If you have printed this bid from the City of Quincy's Website or through an email, it is your responsibility to check for addenda at www.quincyma.gov before you turn in your proposal.

"Please send an acknowledgment that you have printed out this bid via email to; kimtrillcott@quincyma.gov" The City of Quincy will not be responsible for any bids received omitting any addenda acknowledgement.

Thank you
Adams Shore/Houghs Neck Seawall Repairs and Improvements Project

Department of Public Works
Quincy, Massachusetts

July 2019

Tighe&Bond
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**Adams Shore/ Houghs Neck**  
**Seawall Repairs & Improvements**  
**City of Quincy**  
**Quincy, MA**

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## Seawall Repairs & Improvements
### City of Quincy
#### Quincy, MA

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CITY OF QUINCY, MASSACHUSETTS
Department of Public Works

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

INVITATION TO BID

The Department of Public Works for the City of Quincy, Massachusetts is seeking sealed bids for the **ADAMS SHORE / HOUGHS NECK SEAWALL REPAIRS AND IMPROVEMENTS PROJECT** until 11:00 a.m. local time **Thursday, August 29, 2019**, 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. All questions are due no later than Thursday, August 22, 2019.

The work consists of the replacement of the existing seawall which includes the repair and reconstruction of the revetment along the existing seawall, public access to Adams Shore in Quincy MA. As part of the project, drainage outfalls will be replaced.

A non-mandatory pre-bid walk thru will be held on August 8, 2019 at 11:00 a.m. starting at 55 Sea Street – DPW Building, Quincy, MA 02169.

All work under this contract shall be completed within two hundred and fifty (250) calendar days.

Detailed specifications are available on-line at the City of Quincy’s website, [www.quincyma.gov](http://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 non-refundable printing charge of $50.00. Specifications will be available Wednesday July 17, 2019.

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 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 informality 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
Mayor
Kathryn R. Logan
Purchasing Agent
Alfred J. Grazioso
Commissioner of Public Works

Consulting Engineer: Tighe & Bond, Inc. 1 University Ave #100, Westwood, MA 02090

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1305 Hancock St., Quincy MA 02169
Telephone: (617) 376-1060    Fax: (617) 376-1074
SECTION 00200

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 DEFINED TERMS

1.1 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions.
ARTICLE 2  COPIES OF BIDDING DOCUMENTS

2.1 Refer to Advertisement for Bids for information on examination and procurement of documents.

2.2 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.

2.3 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 confer a license or grant for any other use.

ARTICLE 3  QUALIFICATIONS OF BIDDERS

3.1 Bidders shall be experienced in the kind of Work to be performed, shall have the necessary equipment, and shall possess sufficient capital to properly execute the Work within the time allowed. Bids received from Bidders who have previously failed to complete Work within the time required, or who have previously performed similar Work in an unsatisfactory manner, may be rejected. A Bid may be rejected if Bidder cannot show that he has the necessary ability, plant and equipment to commence the Work at the time prescribed and thereafter to prosecute and complete the Work at the rate or within the time specified. A Bid may be rejected if Bidder is already obligated for the performance of other Work which would delay the commencement, prosecution or completion of the Work.

3.2 Bidders shall have a minimum of 5 years of experience and shall have successfully completed projects of similar scope within the past 2 years. Submit with the bid a summary of experience and representative projects to show compliance with these qualifications.

3.3 Bidders may be investigated by Owner to determine if they are qualified to perform the Work. All Bidders shall be prepared to submit within five days of Owner’s or Engineer’s request, written evidence of such information and data necessary to make this determination. The investigation of a Bidder will seek to determine whether the organization is adequate in size, is authorized to do business in the jurisdiction where the project is located, has had previous experience and whether available equipment and financial resources are adequate to assure Owner that the Work will be completed in accordance with the terms of the Agreement. Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of such Bidder fails to satisfy Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.

