed and tested under full operating conditions including bypass of mainline and side sewer flows in accordance with Section 01 51 40.

G. Insert CIPP tube through existing manhole. Equip winch with dynometer to record pulling forces during installation. Pull forces shall not exceed manufacturer’s recommendations. Inversion heads for tubes that are inverted in place shall not exceed manufacturer’s recommendations.

H. After inversion/installation of tube, circulate hot water, steam, ultraviolet light or other methods approved by the Engineer, to cure resin into hard, impermeable pipe.

I. Temperature Monitoring During Cure Cycle

1. Place remote temperature gauges or sensors inside host pipe prior to installation as recommended by manufacturer to monitor temperatures. Monitor, and log, liner and host pipe interface temperature during curing of liner.

2. Place temperature sensors between host pipe and liner in bottom of host pipe invert, throughout its length to monitor temperature on outside of liner to verify correct curing.

3. Place temperature sensors at intervals recommended by CIPP liner and resin manufacturers. Place additional sensors where significant heat sinks are likely. Continuous temperature sensors and monitoring may be required, in accordance with manufacturer’s recommendations.

4. Monitor sensors by computer using database capable of recording temperatures at interface of liner and host pipe. Provide output report identifying each installed sensor station in length of pipe, maximum temperature achieved, sustained temperature time, minimum cool down temperature, and light train sensor readings for UV cured liners, documenting cure along entire length of installed liner.

J. Position wet-out tube in pipeline using method specified by manufacturer. Pull-in or invert through existing manhole or approved access point and fully extend to next designated manhole or termination point.
K. Use appropriate medium in accordance with manufacturer’s recommended cure schedule and method, taking into account liner wall thickness and existing ground conditions, with regards to temperature, moisture level, and thermal conductivity of soil, and applicable ASTM standards. Continue uninterrupted heating until the required curing temperature is achieved.

L. Adjust, in accordance with manufacturer’s recommendations for heat-cured liners, if temperature sensor or multiple sensors do not reach temperature specified by manufacturer to achieve proper curing or cooling. Use manufacturer’s cure procedure for UV cured liners.

M. Cool CIPP in accordance with manufacturers’ recommendations. Cold water used to cure CIPP liner shall not be discharged into existing system without authorization from Engineer. Contractor is responsible for handling and properly disposing of cure-water.

N. Reinstate existing service connections after liner is cured-in-place. Reopen branch connections to buildings without excavation per ASTM F1216, Paragraph 7. See 3.04.B of this Section.

O. Mitigate odors onto public or private property, due to renewal operations, immediately after notification from Engineer including, but not limited to, forced-air ventilation and chemical cleaning of buildings.

3.03 REPAIR/RESTORATION

A. Installed CIPP: continuous over entire length of sewer line section and free from visual defects such as foreign inclusions, discoloration, dry/soft spots, pinholes, major wrinkles, bulges and de-lamination, and impervious and free of leakage from pipe to surrounding ground or from ground to inside lined pipe.

B. Repair defects that could affect structural integrity or impact continuous flow through pipeline in accordance with manufacturers’ recommendations.

C. Grout infiltration leaks identified between host pipe, service connections and CIPP liner to remove observed infiltration as specified in Section 33 01 30.61.

3.04 MANHOLE CONNECTIONS AND RECONNECTIONS OF EXISTING SERVICES

A. Apply hydrophilic compression gasket seal at manhole/wall interface in accordance with CIPP system manufacturer’s recommendations. When hydrophilic compression gaskets are not feasible due to physical pipe or lateral properties, grout service connections or mainline CIPP ends in accordance with Section 33 01 30.61 after existing service connections are reinstated. Ensure annular space between sewer main and CIPP is fully sealed with grout.
B. Reinstate lateral service connections internally using CCTV camera and remote cutting device. Machined opening: between 95 and 100 percent of service connection opening. Bottom of both openings must match. Do not allow pipe fragments, or liner fragments at edges of opening to avoid obstructing flow or snagging debris. Cut invert of sewer connection flush with invert entering mainline.

1. Determine exact locations of service laterals during internal inspection and re-verify with pre-construction inspection reports for accuracy. Repair holes or trial cuts in CIPP liner not in alignment with service lateral.

2. If service reinstatements result in openings greater than 100 percent of service connection opening, install CIPP type repair, sized to completely cover over-cut service connection.

C. Make reconnections of existing services after CIPP is installed, fully cured, and cooled down.

D. Collect coupons of pipe material resulting from service tap cutting at next manhole downstream of pipe rehabilitation operation prior to leaving site. Coupons may not be allowed to pass through system.

3.05 REPAIR/RESTORATION

A. Repairs: in accordance with the manufacturer’s recommended written procedures and techniques for uncured areas, defects, test sample section repairs or other deformities in completed liner pipe.

B. All work required to remedy non-conforming work shall be at the sole cost of the Contractor.

3.06 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

B. Site/Field Tests and Inspections

1. Verify physical properties of installed CIPP through field sampling provided by Contractor, and testing by independent third party laboratory selected by Engineer. Furnish materials for testing. Sampling and testing: in accordance with applicable ASTM test methods to confirm compliance with requirements specified.

2. Provide samples to Engineer for testing from installed CIPP liner, minimum 1 location per 1,000 linear feet of CIPP installed or as required by Engineer. Cut sample from section of cured CIPP that has been inverted or pulled through like diameter pipe and has been held in place by suitable heat sink,
such as sandbags. Engineer will witness curing, cutting and identification of samples and transmit samples to testing laboratory.

a. Engineer may require plate samples cured with CIPP or designate location in newly installed CIPP for Contractor to take sample from. Pipelines: minimum 18-inches in diameter. Repair opening produced from sample in accordance with manufacturer’s recommended procedures.

3. Laboratory results shall identify test sample location referenced to nearest manhole and station. Repair or replace CIPP if properties tested do not meet minimum physical and thickness requirements outlined in this Specification and per ASTM F1216.

4. Chemical resistance requirements without plastic coating: in accordance with ASTM D5813. Provide CIPP samples of fabric tube and resin used for construction or submit certification from manufacturer verifying chemical resistance of CIPP meets requirements.

5. Installed CIPP shall, at minimum, be equal to full flow capacity of original pipe before rehabilitation. When full capacity cannot be achieved after liner installation, Contractor shall submit request to waive this requirement, together with reasons for waiver request. Calculated capacities may be derived using commonly accepted roughness coefficient for existing pipe material taking into consideration its age and condition.

6. Post-Installation Inspection

a. Immediately prior to conducting post-installation CCTV inspection, Contractor shall clean newly installed liner, removing debris and build-up that may have accumulated.

b. Perform CCTV inspection to latest NASSCO standards in presence of Engineer after installation of CIPP liner and reinstatement of laterals.

c. Submit unedited digital documentation of CCTV inspection within 10 working days of liner installation in accordance with Section 33 01 30.10. Engineer may suspend Work if documentation is not submitted as specified above.

d. Utilize bypass pumping or plugging from upstream manhole to minimize sewage from entering line during CCTV inspection. Clear pipe of standing water to provide continuous visibility during CCTV inspection.

e. Leak free pipe is required for final approval of liner installation. Repair or remove liner where leakage is observed through wall of pipe as recommended by CIPP manufacturer.
f. Final acceptance of rehabilitation work shall not be granted until defective areas are repaired to pipe lining manufacturer’s and Engineer’s satisfaction.

7. Warranty Inspection

a. Warranty inspection must commence within 45 calendar days prior to expiration of Warranty Period or within 10 days of receipt of notice from Engineer to commence warranty inspection. Perform CCTV inspection of 10 percent of rehabilitated pipes, in accordance with Section 33 01 30.10 and in presence of Engineer, within 14 calendar days prior to expiration of Warranty Period, 351 days from Substantial Completion. Specific locations will be selected for warranty sections by Engineer and will include all sizes of CIPP in Project.

b. Perform CCTV inspection of entire CIPP system during Warranty Period if abnormalities or defects are discovered by Engineer after primary warranty inspection.

c. Repair and replace abnormalities and defects discovered during warranty inspection as recommended by manufacturer or requested by Engineer, and as specified.

3.07 STARTUP AND COMMISSIONING

A. Provide in accordance with Division 01 General Requirements.

3.08 CLEANING

A. Do not discharge, bypass, or flood sewage to public or private property, including ground, surrounding residences, and downstream sewer lines. Immediately clean and repair damage resulting from cleaning and inspection activities to satisfaction of Engineer.

B. Collect cleaning water, solids and debris generated from sewer pipe cleaning and discharge off-Site to appropriate waste facilities. Do not discharge cleaning water and solids to public or private property.

C. Promptly remove and legally dispose of damaged materials, including but not limited to, items with gouging, abrasion, flattening, cutting, puncturing, or ultra-violet degradation.

3.09 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.
3.10 ATTACHMENTS

A. Cured-In-Place Pipe Lining Installation & Service Lateral Reinstatement Form

END OF SECTION
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CURED-IN-PLACE PIPE LINING
INSTALLATION & SERVICE LATERAL REINSTATEMENT FORM

Project Name: Fiscal Year 2020 Sewer & Drainage System Repairs Improvements

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ATTACHMENT TO
CURED IN PLACE PIPE LINING INSTALLATION & SERVICE LATERAL REINSTATEMENT FORM
WOODARD & CURRAN

FY20 Open Cut Excavation
Sewer & Drainage System Repairs
City of Quincy, MA

Issue Date: March 2020
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Comments:
SECTION 33 01 30.81

SEWERAGE MANHOLE REHABILITATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide manhole rehabilitation in accordance with this Section, and applicable reference standards listed in Article 1.03, using a variety of rehabilitation components including:

a. Chemical Grouting
b. Cementitious Manhole Restoration

B. Related Requirements

1. Section 01 51 40 – Temporary Sewage Bypass

C. Design Requirements

1. Preparation, certification and submission of design calculations by a registered Professional Engineer licensed in the state in which the Project is located will be required for the following:

   a. A manhole is specified to be structurally rebuilt, with build-back materials, or rehabilitated to sustain hydrostatic loading by groundwater.