A. Bidders may be required to provide a letter stating that the Bidder is in good financial standing. The letter must:

1. Be provided by a financial institution or certified public accountant having a relationship with the Bidder;

2. Be on the bank or accountant’s letterhead;

3. Include name and contact information for the bank or accountant including address, email and telephone number;

4. Identify the account holder(s), whose names must match the name of the Bidder, the type and length of business relationship, and the historical status of the accounts (i.e. good standing, timely payments, no overdrafts, etc.); and

5. NOT include account numbers, account amounts, or lines of credit.
ARTICLE 4 SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER’S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.1 The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment are to be obtained and paid for by Contractor.

4.2 Existing Site Conditions

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:
   a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
   b. those drawings known to Owner of physical conditions in or relating to existing surface and subsurface structures at the Site (except Underground Facilities).
   c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
   d. Technical Data contained in such reports and drawings.

2. Copies of reports and drawings referenced above will be made available for review at the Engineer’s office and the Department of Public Works (55 Sea Street, Quincy, MA 02169). These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. 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.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

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

C. Adequacy of Data: 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 conditions appear in paragraphs 5.03, 5.04, and 5.05 of the General 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
4.3 Site Visit and Testing by Bidders

A. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

B. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner’s authority regarding the Site.

C. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

D. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.4 Owner’s Safety Program

A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

ARTICLE 5 BIDDER’S REPRESENTATIONS

5.1 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, including any Addenda, data, and referenced items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, or performance of the Work;

D. carefully study all reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or adjacent to the Site which have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and carefully study all reports and drawings relating to a Hazardous Environmental Condition, if any, at or adjacent to the Site which have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;
E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; 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, and 3) Bidder’s safety precautions and programs;

F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid 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 bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;

G. 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;

H. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and finishing of the Work; and

I. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6  PRE-BID CONFERENCE

6.1 A pre-Bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are required to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7  INTERPRETATIONS AND ADDENDA

7.1 All questions regarding this Bid should be directed to Kathryn R. Logan, Purchasing Agent through fax: 617-376-1074 and/or email: klogan@quincyma.gov and cc: to kimtrillcott@quincyma.gov. Questions will be accepted until Thursday August 22, 2019 at 2:00 p.m.

7.2 Addenda may be issued to clarify, correct or change the Bidding Documents. Such Addenda, if any, will be posted on the Quincy Purchasing Department’s website. It is the responsibility of the bidders to check the website for the posting of addenda.

7.3 The Bidder must acknowledge receipt of each Addendum, if any, in the space provided on the Bid Form.

ARTICLE 8  BID DEPOSIT

8.1 In the Bidding Documents, the terms “Bid security” and “Bid deposit” shall have the same meaning.
8.2 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5% of Bidder’s maximum Bid price (including any additive alternates) and in the form of a certified check, bank money order, cash, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.3 All Bid deposits of General Bidders, except those under consideration by Owner, will be returned within 5 days, excluding Saturdays, Sundays and legal holidays, after the opening of General Bids. Other Bid deposits will be returned upon the execution and delivery of the Agreement. The Bid deposit of the Successful Bidder will be retained until such bidder has furnished the required contract security and executed the Agreement, whereupon the bid deposit shall be returned. If the Successful Bidder fails to furnish the required contract security within 15 days after the Notice of Award and execute the Agreement within 5 days after receipt from Owner, Owner may annul the Notice of Award and the Bid deposit of that Bidder will be forfeited to Owner as liquidated damages for such failure.

ARTICLE 9 CONTRACT TIMES

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

ARTICLE 10 LIQUIDATED DAMAGES

10.1 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 SUBSTITUTE AND “OR EQUAL” ITEMS

11.1 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or “or equal” items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or “or equal” item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the effective date of the Contract. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in the General Conditions and may be supplemented in the General Requirements.

ARTICLE 12 SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.1 If required by the Bid Documents, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed. If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other 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 an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such
substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.2 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will 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 subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

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

12.4 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.06.

ARTICLE 13 PREPARATION OF BID

13.1 A Bid must be made on the Bid form included with the Project Manual. The Bid form shall not be altered in any way. Each hard copy of the Bidding Documents contains a separate, unbound copy of the Bid form to be used for submittal.

13.2 The Bid form must be completed in ink. Blank spaces in the Bid form must be filled in correctly where indicated, and the Bidder must state, both in words and numerals, the prices for which he proposes to complete each and every item of Work. Ditto marks shall not be used.

13.3 A Bidder shall execute his Bid as stated below.
   A. A Bid by an individual shall show the Bidder’s name and official address.
   B. A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature) accompanied by evidence of authority to sign. The official address of the partnership shall be shown.
   C. A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature) and must be accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the corporate secretary. The state of incorporation and the official corporate address shall be shown.
   D. A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person 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.
   E. A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
   F. All names must be printed in ink below the signature.

13.4 The Bid shall contain an acknowledgment of the receipt of all Addenda in the space provided on the Bid form.
13.5 Postal and email addresses and telephone number to which communications regarding the Bid are to be directed shall be shown.

13.6 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.

13.7 In order to be considered for selection, the Bidder must submit a complete bid package in accordance with these Bidding Documents. Partial Bids will not be accepted. Refer to the Bid Form for a list of documents that shall be submitted in addition to the Bid Form.

13.8 Any deviations in completion of the Bid Form and accompanying documents from the instructions provided in this Article may be cause for rejection of the Bid.

13.9 The following listed documents shall be submitted in addition to the Bid form:

A. Bid Bond
B. Relevant Previous Experience
C. Statement of Bidder's Qualifications
D. Certificate of Acknowledgment of Contractor for Bid
E. Signature Authorization
F. Certificate of Non-Collusion
G. Tax Compliance Certificate
H. Certification of Bidder Regarding Equal Employment Opportunity
I. Right-To-Know Law
J. Non-Collusion Affidavit
K. Certification Non-Segregated Facilities

ARTICLE 14 BASIS OF BID

14.1 Unit Price

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The “Bid Price” (sometimes referred to as the extended price) for each unit price Bid item will be the product of the “Estimated Quantity” (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding “Bid Unit Price” offered by the Bidder. The total of all unit price Bid items will be the sum of these “Bid Prices”; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with paragraph 13.03 of the General Conditions.

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
Instructions to Bidders

sum. Discrepancies between words and figures will be resolved in favor of the words.

D. Unit prices for identical item numbers that are in more than one bid schedule shall be equal. Discrepancies will be resolved in favor of the lowest unit price.

E. The award will be based on the lowest eligible Bid.

14.2 Allowances

A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor’s overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents in accordance with paragraph 13.02 of the General Conditions.

ARTICLE 15 SUBMITTAL OF BID

15.1 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement for Bids and shall be enclosed in an opaque sealed envelope plainly marked with the Project title, the name and address of Bidder, and shall be accompanied by the Bid deposit and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation “BID ENCLOSED”. When using the mail or other delivery system, the Bidder is totally responsible for the mail or other delivery system delivering the Bid at the place and prior to the time indicated in the Advertisement for Bids. A mailed Bid shall be addressed to Owner at the address in the Advertisement for Bids.

15.2 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 MODIFICATION OR WITHDRAWAL OF BID

16.1 Withdrawal Prior to Bid Opening

A. A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

16.2 Modification Prior to Bid Opening

A. If a Bidder wishes to modify its Bid prior to the Bid opening, Bidder must withdraw its initial Bid in the manner specified in paragraph 15.1.A and submit a new Bid prior to the date and time for the opening of Bids.

ARTICLE 17 OPENING OF BIDS

17.1 Bids will be opened as indicated in the Advertisement for Bids and publicly read.

17.2 In order to be considered for selection, Bids must arrive at the designated location on or before the date and time specified in the Advertisement for Bids. Bidders mailing their Bids should allow for normal mail delivery time to ensure timely receipt of their Bids by Owner.

17.3 Bids received by mail or otherwise after the time specified for the opening of Bids will not be accepted and will be returned to the Bidder unopened.
17.4 No responsibility will attach to Owner, its employees or the Engineer for premature opening of a Bid not properly addressed and identified in accordance with the Bidding Documents.

ARTICLE 18  DISQUALIFICATION OF BIDDERS

18.1 More than one Bid for the same Work from an individual, or a firm, partnership, corporation or an association under the same or different names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder is interested.