2. Manufacturer’s third-party testing will be acceptable for the following:
   
   a. A manhole is specified to receive a corrosion protective coating sufficiently thick to totally protect the existing host structure from further corrosion, deterioration and water vapor transmission.
   
   b. A manhole is specified to receive a coating to renew mortar or other deteriorated components of a manhole but has no specified longevity or corrosion resistance requirement.

   c. A manhole is specified to receive patch repair materials for portions of the manhole.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.
1.03 REFERENCES

A. Reference Standards

1. National Association of Sewer Service Companies (NASSCO) Manhole Assessment Certification Program (MACP) Standards

2. ASTM International (ASTM)
   b. ASTM C496/C496M Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
   c. ASTM C666/C666M Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
   d. ASTM C267 Standard Test Methods for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacing and Polymer Concretes
   e. ASTM C882/C882M Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear
   f. ASTM C293/C293M Standard Test Method for Flexural Strength of Concrete (Using Simple Beam With Center-Point Loading)
   g. ASTM C469/C469M Standard Test Method for Static Modulus of Elasticity and Poisson’s Ratio of Concrete in Compression
   h. ASTM C596 Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement
   i. ASTM C952 Standard Test Method for Bond Strength of Mortar to Masonry Units
   j. ASTM D570 Standard Test Method for Water Absorption of Plastics
   k. ASTM D638 Standard Test Method for Tensile Properties of Plastics
   l. ASTM D695 Standard Test Method for Compressive Properties of Rigid Plastics
   m. ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
   n. ASTM D2240 Standard Test Method for Rubber Property – Durometer Hardness
o. ASTM D2580 Standard Test Method for Phenols in Water by Gas-Liquid Chromatography
p. ASTM D4414 Standard Practice for Measurement of Wet Film Thickness by Notch Gages
r. ASTM D7234 Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers
s. ASTM F2414 Standard Practice for Sealing Sewer Manholes Using Chemical Grouting

3. Federal Specification HH-P-117

4. Society for Protective Coatings (SSPC) SP 13/NACE International (NACE) No. 6 Surface Preparation of Concrete

5. NACE SP0188 Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.

1. Provide 48-hour advance written notice to Owner and Engineer prior to manhole rehabilitation Work.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product Data

1. Description of system, equipment, and materials proposed for manhole rehabilitation, including proposed repair and patching materials

2. Manufacturer’s recommended procedures for storing, mixing, testing and handling of materials

3. Manufacturer’s recommended installation and application process including mixing, additives, set time, cure time (return to service) and equipment required for quality product delivery
4. Technical data sheet describing each rehabilitation component to be applied/installed, stating the expected longevity of the component in a wastewater environment based on independent third-party tests

5. Copies of independent testing performed on the rehabilitation component, indicating that the product meets the requirements as specified herein and the manufacturer’s design

6. Technical data sheet and Project specific data for manhole repair materials to be used in conjunction with each rehabilitation component(s) including application cure time and surface preparation procedures

7. Manufacturer’s warranty

C. Description of proposed procedures for cleaning and preparing manhole structure prior to rehabilitation, detailing substrate testing being performed to verify acceptability of specific material to be applied

D. Design Data

1. Engineering design calculations performed and certified by a qualified Professional Engineer registered in the state in which the Project is located to meet the Design Requirements specified herein

E. Independent laboratory testing results of samples described in Article 3.06

F. Qualification Statements

1. Qualifications of the firm/personnel performing the Work including at least (5) five similar reference projects within the past (3) three years in the United States.

2. Certifications for personnel performing the Work:
   a. Proof of certification and training by the product manufacturer
   b. Certificate of completion in confined space training meeting the requirements of Federal regulation 29 CFR 1910.146

G. Closeout and maintenance material submittals: per Division 01 General Requirements and as follows:

1. Complete record for each manhole rehabilitation of products applied and installed, including identifying manhole number, location, work performed, date, cure time and quantities of rehabilitation components installed.
1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Qualifications per Division 01 General Requirements and as follows:
   1. Provide Work specified is performed by a firm with a minimum of 5 years of experience in providing the required services. Provide that supervisory personnel have a minimum of 3 years of experience in providing the required services and will be present at Site during Work related to required services.

C. Provide 4-hour on-site inspector training by a manufacturer’s approved trainer for the Owner’s inspectors on specific product being installed prior to commencement of work. Training: prior to product installation, including both technical and field training, and include key aspects of visual inspection and sampling procedures for testing requirements. On projects having an estimated duration of less than 2 weeks of rehabilitation Work, manufacturer shall furnish a checklist containing key elements of specific criteria important for Owner’s inspectors to ensure quality control and testing requirements are appropriately performed.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Handle, mix, and store grouts in accordance with manufacturer’s recommendations. Deliver to Site in unopened original manufacturer’s containers.

C. Collect and legally dispose of debris and residue from cleaning and other construction operations.

1.08 SITE CONDITIONS

A. Existing conditions: per Division 01 General Requirements.

B. Notify Engineer immediately if Site conditions prevent access to manholes or pipes identified as part of the Work.

PART 2 – PRODUCTS

2.01 CHEMICAL GROUTS

A. Grout material characteristics: non-biodegradable and have capability to react/perform in presence of water (groundwater).
1. Increasing grout mix viscosity, density and gel strength: accomplished by increased concentration of constituents or the use of approved additives.

2. Residual grout: easily removed from sewer line to prevent blockage of sewage flow.

3. Cured grout: capable of withstanding submergence in water without degradation and chemically stable and resistant to organics found in sewage.

4. Resultant grout formation: homogeneous and able to prevent the passage of water (infiltration) through the pipe joint.

5. Acceptable level of quality: equivalent to Avanti products meeting specified performance requirements.

B. Chemical grouts: designed for injection into the soil surrounding the manhole to stabilize the soil and form a permanent impermeable seal called “grout/soil ring”, and into the annular space.

C. Water based chemical grouts: minimum of 10 percent acrylamide base material by weight in the total grout mix. Use higher concentration of acrylamide base material to increase strength or offset dilution during injection.

1. Viscosity: approximately 2 centipoise, increased with approved additives.

2. Controllable reaction (curing) time: from 10 seconds to 1 hour to produce a homogenous, chemically stable, non-biodegradable, firm, flexible gel with ability to tolerate some dilution and react in moving water during injection.

3. Acceptable level of quality: equivalent to Avanti AV-100 or Avanti AV-118.

D. Acrylate base grouts: minimum of 10 percent acrylate base material by weight in the total grout mix.

1. Viscosity: approximately 1-3 centipoise, increased with approved additives.

2. Controllable reaction (curing) time: from 10 seconds to 1 hour to produce a homogenous, chemically stable, non-biodegradable, firm, flexible gel with ability to tolerate some dilution and react in moving water during injection.

2.02 ADDITIVES

A. Additives: selected and used within manufacturer’s recommended quantities based on field conditions.

B. Strengthening agents for joint grouting: latex or diatomaceous earth additive increase compressive and tensile strength. Quantity: as recommended by manufacturer and approved by Engineer.

C. Add root inhibitor to control root re-growth. Quantity: as recommended by manufacturer and approved by Engineer.

D. Add manufacturer approved water-soluble dye without trace metals to grout tanks for visual confirmation if desired.

E. Use gel time extending agent as necessary in accordance with manufacturer’s recommendations.

F. Use ethylene glycol or other approved additive in lines where the grouting material may be exposed to a freeze-thaw cycle to prevent chemical grout cracking once set.

G. Provide mechanical mixing devices in grout tanks to keep additives in suspension and maintain uniform solution of grout and additive when using non-soluble additives.

2.03 CEMENTITIOUS RESTORATION

A. Provide a cementitious restoration material designed for structural build-back, infiltration/inflow abatement, corrosion resistance, and repairing inverts to design requirements. All materials applied to a structure shall be compatible, as specified by the manufacturer.

B. Infiltration Control – Cementitious Material

1. All fast setting materials furnished shall be designed specifically for leak control, to be applied in dry powder form, with no prior mixing of water, directly to active leaks under hydrostatic pressure in manholes or related structures, in accordance with the manufacturer’s recommendations.

C. Infiltration Control – Oakum Water Plugs

1. Rapid setting, oil-free oakum and hydrophilic grout to seal active water leaks prior to applying other systems

2. Oil-free oakum meeting Federal Specification HH-P-117
3. Two-part urethane resin

D. Invert Repair and Patching

1. All material furnished, by the Contractor, shall be designed to fill large voids in manhole walls and to repair or reconstruct inverts where no hydrostatic pressure exists. Material shall consist of rapid setting cements, mono-crystalline quartz aggregates, and various accelerating agents. Material shall not contain chlorides or metallic particles and shall be applied in accordance with the manufacturer’s recommendations.

2. Repair and Patching Materials shall have its bond strength tested to substrate failure according to ASTM C952 and be compatible with all other material components applied to the manhole.