ARTICLE 19  BIDS TO REMAIN SUBJECT TO ACCEPTANCE

19.1 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 deposit prior to the end of this period.

ARTICLE 20  EVALUATION OF BIDS AND AWARD OF CONTRACT

20.1 Owner reserves the right to reject any and all Bids, to waive any and all informalities, and the right to disregard all nonconforming, nonresponsive or conditional Bids.

20.2 Owner reserves the right to reject any Bid not accompanied by specified documentation and Bid deposit.

20.3 Owner reserves the right to reject any Bid if it shows any omissions, alterations of form, additions not called for, conditions or qualifications, or irregularities of any kind.

20.4 Owner reserves the right to reject any Bid that, in his sole discretion, is considered to be unbalanced or unreasonable as to the amount bid for any lump sum or unit price item.

20.5 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 Award.

20.6 In evaluating whether a Bidder is responsible, Owner will consider the qualifications the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

20.7 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

20.8 If the Owner awards the Contract for the Work, such award shall be to the responsible Bidder (who has neither been disqualified nor rejected pursuant to Article 17 or this Article 19) submitting the lowest responsive Bid.

20.9 Contents of the Bid of the Successful Bidder will become part of any contract awarded.

ARTICLE 21  CONTRACT SECURITIES

21.1 Performance and payment bonds shall be furnished by the successful Bidder. The amounts of and other requirements for performance and payment bonds are stated in Article 6 of the General Conditions. Performance and payment bonds submitted shall be posted by a recognized surety company having a place of business in the Commonwealth of Massachusetts. All performance and payment bonds signed by an agent must be
SECTION 00410

BID FORM

PROJECT IDENTIFICATION:

Adams Shore/Houghs Neck Seawall Repairs & Improvements

TABLE OF ARTICLES

1. Bid Recipient
2. Bidder’s Acknowledgements
3. Bidder’s Representations
4. Bidder’s Certifications
5. Basis of Bid
6. Time of Completion
7. Attachments to This Bid
8. Bid Submittal

ARTICLE 1 - BID RECIPIENT

1.1 This Bid is submitted to: City of Quincy, Massachusetts - Office of the Purchasing Agent, 1305 Hancock St., Quincy, Massachusetts 02169

1.2 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 2 - BIDDER’S ACKNOWLEDGEMENTS

2.1 Bidder accepts all of the terms and conditions of the Advertisement for Bids and Instructions to Bidders, including without limitation, those dealing with the disposition of Bid deposit. The 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.

2.2 The Work under this Contract shall be subject to the provisions of Chapter 30, Section 39M of the Massachusetts General Laws.

ARTICLE 3 - BIDDER’S REPRESENTATIONS

3.1 In submitting this Bid, Bidder represents, as set forth in the Agreement, that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents and hereby acknowledges the receipt of all Addenda.

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
C. Bidder is familiar with and has satisfied itself as to all federal, state and local 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 adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any 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; and (3) Bidder’s safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price 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 confirms that 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 and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

K. Bidder is aware that the estimated quantities on the Bid Form are subject to Article 13.03 of the General Conditions (Section 00700).

ARTICLE 4 - BIDDER’S CERTIFICATION

4.1 Bidder hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work, that all employees to be employed at the 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, and that Bidder will comply fully with all laws and regulations applicable to awards made subject to MGL Chapter 30, Section 39M.

4.2 Bidder certifies that, under penalty of perjury, Bidder is not presently debarred from doing public construction work in the Commonwealth under the provisions of MGL Chapter 29, Section 29F or
any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder; and is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.

4.3 Bidder hereby certifies under the penalties of perjury, to the best of Bidder’s knowledge and belief, that Bidder has filed all State tax returns and paid all State taxes required by law.

4.4 Bidder hereby certifies Bidder will comply with the minority workforce percentage ratio and specific affirmative action steps contained in the EEO/AA provisions of this Contract, including compliance with the Minority/Woman Business Enterprise as required under these contract provisions. The Bidder, if this Bid is accepted, shall be required to obtain from each of its subcontractors a copy of the certification by said subcontractor, regardless of tier, that it will comply with the minority workforce ratio and specific affirmative action steps contained in these EEO/AA contract provisions and submit it to Owner prior to the award of such subcontract.