E. Grouting Mix

1. For stopping severe infiltration, the Contractor shall provide a polymer solution that reacts freely with water to form a strong film, gel, or foam of polyurethane. See Article 2.01 – Chemical Grouts.

F. Cementitious Coating Restoration Materials for manhole walls, channels, corbels, chimneys and benches: specifically designed for the rehabilitation of manholes and other related wastewater structures. Liner materials shall be cement based, poly-fiber reinforced, shrinkage compensated, and enhanced with chemical admixtures and siliceous aggregates.

G. Physical properties based on minimum of 28 days curing:

1. Compressive strength: ASTM C109 >9,000 psi
2. Flexural strength: ASTM C293 >1,600 psi
3. Tensile strength: ASTM C496 >800 psi
4. Modulus of elasticity: ASTM C469 >4,500,000 psi
5. Permeability: ASTM C1202 < 300 coulombs
6. Bond: ASTM C882 >2,000 psi
7. Shrinkage: ASTM C596 0.0% (at 90% RH)
8. Freeze/thaw: ASTM C666 300 cycles
9. Sulfide resistance: ASTM C267 No loss after 90 days
H. Manufacturers: Parsons Environmental, Strong-Seal or equal.

2.04 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 MANHOLE PREPARATION

A. Bypass pump sewage in the manhole as required.

B. For all manhole rehabilitation clean interior surfaces of manhole of debris, dirt, oil, grease, remains of old coating materials, and any other extraneous materials.

C. Pressure wash manhole walls to remove loose mortar, concrete and debris. Pressure washing levels, used for cleaning, shall be as recommended by the manufacturer.

D. Repair irregularities in manhole using materials, compatible with proposed resurfacing material, as recommended by the manufacturer.

E. Repair leakage in manhole using materials, compatible with proposed resurfacing material, specified in these contract specifications.

F. Trim and grout incoming laterals and pipes as required and/or specified.

G. Remove debris from manhole and incoming sewer connections.
   1. Handle cleaning water to prevent water and residue from causing damage.
   2. Do not discharge debris downstream through the sanitary sewer system.
   3. Filter solids-laden water through a de-silting device.

3.02 CHEMICAL GROUTING

A. General

1. Grouting should only be performed on a structurally sound manhole unless the grout is used to prevent water from entering the manhole during application of a lining or coating system. All structural repairs, adjustments to the frame and cover and installation of grade rings shall be completed prior to beginning the grouting operation.

2. Normal grouting operations shall be performed at the temperatures as recommended by the manufacturer.
3. Grouting applications may include sealing a manhole from infiltration/inflow prior to application of a coating or lining or other structural rehabilitation component or using the grout for sealing the entire manhole structure. If the entire manhole is to be sealed, grouting shall include corbel, wall, pipe seals, bench and invert as recommended by the manufacturer of the grouting material.

B. Drilling and Grout Injection

1. Drilling grout injection holes in the manhole in strategic locations to redirect flow coming through cracks and other defects in the wall, or to seal the entire exterior surface of the manhole, shall be in accordance with the recommendations of the grout manufacturer.

2. Grout shall be injected through the drilled holes using the recommended probe and applying pressures that will effectively inject the grout but, not cause damage to the manhole structure or the surrounding area.

3. Grout typically, shall be injected through the lowest holes first, working the grout higher until the manhole is externally sealed with grout. Additional holes may be required to verify that the grout has encompassed the entire outside of the manhole.

4. The injection holes shall be cleaned and patched as recommended by the manufacturer.

C. Testing and Acceptance

1. Visual inspection – all leakage into the manhole must be eliminated.

3.03 CEMENTITIOUS RESTORATION

A. General

1. Install a perforated device, catch bucket, or other straining device to prevent construction debris from entering downstream pipes before starting any patchwork or liner application

2. Inspect each manhole to determine methods of stopping leaks and applying patch repairs.

3. Install products in accordance with manufacturer’s instructions regarding surface preparation, product application and curing.
4. Confirm that all material to be used, for the rehabilitation of the manhole are compatible with each other. Do not use any materials that have not been verified for compatibility.

B. Sealing Active Leaks

1. The Work consists of hand applying a dry quick-setting cementitious mix designed to instantly stop running water or seepage in all types of concrete and masonry structures. The applicator shall apply material in accordance with manufacturer’s recommendations in accordance with the following minimum specifications.
   a. The area to be repaired must be clean and free of all debris per the guidelines set forth elsewhere in these specifications.
   b. Once cleaned, prepare crack or hole by chipping out loose material to a minimum depth recommended.
   c. As recommended by the manufacturer, place a generous amount of the dry quick-setting cementitious material to the active leak, with a smooth fast motion, maintaining external pressure for 30 seconds, repeat until leak is stopped.
   d. Proper application should not require any special mixing of product or special curing requirements after application.
   e. Use of Oil-free Oakum Water Plugs.
      1) Saturate oakum with resin following approved submittals.
      2) Use additives as required.
      3) Place and cure following manufacturer’s recommendations.

C. Invert Application

1. The Work consists of hand mixing and applying a rapid setting, high early strength, non-shrink patching material to fill all large voids and repair manhole channels prior to spray lining of the manhole. For invert repairs, flow must be temporarily restricted by inflatable or mechanical plugs prior to cleaning.
   a. The area to be repaired must be cleaned and free of all debris per the guidelines set forth in Article 3.01.
   b. Mix water shall be clean potable water and require no additives or admixtures for use with cementitious patching materials.
   c. Cementitious material shall be mixed in a mortar tub or 5 gallon pail with water per manufacturer’s specifications. Material should
be mixed in small quantities, to avoid setting prior to placement in voids or channels.

d. Once mixed to proper consistency, the materials shall be applied to the invert or void areas by hand or trowel. In invert applications, care should be taken to not apply excessive material in the channel, which could restrict flow. Once applied, materials should be smoothed either by hand or trowel in order to facilitate flow.

e. Flows in channels shall be re-established when material has cured enough to withstand the flow as determined by the manufacturer.

D. Application of Cementitious Manhole Liner

1. The Work consists of troweling, spray applying and/or centrifugally spinning a cementitious based liner to the inside of the existing manhole. The necessary equipment and application methods to apply the cementitious based liner materials shall be only as recommended and approved by the material manufacturer.

2. Material shall be mixed with water in accordance with manufacturer’s specifications. Once mixed to proper consistency, the materials shall be pumped via a rotor-stator style progressive cavity pump through a material plaster hose for delivery to the appropriate and/or selected application device. The equipment shall be as recommended by the manufacturer, matched for the material being applied.

3. If a chimney seal is required in conjunction with the lining technology, the Contractor should contact the chimney seal manufacturer to determine the proper preparation required for effectively installing the chimney seal after the coating has been applied and cured.

E. Spray Application of the Cementitious Material

1. All material shall be applied and finished, by the Contractor, using equipment specified by the manufacturer.

   a. Material hose shall be coupled to a low-velocity spray application nozzle. Pumping of the material shall commence and the mortar shall be atomized by the introduction of air at the nozzle, creating a low-velocity spray pattern for material application.

   b. Spraying shall be performed by starting at the manhole invert and progressing up the wall to the corbel and chimney areas.

   c. Material shall be applied to a specified uniform minimum thickness as required by the manufacturer and as necessary for
proper curing and application. Material shall be applied to the bench area in such a manner as to provide for proper drainage.

d. Material shall be troweled smooth to compact material into voids. A brush or broom finish may be applied when a top coating is desired.

F. Spin Casting Application of the Cementitious Material

1. All material shall be applied and finished by the Contractor using equipment specified by the manufacturer.

a. Material hose shall be coupled to a high-speed rotating applicator device. The rotating casting applicator shall then be positioned within the center of the manhole at either the top of the manhole chimney or the lowest point elevation corresponding to the junction of the manhole bench and walls.

b. Initialize high speed rotating applicator and begin pumping material. As the mortar begins to be centrifugally cast evenly around interior of the manhole, raise or lower rotating applicator head at a controlled retrieval speed conducive to providing a uniform material thickness on manhole walls.

c. Controlled multiple passes are then made until the specified minimum finished thickness is attained. If the procedure is interrupted for any reason, simply stop the retrieval of the applicator head until flows are recommenced.

d. Material thickness may be verified at any point with a depth gauge and shall be no less than a uniform 1/2-inch. If additional material is required at any level, the rotating applicator head shall be placed at that level and application shall recommence until that area is thickened.

e. Apply material only when manhole is in a saturated surface dry (SSD) state with no visible water dripping or running over the manhole walls.

f. The low-velocity spray nozzle and the centrifugal spin casting head may be used in conjunction to facilitate uniform application of the mortar material to irregularities in the contour of the manhole walls and bench areas.

g. Begin troweling materials immediately following spray application. Initial troweling: in an upward motion to compress material into voids and solidify manhole wall. A brush or broom finish may be applied if top coating is desired.
h. Curing will take place once the manhole cover has been replaced. Replace manhole cover no more than 10 to 20 minutes after troweling is complete to avoid moisture loss in material due to sunlight and winds.

i. Do not apply material during freezing weather conditions. Do not place when ambient temperature is 37 degrees F and falling, or when the temperature is anticipated to fall below 32 degrees F during 24 hours.

G. Trowel cementitious liners to densify and smooth out surfaces.

H. Testing and Acceptance

1. Visual inspection and acceptance by the Engineer.

2. Cementitious material physical property testing as described in Part 3.04.

3.04 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

B. General

1. Perform testing in the presence of Engineer. Engineer shall receive test samples from Contractor and transmit samples to a third-party testing laboratory. Engineer will maintain the chain of custody of samples that are transmitted and tested to verify compliance with these specifications.

C. Visual Inspection

1. Visually inspect rehabilitated manholes. Identify leakage into the manhole in areas that were rehabilitated.

D. Cementitious Material Property Testing

1. Where specified, one 2x2 inch sample cube shall be taken for every 50 bags of material used. Samples shall be sprayed from nozzle, identified in the presence of the Engineer and sent, by the Engineer, to an independent test laboratory for compression strength testing as described in ASTM C109.

3.05 WATER AND WASTE MANAGEMENT

A. Discharge, bypass, or flooding of sewage, cleaning water, or debris to public or private property, including ground, surrounding residences, and downstream sewer lines, is prohibited.
3.06 WARRANTY INSPECTION

A. Warranty Inspection must commence within 45 calendar days prior to the expiration of the Warranty Period or within 10 days of receipt of notice from Owner to commence Warranty Inspection. Within 14 days prior to expiration of the Warranty Period (351 days from Substantial Completion), conduct visual inspection of 10 percent of rehabilitated manholes in the presence of the Engineer. Specific locations will be selected at random by the Owner.

B. If abnormalities and defects are discovered after inspection of a portion of rehabilitated manholes, perform visual inspection of all rehabilitated manholes at no additional cost to the Owner.

C. Repair and replace abnormalities and defects discovered during the Warranty Inspection as recommended by the manufacturer and as specified.

3.07 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
SECTION 33 31 11

PUBLIC SANITARY SEWERAGE GRAVITY PIPING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide gravity sewer and appurtenances in accordance with this Section, the Drawings, and applicable reference standards listed in Article 1.03.

B. Related Requirements

1. Section 01 51 40 – Temporary Sewage Bypass
2. Section 33 01 30.10 – Television Inspection and Cleaning of Sewers
3. Section 33 39 13 – Sanitary Utility Sewerage Manhole, Frames and Covers

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Water Works Association (AWWA)


c. AWWA C116 - Protective Fusion Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings

d. AWWA C151 - Class 52, Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids

e. AWWA C153 – Ductile-Iron Compact Fittings, 3-in Through 64-in for Water and Other Liquids.

f. AWWA C219 – Bolted, Sleeve-Type Coupling for Plain-End Pipe
g. AWWA C600 – Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.

h. AWWA M41 – Ductile-Iron Pipe and Fittings

i. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution

2. ASTM International (ASTM)


b. ASTM A242/A242M – Standard Specification for High-Strength Low-Alloy Structural Steel

c. ASTM D2000 – Standard Classification System for Rubber Products in Automotive Applications

d. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)

e. ASTM D2321 – Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications


g. ASTM D2729 – Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings

h. ASTM D3034 - Standard Specification for Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings


j. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

k. ASTM F679 - Poly Vinyl Chloride (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings

l. ASTM F1417 – Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air

m. ASTM F2487 – Infiltration and Exfiltration Acceptance Testing of Installed Corrugated High-Density Polyethylene Pipelines
n. ASTM F2736 – 6 to 30 in. [152 to 762 mm] Polypropylene (PP) Corrugated Single Wall Pipe and Double Wall Pipe

o. ASTM F2764 – 30 to 60 in. [750 to 1500 mm] Polypropylene (PP) Triple Wall Pipe and Fittings for non-pressure Sanitary Sewer Applications

p. ASTM F3058 - Preliminary Field Testing of Thermoplastic Pipe for Gravity Flow (non-Pressure) Sewer Lines

3. Uni-Bell PVC Pipe Association (UBPPA)
   a. UNI-B-06 Recommended Low-Pressure Air Testing of Installed Sewer Pipe
   b. UNI-TR-1 Deflection: The Pipe/Soil Mechanism
   c. Uni-Bell Handbook of PVC Pipe Design and Construction

4. American Association of State Highway and Transportation Officials (AASHTO)
   a. AASHTO HB Section 17 – Soil-Thermoplastic Pipe Interaction system
   b. AASHTO HB Section 30 – Thermoplastic Pipe

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Product Data
   1. Manufacturer’s product information including details of installation, joints and pipe/manhole connections; properties and strengths of pipes; and recommendations for storage, protection, handling, and transportation of the PVC pipe, fittings, and appurtenances
   2. Pipe design load calculations.
   3. Factory test reports.

C. Certificates
1. Certificate of Compliance: Each shipment of pipe, pipe fittings and appurtenances shall be accompanied with the manufacturer’s notarized certificate certifying conformations with the Specifications.

D. Description of proposed bypass system and emergency response plan in accordance with Section 01 51 40.

E. Source and field quality control submittals: weekly construction records of installed Work.

F. Closeout and maintenance material submittals per Division 01 General Requirements and as follows.

1. Video recordings of post-construction inspections showing watertight connection between existing sewer and new PVC sewer, provided on a portable USB hard drive and verified for accuracy and quality prior to submittal

2. Record depths and ties to the locations of the following as applicable:
   a. New pipe connections to existing pipe (for spot repairs)
   b. Repairs to existing pipes
   c. Pipe stub capped ends
   d. Location of plugged pipes
   e. Manholes and catch basins

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Discharge, bypass, or flooding of sewage, cleaning water, or debris to public or private property, including ground, surrounding residences, and downstream sewer lines, is prohibited. Immediately and completely clean and repair any damage resulting from new pipe installation activities to the satisfaction of the Owner and Engineer.

1.08 SITE CONDITIONS

A. Existing conditions: per Division 01 General Requirements.
B. Notify the Owner immediately if Site conditions prevent access to manholes or pipes identified as part of the Work.

PART 2 – PRODUCTS

2.01 PIPE, FITTINGS, AND MATERIALS

A. Polyvinyl Chlorine Pipe (PVC)
   1. Provide fittings of same type and class of materials as pipe, unless otherwise specified. Provide commercially manufactured wyes or tee/wyes for service connections and manhole outside drop connections. Provide fittings with single piece gasket. Use nitrile gaskets in contaminated soils areas.
   2. PVC Pipe with less than 4-feet of cover: SDR 26 grade.
   3. PVC Pipe between 4-feet and 12-feet deep: SDR 35 grade.
   4. PVC Pipe in excess of 12-feet deep: SDR 26 grade.
   5. Furnish Neoprene sleeve with stainless steel bands equal to Fernco Strong Back RC flexible couplings for connecting new PVC pipe to existing sewer. Existing pipe material provided on the Drawings is not guaranteed and should be verified by the Contractor prior to proposed Work

B. Provide manhole pipe connections in accordance with Section 33 39 13.

2.02 COUPLINGS

A. Type A solid sleeve coupling: AWWA C219, ROMAC Model No. 501, Smith-Blair Model No. 411, Dresser Style 38, or equal

B. Type B neoprene sleeve: ASTM 1173. Acceptable level of quality: of equivalent to Fernco

2.03 SEWER CHIMNEY

A. Precast Sewer Chimneys
   1. Furnish Precast Concrete Chimneys designed and installed such that it provides a direct positive connection from the mainline pipe to the building connection, will withstand the required pressure tests after backfilling, and will not be adversely affected by local settlement after completion and acceptance by the Owner.
2. Chimneys shall consist of a minimum 6-inch PVC pipe extending vertically from the mainline pipe to the local building connection elevation. The pipe and fittings shall be SDR 35 or heavier. A wye shall be placed at the top of the riser and a PVC plug cleanout shall be provided at the top of the fitting for future cleaning of the chimney.

3. The riser pipe shall be protected during installation with a precast concrete sections, as shown on the Drawings or approved by the Engineer, to prevent damage to the pipe or movement of the pipe during the backfilling operation. The encasement shall be supported independently of the mainline pipe at the base. Refer to Measurement and Payment Section for the minimum height of chimney considered for payment.

4. Precast sections shall be of similar quality and performance as manufactured by Arrow Concrete Products, Inc. or approved equal.

2.04 FITTINGS
A. Furnish single piece gasket of same type and class of materials as pipe. Provide wyes or tee wyes for service connections and manhole inside drop connections

2.05 INSULATION
A. Furnish 2-inch thick 2 by 4 feet wide Extruded closed-cell rigid formed polystyrene, equal to Dow Styrofoam Highload 60.

2.06 NON-WOVEN FILTER FABRIC FOR WORKING MAT
A. Non-Woven Filter Fabric (For Working Mat): Equal to Mirafi 160N by TenCate.

2.07 DETECTABLE WARNING AND IDENTIFICATION TAPE FOR BURIED UTILITY LINES
A. Acceptable level of quality: equivalent to Trumbull Manufacturing.
B. Underground Marking Tape: detectable marking tape with aluminum core with minimum 6-inch width and minimum 3 mils thickness with APWA uniform color-coding for quick and easy identification and location.
   1. Minimum strength: 1,500 pounds per square inch lengthwise, and 1,250 pounds per square inch crosswise, with a maximum 350 percent elongation.
   C. Text or lettering: repeated in bold letters continuously along length of tape at intervals no greater than 3 feet indicating Caution Buried Sewer Below.
   D. Color and printing: permanent and unaffected by moisture or soil.
2.08 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 PREPARATION

A. Confirm the locations of all branch service connections prior to installation of new PVC sewer pipe. The Owner will make the final decision as to whether or not the service connection is live or abandoned. Only service connections deemed “active” shall be reinstated by the Contractor.