4.5 Bidder certifies under penalties of perjury that this Bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used herein the word “person” shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

4.6 Bidder certifies that this 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;

4.7 Bidder certifies that Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

4.8 Bidder certifies that Bidder has not solicited or induced any individual or entity to refrain from bidding; and

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

A. “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;

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

C. “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

D. “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.

ARTICLE 5 - BASIS OF BID

5.1 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Name and Unit Bid Prices Written in Words and Figures</th>
<th>Estimated Quantity</th>
<th>Total Amount of Item (in figures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Initial and Ongoing Mobilization and Demobilization, per lump sum, the price of:</td>
<td>lump sum* = $_________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($                                                             )</td>
<td>*Not to exceed 5 percent of the total Bid price</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Traffic Control, per lump sum, the price of:</td>
<td>lump sum = $_________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($                                                             )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Uniformed Traffic Police per the price of:</td>
<td>Allowance $_________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ten thousand eight hundred dollars and 00 cents.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>($ 10,800.00                                                  )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Removal of Existing Sewall Unit incl. footing and cap, each, the price of:</td>
<td>x 1005 each = $_________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($                                                             )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Miscellaneous Demolition and Cleanup, per lump sum, the price of:</td>
<td>lump sum = $_________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($                                                             )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Concrete Sewall 4ft higher, incl. footing, weeps, dowels, staples and cap, each, the price of:</td>
<td>x 715 each = $_________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($                                                             )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Concrete Sewall 2ft higher, incl. footing, weeps, dowels, staples, each, the price of:</td>
<td>x 290 each = $_________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($                                                             )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. Solid Concrete Stairway, each, the price of:

($ ) x 13 each = $______________

9. Processed Gravel Borrow, per cubic yard, the price of:

($ ) x 520 c.y. = $______________

10. Removal and Resetting Coastal Revetment Stone, incl. geotextile, chinking, per linear foot, the price of:

($ ) x 2070 l.f. = $______________

11. Armor Stone installed, per ton, the price of:

($ ) x 2200 ton = $______________

12. Calcium Chloride for Dust Control, per ton, the price of:

($ ) x 15 ton = $______________

13. Silt Sock, per linear foot, the price of:

($ ) x 1500 l.f. = $______________

14. Catch Basin Sedimentation Control, each, the price of:

($ ) x 2 each = $______________

15. 48-inch Precast Concrete Manholes, each, the price of:

($ ) x 5 each = $______________
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Quantity</th>
<th>Price per Unit</th>
<th>Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>60-inch Precast Concrete Manholes, each, the price of:</td>
<td>4</td>
<td>$</td>
<td>$___________</td>
</tr>
<tr>
<td></td>
<td>($ ) x 4 each = $_________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Manhole Frame and Cover, each, the price of:</td>
<td>9</td>
<td>$</td>
<td>$___________</td>
</tr>
<tr>
<td></td>
<td>($ ) x 9 each = $_________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18a</td>
<td>8 ft Precast Concrete Manhole each, the price of:</td>
<td>1</td>
<td>$</td>
<td>$___________</td>
</tr>
<tr>
<td></td>
<td>($ ) x 1 each = $_________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18b</td>
<td>6-inch Flex Valve, each, the price of:</td>
<td>210</td>
<td>$</td>
<td>$___________</td>
</tr>
<tr>
<td></td>
<td>($ ) x 210 each = $_________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18c</td>
<td>12-inch DI Storm Drain Pipe, per linear foot, the price of:</td>
<td>30 l.f.</td>
<td>$</td>
<td>$___________</td>
</tr>
<tr>
<td></td>
<td>($ ) x 30 l.f. = $_________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18d</td>
<td>12-inch Flex Valve, each, the price of:</td>
<td>1</td>
<td>$</td>
<td>$___________</td>
</tr>
<tr>
<td></td>
<td>($ ) x 1 each = $_________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18e</td>
<td>16-inch DI Storm Drain Pipe, per linear foot, the price of:</td>
<td>500 l.f.</td>
<td>$</td>
<td>$___________</td>
</tr>
<tr>
<td></td>
<td>($ ) x 500 l.f. = $_________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18f</td>
<td>16-inch Flex Valve, each, the price of:</td>
<td>1</td>
<td>$</td>
<td>$___________</td>
</tr>
<tr>
<td></td>
<td>($ ) x 1 each = $_________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18g</td>
<td>18-inch DI Storm Drain Pipe, per linear foot, the price of:</td>
<td>130 l.f.</td>
<td>$</td>
<td>$___________</td>
</tr>
<tr>
<td></td>
<td>($ ) x 130 l.f. = $_________________</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
18h  18-inch Flex Valve, each, the price of:

($ ) 

x 1 each = $____________

18i  24-inch DI Storm Drain Pipe, per linear foot, the price of:

($ ) 

x 90 l.f. = $____________

18j  24-inch Flex Valve, each, the price of:

($ ) 

x 1 each = $____________

18k  Helical Anchor, each, the price of:

($ ) 

x 622 each = $____________

18l  30-inch Flex Valve, each, the price of:

($ ) 

x 2 each = $____________

18m  30-inch DI Storm Drain Pipe, per linear foot, the price of:

($ ) 

x 570 l.f. = $____________

18n  36-inch DI Storm Drain Pipe, per linear foot, the price of:

($ ) 

x 270 l.f. = $____________

18o  36-inch Flex Valve, each, the price of:

($ ) 

x 2 each = $____________

18p  Remove & reset stone jetty over new drains, the price of:

($ ) 

lump sum = $____________

Q0019-010/07/16/19  00410-UP-7   Bid Form
19 Outfall Pipe Support, helicals, cap, strap each, the price of:

($ )

x 11 each = $______________

20 Removal of Existing Outfall Pipe, per linear foot, the price of:

($ )

x 280 l.f. = $______________

21 Fine Grade Compaction, per square yard, the price of:

($ )

x 2300 s.y. = $______________

22 Permanent Bituminous Concrete Repair, per square yard, the price of:

($ )

x 1200 s.y. = $______________

23 Non-Woven Geotextile Fabric (Geotech 801), per square yard, the price of:

($ )

x 4600 s.y. = $______________

24 Loam & Seed, per square yard, the price of:

($ )

x 1020 s.y. = $______________

25 Project Plaque, each, the price of:

($ )

x 1 each = $______________

26 Landscaping, the price of:

One Hundred Thousand Dollars

($100,000.00) allowance = $ 100,000.00
27 Pre-Construction Survey Pictures of Parcels/Decks/Properties, each, the price of:

\[ \text{\text{\blank}} \times 320 \text{ each} = \text{\$\text{\blank}} \]

28 Asbuilt Survey, per lump sum, the price of:

\[ \text{\text{\blank}} \text{ lump sum} = \text{\$\text{\blank}} \]

29 the price of:

\[ \text{\text{\blank}} \text{ lump sum} = \text{\$\text{\blank}} \]

TOTAL AMOUNT OF BID – Items 1 through 29

\[ \text{\$\text{\blank}} \text{ (figures)} \]

(words)

5.2 This Bid includes Addenda numbered \underline{\text{\blank}}.

ARTICLE 6 - TIME OF COMPLETION

6.1 Bidder agrees that the Work will be substantially completed and ready for final payment in accordance with paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.2 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times as stated in the Agreement.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.1 The following documents are attached to and made a condition of this Bid:

A. Bid deposit in the amount of \underline{\text{\blank}} dollars ($\underline{\text{\blank}}

B. Relevant Previous Experience

C. Statement of Bidder's Qualifications

D. Certificate of Acknowledgment of Contractor For Bid

E. Signature Authorization

F. Certificate of Non-Collusion

G. Tax Compliance Certificate
H. Certification of Bidder Regarding Equal Employment Opportunity
I. Right-To-Know Law
J. Non-Collusion Affidavit
K. Certification Non-Segregated Facilities
L. Affidavit Regarding Prior Labor Disputes
M. Certification Internal Accounting
N. Certification of Bidders/Sub-Bidders on Public Construction Projects
ARTICLE 8 - BID SUBMITTAL