B. Provide bypass pumping in accordance with Section 01 51 40.

3.02 INSTALLATION OF GRAVITY PIPE AND FITTINGS

A. Install in accordance with manufacturer's recommendations. Secure each length of pipe with bedding before placing next length. Plug open ends whenever Work is suspended. Bed pipe as shown on Drawings. Provide 30-inch minimum cover over the top of PVC pipe before trench is wheel-loaded.

B. Lay pipe to line and grade shown on the Drawings. If grade is not shown, determine elevations of start and finish points for each run of pipe. Lay pipe to a uniform grade between these points. Line and grade may be adjusted by the Engineer as required by field conditions.

C. Lay pipe in the dry. Dewater trench pursuant to Division 01 General Requirements. Do not use installed pipe to remove water from Work area.

D. Flush pipe and remove debris using flushing method approved by Engineer and in accordance with Section 33 01 30.10.

E. Jointing

1. Clean ends of pipe and coupling components.

2. Apply joint lubricant to pipe end and elastomeric seals of coupling. Use only lubricants approved by the pipe manufacturer.

3. Use suitable equipment and end protection to push or pull the pipes together.

4. Do not exceed forces recommended by the manufacturer for coupling pipe.
5. Join pipes in straight alignment. Do not allow any deflection angle or pipe misalignment to exceed the maximum permitted by the manufacturer.

6. Pipe segment shall not be loaded or backfilled above pipe spring line until subsequent pipe segment and coupling have been installed and gasket inspected.

F. Connections to new Precast Concrete Manholes: Provide in accordance with Section 33 39 13.

G. Connections to Existing Precast Concrete Manholes
   1. Core existing manhole and Repair manhole penetration as necessary to install flexible connector.
   2. Repair manhole brick invert and bench as necessary to provide smooth transition from manhole to pipe.

H. Connections to Existing Non-Precast Concrete Manholes
   1. Core existing manhole and provide new boot type flexible connector consisting of a rubber gasket or boot, metal expansion ring and double metal take-up clamps. Rubber books and gasket material shall meet or exceed ASTM C-923 Repair manhole penetration as necessary to install flexible connector.
   2. If manhole cannot be cored, minimize size of penetration and provide non-shrink grout surrounding pipe to seal and provide watertight pipe connection. Provide damp proofing to repair as specified in Section 33 39 13.
   3. Repair manhole brick invert and bench as necessary to provide smooth transition from manhole to pipe.

I. Service Laterals and Manhole Drop Connections
   1. Verify location and size of service laterals.
   2. Provide tee/wye or wye fittings on PVC main line pipe and connect existing services/drop connections to main line. Maximum length of new PVC service pipe: from the main sewer to the trench width limits.
   3. Enclose upright portion of sewer chimney with a sonotube filled with ¾-inch crushed stone. Cut sonotube to one-foot below elevation of the tee connecting chimney to service connection pipe.

J. Precast Concrete Chimneys
1. Unless otherwise indicated, at locations designated by the Engineer to receive sewer chimneys, crushed stone shall be placed and compacted in maximum 6-inch lifts from the bottom of the trench to the top of the mainline pipe.

2. The Contractor shall install the precast concrete chimney piping sections and then backfill carefully to avoid dislocating or damaging the chimney piping.

3. The completed chimney shall be tested with and subject to the same test requirements as the sewer main to which it is attached.

K. Vertical Separation from Water and Storm Drain Lines

1. Elevation where sewer piping crosses water or storm drain lines: minimum 18 inches below bottom of water or drain line. Provide protection as follows when elevation of sewer piping cannot be buried as specified above.

   a. Provide adequate structural support to prevent excessive deflection of joints.

   b. For water pipe, center 1 full length of water pipe at crossing point so joints are equal distance and as far as possible from sewer piping.

L. Parallel Separation from Water and Storm Drain Lines

1. Lay sewer piping, sewer services and sewer manholes at least 10-feet horizontally, edge to edge, from water and drain lines. When conditions do not permit a horizontal separation of 10-feet, a sewer line may be laid closer to a water or drain line as shown on the Drawings and ensure bottom of water or drain line is at least 18 inches above top of sewer piping wherever possible.

3.03 INSULATION

A. Install insulation when gravity sewer pipe depth is less than 4 feet, or as directed by the Engineer.

B. Provide minimum 4-inch sand layers directly above and below insulation.

3.04 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.
B. Manufacturer on-site services: Provide properly trained manufacturer’s service technician employed by manufacturer to ensure proper installation of sewer pipe. Service technician shall observe and make recommendations as to the care and methods of construction.

1. Minimum service requirement: 1 full 8-hour day. Cost shall include all travel and expenses of QC representative. Eight-hour day shall not include travel to and from the site. Shall not include inclement weather days. Coordinate visit so that it occurs during installation of the first 36-inch reach of pipe on the Project.

C. Field Testing Requirements

1. Test all sanitary sewer pipes after backfilling. Install all house service leads on main line before testing. Perform tests in the presence of the Engineer. A maximum of 1,000 linear feet of pipe may be installed but not tested at any time. Provide low pressure air testing of all gravity sewer piping systems as follows:

   a. All testing equipment shall be inspected by the Engineer to ensure that equipment is functioning properly.

   b. Plug all ends of sections to be tested. The Contractor shall furnish suitable test plugs, water pumps, and appurtenances, and all labor required to properly conduct the tests. Suitable bulkheads shall be installed, as required, to permit the test of the sewer. The Contractor shall construct weirs or other means of measurements as may be necessary.

   c. Supply air slowly to the pipe to be tested until the air pressure inside the pipe is 4.0 psi greater than the average back pressure of any groundwater submerging the pipe.

   d. Disconnect air supply and allow a minimum of two minutes for stabilization of pressure.

   e. Low-pressure air test in accordance with UNI B-06. Conform minimum times for test to the more stringent of the following table or Table 1 of UNI B-06.

2. Minimum specified time required for a 1.0 PSIG pressure drop for size and length of pipe indicated for Q=0.0015.
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Note: 1. Polypropylene Pipes larger than 36-inch diameter shall be joint isolation test in accordance to ASTM F3058 as recommend by manufacture.

3. Acceptable Drop: Pressure drop shall not exceed more than 1.0 psi.

4. PVC Pipe Material Deflection Test
   a. Test 100 percent of pipe with go/no-go mandrel with outside dimension to permit no more than a 7.5 percent deflection.
   b. Base mandrel dimensions on a base pipe ID from ASTM D3034 SDR 35/SDR 26 or AWWA C900 DR 18 as appropriate, and the following calculation: per UNI-TR-1.

   Mandrel O.D. = ((100-7.5)/100) X base pipe ID

5. Pipe failing the pressure test will not be accepted and shall be repaired or replaced until a successful test is achieved. Provide repair and retesting of all piping systems that do not pass tests using materials and methods approved by the Engineer at no additional cost to the Owner.
6. Clean and flush sewer pipe after Work is completed and before final acceptance.

D. Post-Construction Inspection

1. Perform CCTV survey inspection upon completion of new sewer installation, or open cut repair, in the presence of Engineer. Cleaning and CCTV inspection shall be performed in accordance with Section 33 01 30.10.

3.05 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
SECTION 33 39 13

SANITARY SEWERAGE UTILITY STRUCTURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide manholes and accessory items in accordance with this Section, applicable reference standards listed in Article 1.03, and as shown on the Drawings.
   a. Precast manholes
   b. Masonry inverts
   c. Frames and covers
   d. Precast anti-flotation slabs

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. ASTM International (ASTM)

1. ASTM A48 Standard Specification for Gray Iron Castings
2. ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
3. ASTM C32 Sewer and Manhole Brick (Made From Clay or Shale)
4. ASTM C270 Mortar for Unit Masonry
5. ASTM C478 Circular Precast Reinforced Concrete Manhole Sections
6. ASTM C913 Standard Specification for Precast Concrete Water and Wastewater Structures
7. ASTM C923 Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes
8. ASTM C990 Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
9. ASTM C1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test

10. ASTM D4101 Standard Specification for Polypropylene Injection and Extrusion Materials

B. American Association of State Highway and Transportation Officials (AASHTO)

1. AASHTO M81 or M82, Asphalt emulsion

2. AASHTO M140

3. AASHTO H20

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with Division 01 General Requirements.

B. Shop Drawings for each precast manhole and all precast concrete items. Show components to be used, elevations of top of precast sections, base and pipe inverts, location of pipe penetrations, steps, for each manhole. Confirm finish grade elevation for each proposed structure.

1. Design Data/Submittals

a. Manufacturer’s anti-flotation calculations for each structure, signed and stamped by a Professional Engineer licensed in the state where Project is located based on the following criteria.

1) Groundwater elevation shall be set at grade above the structure.

2) Factor of safety shall be 1.1; downward forces from the weight of the pipe and soils over pipe shall be 1.1 times the buoyant uplift forces.

3) The structure shall be considered empty. Calculations shall not consider the weight of internal water.

C. Manufacturers’ product data and installation instructions for frames, covers, grates, precast items, steps, grade rings, manhole sleeves, joint sealants, damproofing, and all appurtenances.

D. Certificate of design for the structural design of the precast concrete structure by a professional engineer licensed in the state where the Project is located.
1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide complete manhole capable of supporting AASHTO H20 loading. All precast concrete shall comply with ASTM C913.

2.02 PRECAST CONCRETE MANHOLES

A. Design: AASHTO H20 loading.
B. Precast Manhole Components: ASTM C478. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on each precast section.
C. Wall Sections: Not less than 5 inches thick
D. Base Sections: Precast monolithic construction (base includes min. 18” riser) with shiplap joints and steps.
E. Barrel Sections (Manhole Risers): Precast with shiplap joints and steps.
F. Top Sections: Precast eccentric cone with shiplap joints and steps. Use flat covers only if shown on Drawings and for structures less than 5’ deep.
G. Steps: Copolymer polypropylene reinforced with Grade 60 steel reinforcement metal rod. Steps must meet OSHA requirements and have a minimum outside width of 14.5 inches. Manhole sections shall contain manhole steps accurately positioned and embedded in the concrete extending a minimum 5 inches from the wall. The steps shall be manufactured from deformed 1/2 inch steel reinforcement rod complying with ASTM A615 and encased in polypropylene complying with ASTM D4101. Include pattern design to prevent lateral slippage off step.
H. Pipe to Manhole Connections: As required in 33 31 11 Sanitary Utility Sewerage Piping

2.03 PRECAST CONCRETE DROP MANHOLES

A. General: Conform to requirements above for manholes. Provide inside drop as shown on the Drawings.
B. Riser Support Bracket: 10 gauge, type 304, No. 3 finish stainless steel. Spaced no greater than 5’ apart.
2.04 MASONRY INVERTS

A. Brick: Brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer. Rejected brick shall be immediately removed from the work and brick satisfactory to the Engineer substituted.

1. Sewer Invert: ASTM C32, Grade SS
2. Grade Adjustment: ASTM C32, Grade MS

B. Mortar: Type M, ASTM C270 composed of (by volume):

1. 1 Part: Portland Cement - Type II; ASTM-C150
2. 1/3 Part: Type S lime; ASTM C207
3. 4 Part: Sand, ASTM C33

C. Provide brick and mortar inverts only. Do not provide concrete inverts.

2.05 FRAMES AND COVERS


B. Cast Iron: Conform to ASTM A48/A48M Class 30

C. Aluminum: Provide alloy number 713.0. Conform to ASTM B26/B26M.

D. Carbon Steel: Conform to ASTM A36/A36M.

E. All manholes shall have a minimum 30-inch diameter clear opening.


2.06 ANTI-FLOTATION

A. Anti-flotation slabs shall be integral to manhole base.

B. Alternate: Anti-flotation slabs may be provided as cast-in-place if approved by Owner/Engineer.

C. Size: Slab size and reinforcement calculations performed by a Registered Engineer must accompany any submittal with modified dimensions or reinforcement showing adequate strength and resistance to buoyant forces. Design must include...
connection hardware specifications. Calculations shall be stamped and signed by a Professional Engineer licensed in the project state.

1. Anti-flotation and buoyancy calculations shall have a minimum factor of safety of 1.10.

2. Calculations for anti-flotation and buoyancy shall not use friction from soil interaction to help design.

2.07 MISCELLANEOUS

A. Manhole Cover Lifting Tools: Provide 1 lifting tool, compatible with manhole covers provided. Tool shall be mechanical or magnetic as selected by Owner.

B. Dampproofing: The exterior surfaces of all precast manhole bases, walls, and cones shall be given a minimum of two shop coats of bituminous dampproofing using cutback asphalt, AASHTO M81 or M82, Asphalt emulsion AASHTO M140 or approved equal, at 5 gallons per 150 square feet minimum per coat and be equal in quality to Sonneborn Hydrocide 700B.

C. Joint Sealants:

1. Butyl Rubber Sealant: One-inch diameter flexible rope form equal to that manufactured by Kent Seal meeting all requirements of AASHTO M198 and ASTM C990 section 6.2.1A. Butyl mastic shall not be acceptable.

2. Butyl Rubber Caulking: conform to ASTM C990.

2.08 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 INSTALLATION OF MANHOLES

A. Placement: Place precast bases on compacted bedding material so manhole structure is plumb, and pipe inverts are at proper elevations. Place barrel and top sections in the appropriate height combinations. Plug all lifting holes inside and out with non-shrink grout and touch up dampproofing.

B. Joints: Follow manufacturer’s instructions for sealing joints between precast sections. Provide two strips of 1 inch diameter butyl rubber sealant for all joints. Parge joints inside and out with non-shrink grout.

C. Frame and Covers

1. Setting frames and covers:
a. In cross-country areas set 24” above finish grade
b. In lawn/landscaped areas set at grade
c. 1/4” below pavement grade in paved areas

2. Set manhole frames and covers to final grade only after pavement base course has been applied, or after final grading of gravel roads. Set castings in cement.

3. Provide minimum 2 bricks, maximum 5 bricks for grade adjustment.

4. Install bituminous asphalt cap/collar.

D. Steps: Replace any steps that are out of plumb and proper horizontal placement.

E. Pipe to Manhole Connections: Provide watertight connections as specified in Section 33 31 11 Sanitary Utility Sewerage Piping.

F. Touch up dampproofing in the field prior to backfilling as required by Engineer. This includes lifting holes and all manhole connections.

3.02 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

B. Leakage Testing

1. Manhole Inspections: Given ample notice, Engineer will conduct his observation of manholes prior to the performance of leakage tests. If the observations are not completed before leakage testing, and subsequent modifications are made to a manhole, the manhole shall be retested for leakage.

2. No credit will be given for absorption of water in manhole walls. If necessary, fill pipes and manholes with water well in advance of exfiltration test and allow them to soak in order to eliminate or minimize the effects of absorption.

3. All tests shall be observed by the Engineer.

4. Exfiltration Test

a. Plug pipes into and out of MH and secure plugs.
b. Lower groundwater table (GWT) to below MH. Maintain GWT at this level throughout test. Provide means of determining GWT level at any time throughout test.
c. Fill manhole with water to top of cone.
d. Allow a period of time for absorption (determined by Contractor).
e. Refill top of cone.

f. Determine volume of leakage in an 8 hour (min.) test period and calculate rate.

g. Acceptable leakage rate: Not more than 1 gallon per vertical foot per 24-hours.

h. Engineer reserves the right to require an infiltration test

5. Vacuum Test for Manholes

a. Manholes may be vacuum tested in lieu of exfiltration test. Vacuum tests must be accomplished prior to backfilling the manhole and constructing the manhole inverts and benches. All pipe connections shall be made prior to the test.

b. Test Procedure

1) Plug pipe openings and securely brace the plugs and pipe.

2) Set the tester onto the top section of the manhole and inflate the compression band to effect a seal between the structure and the vacuum base.

3) Connect the vacuum pump to the outlet port, open the valve, start the motor and draw a vacuum of 10 inches of Hg (Mercury).

4) Close the valve and monitor the vacuum gauge.

5) The test shall pass if the vacuum holds at 10 inches of Hg or drops no lower than 9 inches of Hg with the following times:

<table>
<thead>
<tr>
<th>Depth of Manhole</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 feet to 10 feet</td>
<td>3 min.</td>
</tr>
<tr>
<td>10 feet to 15 feet</td>
<td>3.5 min.</td>
</tr>
<tr>
<td>15 feet to 20 feet</td>
<td>4 min.</td>
</tr>
<tr>
<td>20 feet to 25 feet</td>
<td>4.5 min.</td>
</tr>
<tr>
<td>Greater than 25 feet</td>
<td>5 min.</td>
</tr>
</tbody>
</table>
6) If the vacuum drops in excess of the prescribed rate, locate the leak, make proper repairs, and retest the manhole.

7) If the unit fails the test after repair, the unit shall be water exfiltration tested.

3.03 INVERT BRICK WORK

A. All debris shall be removed from the bottom of the manhole before the invert is constructed.

B. Bricks shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

C. Each brick shall be laid as a header in a full bed and joint of mortar without requiring subsequent grouting, flushing or filling, and shall be thoroughly bonded as directed.

D. The brick inverts shall conform accurately to the size of the adjoining pipes. Side inverts shall be curved and main inverts (where direction changes) shall be laid out in smooth curves of the longest possible radius which is tangent to the centerlines of adjoining pipe.

3.04 CLEANING

A. All manholes shall be thoroughly cleaned of all silt, debris and foreign matter of any kind, prior to final inspection.

3.05 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
SECTION 33 41 00

STORM DRAINAGE PIPING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide storm drain systems in accordance with this Section, applicable reference standards listed in Article 1.03, and the Drawings.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. MassDOT Standard Specifications and Supplements, except for Compensation sections and MassDOT Construction Details

2. American Association of State Highway and Transportation Officials (AASHTO)

   a. AASHTO M252, Type S
   b. AASHTO M294, Type S

3. ASTM International (ASTM)

   a. ASTM F405, Type S or SP, or ASTM F2306
   b. ASTM C76, Class IV
   c. ASTM C443
   e. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
g. ASTM D3034 – Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings


i. ASTM D4101 – Standard Specification for Polypropylene Injection and Extrusion Materials

j. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe


1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with the Division 01 General Requirements.

1. Product Data

2. Manufacturer's notarized certificate certifying conformance with the Specifications to accompany shipments

3. Design Data/Submittals

a. Pipe manufacturer’s anti-floatation calculations for each pipe material and details, signed and stamped by a Professional Engineer licensed in the state where the Project is located based on the following criteria.

   1) Groundwater elevation shall be set at grade above the pipe.

   2) Factor of safety shall be 1.1; downward forces from the weight of the pipe and soils over pipe shall be 1.1 times the buoyant uplift forces.

   3) The pipe shall be considered empty. Calculations shall not consider the weight of internal water.

4. Manufacturer Instructions

5. Field Quality Control Submittals

   a. Test results
b. Logs of inspection and testing

B. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1. Record depth and take ties to the location of the following for Conformed to Construction Records.
   a. Pipe stub capped ends
   b. Locations of plugged pipes
   c. Drainage Structures, manholes and catch basins

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Packing, Shipping, Handling, and Unloading

1. Provide that each shipment of pipe, pipefittings and appurtenances includes manufacturers’ Certificate of Conformance.

2. Inspect upon delivery and reject pipe immediately that does not conform to the specified requirements or has been damaged beyond repair and immediately remove from Site.

C. Remove and legally dispose of damaged pipe.

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide in accordance with MassDOT Standard Specifications and Supplements Section 230 and MassDOT Construction Details and as specified below.

B. Drain Pipe

1. Smooth Interior High Density Polyethylene (HDPE) Pipe
   a. Performance/Design Criteria: 4-inch through 60-inch
1) Meet or exceed the following specification requirements.
   a) 4-inch to 10-inch: AASHTO M252
   b) 12-inch to 60-inch: AASHTO M294 and ASTM F2306
   b. Pipe: dual wall N-12, with smooth interior and corrugated exterior
   d. Lubricant: soft, high performance, paste like compound; NSF certified, petroleum free; non-toxic.

2. Reinforced Concrete Pipe: ASTM C76, Class IV, Modified tongue and groove compression gasket joints ASTM C443; size and class required to replace pipe damaged during construction.

C. Provide fittings of same type and class of materials as pipe with single piece gasket, unless otherwise specified.

2.02 MISCELLANEOUS

A. Pipe to Pipe Connection Flexible Couplings: ASTM C1173.
   1. Type A: non-pressure application, elastomeric sleeve or rubber sleeve incorporating stainless steel tension bands and a tightening mechanism to provide a positive seal against both infiltration and exfiltration. Stainless steel bands: 300 series stainless steel. Coupling: resilient and unaffected by soil conditions, resistant to chemicals, ultraviolet rays, and fungus growth.

B. Underground Marking Tape: detectable marking tape with aluminum core with minimum 3 inch width and minimum 5 mils thickness with APWA uniform color-coding for quick and easy identification and location. Text or lettering: repeated continuously along length of tape at intervals no greater than 3 feet indicating “Caution Buried Drain Line Below”.

C. Manholes Connections
   1. To New Manholes: compression type flexible connector cast into the manhole wall or flexible boot connection per pipe manufacturer recommendations.
   2. To Existing Manholes: by coring and installing a boot type flexible connector.
D. Gasket lubricant: solution of vegetable soap or other solution supplied by the pipe manufacturer.

E. Anti-floatation system for each pipe material: per the design of the pipe manufacturer and provided where required.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install storm drain piping in accordance with Section 230 of the MassDOT Standard Specifications, and to the lines and grades and at the locations shown on the Drawings. Field verify elevations and slope and make adjustments as necessary.

B. Install in accordance with manufacturer's recommendations. Do not install unsound or damaged pipe or accessories.

C. Secure each length of pipe with bedding before placing next length. Bed pipe as shown on the Drawings. Excavate bell/coupling holes or provide in the base material to receive the bell or coupling so that only the barrel of the pipe receives bearing pressure from the supporting material. No pipe or fitting shall be permanently supported on blocks, wedges, boards or stones.

D. When each pipe has been properly bedded, place and compact enough of the backfill material between the pipe and the sides of the trench to hold the pipe in correct alignment.

E. Close open ends of pipe by suitable temporary bulkheads to prevent entrance of earth and other materials when pipe laying is not in progress.

F. Take necessary precautions to prevent floatation of the pipe as a result of the water in the trench.

G. Maintain flows during Work per Division 01 General Requirements.

H. Assist Engineer as needed to run level checks on pipe slopes, and take ties.

I. Lay pipe to line and grade shown on the Drawings. If grade is not shown, determine elevations of start and finish points for each run of pipe. Lay pipe to a uniform grade between manholes. Line and grade may be adjusted by the Engineer as required by field conditions. Lay each pipe to form a close joint with the next adjoining pipe and bring the inverts continuously to the required line and grade.

J. Immediately lay pipe as soon as excavation is completed and the bedding material has been brought to the proper grade.
1. Insert circular rubber gasket in the gasket seat provided and apply a thin film of gasket lubricant to the inside surface of the gasket.

2. Clean spigot end of the pipe and enter into the rubber gasket in the bell, using care to keep the joint from contacting the ground.

3. Complete joint shall then be completed by forcing the plain end to the seat of the bell. Pipe which is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint.

K. Do not lay next length of pipe until the previous length has had sufficient material tamped about it to firmly secure it in place so as to prevent any movement or disturbance.

L. Do not lay pipe in water or when trench conditions or weather are unsuitable for such Work, except as approved by Engineer. Do not use installed pipe to remove water from Work area.

M. Lay pipe with the bell ends facing the direction of the laying unless otherwise permitted by the Engineer. Make joints per pipe manufacturers’ recommendations.

N. Connections to manholes and catch basins: short length of pipe so joints are located within 3 feet of inside surface of manholes and catch basins.

O. Use manufacturer recommended anti-floatation system for each pipe material.

3.02 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

B. Subject pipe to thorough inspection and tests in accordance with the methods prescribed by, and acceptance or rejections based on, applicable ASTM specifications. Pipes may be rejected at Site if non-conforming or damaged regardless of prior factory acceptance.

C. Remove and replaced damaged pipe found or encase in a Class A concrete collar or envelope as directed, at no additional cost to the Owner.

D. Pipe Material Deflection Test

1. Test 100 percent of pipe with go/no-go mandrel with outside dimension to permit no more than a 7.5 percent deflection.

2. Base mandrel dimensions on a base pipe ID as appropriate, and the following calculation
Mandrel O.D. = \(((100-7.5)/100\) X base pipe ID

3.01 CLEANING
   A. Clean and flush piping after Work is completed and before final acceptance.

3.03 CLOSEOUT ACTIVITIES
   A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
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SECTION 33 49 00

STORM DRAINAGE STRUCTURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Provide storm drainage manholes and catch basins, and precast concrete items in accordance with this Section, applicable reference standards listed in Article 1.03, and as shown on the Drawings.

   a. Precast manholes
   b. Precast catch basins
   c. Masonry inverts
   d. Frames and covers
   e. Precast anti-floatation slabs

B. Related Requirements

1. Section 03 30 00 - Cast-In-Place Concrete
2. Section 31 00 00 - Earthwork
3. Section 33 41 00 - Storm Drainage Pipe

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. ASTM A48 Standard Specification for Gray Iron Castings
2. ASTM C32 Sewer and Manhole Brick (Made From Clay or Shale)
3. ASTM C144 Aggregate for Masonry Mortar
4. ASTM C207 Hydrated Lime for Masonry Purposes
5. ASTM C478 Circular Precast Reinforced Concrete Manhole Sections
6. ASTM C913 Standard Specification for Precast Concrete Water and Wastewater Structures
7. ASTM C923 Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes
8. ASTM C990 Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants

B. American Association of State Highway and Transportation Officials (AASHTO)
   1. AASHTO M198
   2. AASHTO H20

C. MassDOT Standard Specifications and Supplements, except for Compensation sections and MassDOT Construction Details

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with the Division 01 General Requirements.

1. Shop Drawings for each precast manhole and all precast concrete items. Show components to be used, elevations of top of precast sections, base and pipe inverts, location of pipe penetrations, steps, for each manhole. Confirm finish grade elevation for each proposed structure.

2. Manufacturers’ product data and installation instructions for frames, covers, grates, precast items, grade rings manhole sleeves, joint sealants, dampproofing, and all appurtenances.

3. Certificate of design (example included as attachment to this Section) for the structural design of all precast concrete structures by a Professional Engineer licensed in the state where the Project is located

4. Design Data/Submittals
   a. Manufacturer’s anti-floatation calculations for each structure, signed and stamped by a Professional Engineer licensed in the state where Project is located based on the following criteria.
      1) Groundwater elevation shall be set at grade above the structure.
2) Factor of safety shall be 1.1; downward forces from the weight of the pipe and soils over pipe shall be 1.1 times the buoyant uplift forces.

3) The structure shall be considered empty. Calculations shall not consider the weight of internal water.

4) Size: Slab size and reinforcement as shown on the Drawings. Calculations performed by a Registered Engineer must accompany any submittal with modified dimensions or reinforcement showing adequate strength and resistance to buoyant forces.

5) Connection of Slab to Manhole: Provide connection hardware as sized and detailed on the Drawings.

5. Manufacturer literature and test reports for manhole inverts

B. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide complete manhole, and precast concrete structures capable of supporting AASHTO H20 loading. All precast concrete shall comply with ASTM C913.

2.02 PRECAST CONCRETE DRAIN MANHOLES/STRUCTURES:

A. Design: AASHTO H20 loading.

B. Precast Manhole Components: ASTM C478. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on each precast section.

C. Wall Sections: Not less than 5 inches thick

D. Base Sections: Precast monolithic construction (base includes min. 18” riser) with shiplap joints and steps.

E. Top Sections: Precast eccentric cone with steps. Use flat cover only if shown on Drawings and for structures less than 5’ deep.
F. Steps: Copolymer polypropylene reinforced with Grade 60 steel reinforcement metal rod. Steps must meet OSHA requirements and have a minimum outside width of 14.5 inches. Manhole sections shall contain manhole steps accurately positioned and embedded in the concrete extending a minimum 5 inches from the wall. The steps shall be manufactured from deformed 1/2 inch steel reinforcement rod complying with ASTM A615 and encased in polypropylene complying with ASTM D4101. Include pattern design to prevent lateral slippage off step.

G. Pipe to Structure Connections: As required in 33 41 00 Storm Drainage Piping

H. Joints Between Precast Sections: Watertight, shiplap-type seal with one ring of 1 inch diameter butyl rubber sealant in flexible rope form. It shall meet or exceed all requirements of AASHTO M198 and ASTM C990 section 6.2.1, Butyl rubber sealants.

2.03 CATCH BASINS

A. Catch Basins shall be pre-cast concrete sections conforming to Section 2.02 unless directed otherwise shown on the Drawings. Catch Basins shall conform to ASTM C478 and as shown on the Drawings and capable of supporting AASHTO H20 loading.

B. Catch Basins shall have a minimum 4 foot sump.

C. Steps shall not be installed in catch basins.

D. Catch Basin Hood: Hood shall be constructed so that is forms a baffle against floatable litter and oil. The hood shall protrude at least 6 inches or 1/3 of the pipe's inside diameter, whichever is greater, below the invert. Catch Basin Hood shall be sealed to the catch basin structure with an oil resistant foam gasket. Vent holes shall be installed on the top of the hood to allow air flow into pipe. The Catch Basin Hood shall be attached to the structure with stainless steel anchor studs and nuts, allowing the hood to be removed and installed with minimum effort. Hood material shall be HDPE.

2.04 ANTI-FLOATATION

A. Anti-floatation slabs shall be integral to manhole base.

B. Alternate: Anti-floatation slabs may be provided as cast-in-place if approved by Owner/Engineer.

C. Size: Slab size and reinforcement as shown on the Drawings. Calculations performed by a Registered Engineer must accompany any submittal with modified dimensions or reinforcement showing adequate strength and resistance to buoyant forces. Design must include connection hardware specifications.
2.05 CASTINGS

A. Cast Iron: Conform to ASTM A48, Class 35.

B. Manhole cover: Acceptable level of quality: Equal to E.J. Group Inc., Foundry catalog number 00200634/00200811 or approved equal gray iron cover and frame per the Drawings.

C. Catch basins: Acceptable level of quality: Equal to E.J. Group Inc., Foundry catalog number 0MA552000050 (3-flange), 0MA552000051 (4-flange) or approved equal catch basin square frame or gutter inlet frames and grates with square hole grate per the Drawings.

2.06 MASONRY INVERTS

A. Brick: Brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer. Rejected brick shall be immediately removed from the work and brick satisfactory to the Engineer substituted.

1. Sewer Invert: ASTM C32, Grade SS
2. Grade Adjustment: ASTM C32, Grade MS

B. Mortar: Type M, ASTM C270 composed of (by volume):

1. 1 Part: Portland Cement - Type II; ASTM-C150
2. 1/3 Part: Type S lime; ASTM C207
3. 4 Part: Sand, ASTM C33

C. Provide brick and mortar inverts only. Do not provide concrete inverts.

2.07 MISCELLANEOUS

A. Manhole Cover Lifting Tools: Provide 1 lifting tool, compatible with manhole covers provided. Tool shall be mechanical or magnetic as selected by Owner.

B. Dampproofing: The exterior surfaces of all precast manhole bases, walls, and cones shall be given a minimum of two shop coats of bituminous dampproofing using cutback asphalt, AASHTO M81 or M82, Asphalt emulsion AASHTO M140 or approved equal, at 5 gallons per 150 square feet minimum per coat and be equal in quality to Sonneborn Hydrocide 700B.

2.08 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.
PART 3 – EXECUTION

3.01 INSTALLATION

A. Placement: Place precast bases on compacted bedding material so structure is plumb, and pipe invert is at proper elevations. Place barrel and top sections in the appropriate height combinations. Plug all lifting holes inside and out with non-shrink grout.

B. Adjustments to existing drainage structures: per the Drawings or as directed by Engineer. Refill the excavated area with compacted gravel and set casting into a concrete collar. Engineer will determine the new elevation of the structure.

C. Resetting cones for re-alignment: per the Drawings or as directed by the Engineer.
   1. Reset cone section of the structure where line or grade requires a change greater than 6 inches at existing drainage structures or where noted on the Drawings.

D. Existing castings belonging to the Owner and not needed for the Work: transported and carefully stacked at a location selected by the Owner within the City or otherwise disposed of as directed by Engineer at no additional cost to Owner.

E. Frame and Cover/Grates
   1. Setting frames:
      a. In cross-country areas set 24” above finish grade
      b. In lawn/landscaped areas set at grade
      c. 1/2” below pavement grade in paved areas
   2. Set frames and covers/grates to final grade only after pavement base course has been applied, or after final grading of gravel roads. Set castings in cement.
   3. Provide minimum 2 bricks, maximum 5 bricks for grade adjustment.
   4. Install bituminous asphalt cap/collar.
   5. Provide frame and cover for manholes. Provide frame and grate for catch basins. Frame and grate single or double inlet size to be as shown on the Drawings.

F. Seal drain pipe connections to catch basin/manhole structures with mortar per M4.02.15 of the MassDOT Standard Specifications and Supplements.
3.02  INVERT BRICK WORK

A. All debris shall be removed from the bottom of the manhole before the invert is constructed.

B. Bricks shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

C. Each brick shall be laid as a header in a full bed and joint of mortar without requiring subsequent grouting, flushing or filling, and shall be thoroughly bonded as directed.

D. The brick inverts shall conform accurately to the size of the adjoining pipes. Side inverts shall be curved and main inverts (where direction changes) shall be laid out in smooth curves of the longest possible radius which is tangent to the centerlines of adjoining pipe.

3.03  FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

B. Do not pave over any of the utility appurtenances/structures unless specifically directed otherwise.

3.04  CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

END OF SECTION
SECTION 33 49 15

STORM DRAINAGE TIDE GATES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide flap gates in accordance with this Section and applicable reference standards listed in Article 1.03.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. MassDOT Standard Specifications and Supplements, except for Compensation sections and MassDOT Construction Details

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with the Division 01 General Requirements.

1. Product Data: Manufacturer's specifications (including unseating heads and loss of head through flap gate), installation instructions and mounting details.

2. Shop Drawings: plans and details of flap gates and mounting details.

B. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.
1.07 DELIVERY, STORAGE, AND HANDLING
   A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS
   A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GENERAL
   A. Provide in accordance with manufacturers specifications, installation instructions and mounting details. Acceptable level of quality: equivalent to Hydro Gate Model 50C.

2.02 COVER
   A. Diameter covers shall be cast in one piece with necessary reinforcing ribs, spherically designed to withstand maximum operating loads. The cover shall be provided with a lifting eye for manual operation or stainless steel eye bolt for securing the cover open.

2.03 SEATING FACES
   A. Corrosion-resistant dovetailed seating faces shall be mounted and held securely without use of screws or other fasteners. The seating faces shall be machined to a 63 micro-inch finish for maximum water tightness. When specified, gates shall have a rubber seating face on the seat. Rubber seating faces shall be mounted in a dovetail slot and held securely without use of pins or screws.

2.04 FASTENERS
   A. All anchor bolts, assembly bolts, screws, studs and nuts shall be of ample size to safely withstand the forces created by operation of the gate. Quantity and size of the fasteners shall be of recommended by the manufacturer. Anchor bolts shall be furnished with two nuts each to facilitate installation and alignment when attached to concrete.

2.05 HINGE ARMS
   A. The hinge arms shall be ductile iron with stainless steel hinge pins and hardware. Each hinge arm will have two pivot points and shall be provided with commercial grade, corrosion resistant brushings at each pivot point. The lower pivot shall include an adjusting screw to aid alignment of seating faces.
2.06  **PAINTING**

A. Machined surfaces shall be coated with a water-resistant, rust-preventative compound. All cast iron parts shall be shop cleaned and painted in accordance with the manufacturer’s standard practice.

2.07  **MATERIALS**

A. Flap gate shall be circular opening for gravity flow, single pivot, flange-framed with resilient seating.

B. Seat and Cover: Cast Iron, ASTM A126 Class B; the resilient elastomer seat shall be mounted in the body of the valve.

C. Face and Anchors: Stainless Steel, ASTM A276 Type 302 or 304.

D. Fasteners: Bolts - ASTM F593, Alloy Group 2; Nuts – F594, Alloy Group 1

E. Seating Faces: Silicon Bronze, ASTM B98, Alloy 651.

F. Rubber Seating Faces: Conform to ASTM D2000, Grade 1BE625.

G. Hinge Arms and Pivot Lugs: Ductile Iron, ASTM A536 80-55-06

H. Hinge Pins: Stainless Steel, ASTM276, Type 316

I. Bronze (Bushings): Conform to ASTM B584, Alloy 392.

2.08  **SOURCE QUALITY CONTROL**

A. Provide in accordance with Division 01 General Requirements.

**PART 3 – EXECUTION**

3.01  **INSTALLATION**

A. Install in accordance with manufacturer’s specifications, installation instructions and mounting details.

3.02  **CLOSEOUT ACTIVITIES**

A. Provide in accordance with Division 01 General Requirements.

**END OF SECTION**