BIDDER: [Indicate correct name of bidding entity]

______________________________
By: [Signature]

______________________________
[Printed name]
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

______________________________
[Signature]

______________________________
[Printed name]

Title: __________________________________________

Submittal Date: __________________________________

Address for giving notices: 

____________________________________________________________________________________

____________________________________________________________________________________

Telephone Number: ______________________________________________________

Fax Number: ______________________________

Contact Name and e-mail address: ___________________________________________

____________________________________________________________________________________

Bidder’s License No.: ____________________________________

(Where applicable)

END OF SECTION
This form may be substituted with standardized form issued by insurance/bonding agent.

**BID BOND**

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

____________________________________________ as Principal and

____________________________________________ as Surety, are hereby held and firmly bound unto

____________________________________________ as OWNER in the penal sum of

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

Signed this ______ day of _____________ , 20

The Condition of the above obligation is such that whereas the Principal has submitted to:

____________________________________________ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing for the:

________________________________________________________________________________

NOW, THEREFORE,

(A) If said BID shall be rejected, or

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

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.
This form may be substituted with standardized form issued by insurance/bonding agent.

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

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

___________________________________ (L.S.)
Principal

___________________________________
Surety

BY:_________________________________

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

The Bidder shall list below the relevant prior work experience on similar projects, and give references that will enable the City to evaluate his qualifications to perform the work under this Contract. The length of the relevant experience must be at least 5 years on projects of comparable size and complexity. The evaluation shall be based on prior experience, work performance and level of key personnel skills, and business standing (add additional page if necessary).

I. PROJECTS

<table>
<thead>
<tr>
<th>Completion Date</th>
<th>Project Name</th>
<th>Contract Amount</th>
<th>Design Reference Engineer Name</th>
<th>Reference Phone No.</th>
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</tbody>
</table>

II. KEY PERSONNEL:

Key personnel to be employed on the job, in the event of contract award. Attach brief education and experience where applicable.

1.                                                      
2.                                                      
3.                                                      
4.                                                      
STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the date given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheet. The bidder may submit any additional information, if desired.

1. Name of Bidder:

2. Permanent main office address:
   a. Treasury Number (Employer's Identification No.):

3. When organized?

4. If a corporation, where incorporated?

5. How many years have you been engaged in the contracting business under your present firm or trade name?
   a. Names and home addresses of principal officers and their social security numbers: (attach separate sheet).

6. Contracts on hand: (Schedule these, showing gross amount of each contract and the approximate anticipated dates of completion. Name and address of client and name of person supervising for client.) (Attach separate sheet)

7. General character of work performed by your company?

8. Have you ever failed to complete any work awarded to your? If so, where and why?

9. Have your ever defaulted on a contract? If so, where and why?

10. List the more important contracts recently completed by you stating approximate cost of each, and the month and year completed. (Give names and addresses of client and name of person supervising for client). (See attached form.)

11. List your major equipment available for this contract. (Use separate sheet)

12. Experience in construction work similar in importance to this project. (See form)

13. Background and experience of the principle members of your organization, including the
officers.

14. Credit available: $______________________.

15. Give bank reference, including bank name, address, telephone and contact name.

16. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required?

17. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City of Quincy in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated this ______ day of ____________, 20__.

Name of Bidder: ____________________________.

By: ____________________________.

Title: ____________________________.

State of ____________________________.

County of ____________________________.

______________________________ being duly sworn, deposed and says that he is ____________________________ of ____________________________ of ____________________________.

(office) (Name of Organization)

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

SUBSCRIBED AND SWORN TO, before me the _____ day of ____________, 20__________.

________________________________________ ____________________________.

(Notary Public) Seal

My commission expires: ____________________________.
CERTIFICATE OF ACKNOWLEDGMENT
OF CONTRACTOR FOR BID

State of ____________________________ .  Date: __________ 20 __.
County of ____________________________ .

On this ______ day of ____________________________ , 20______ .

before me personally appeared ________________________________________ .
who being duly sworn, did depose and say as follows:

________________________________________________ , that said firm consists of
(Company Name)

________________________________________________ .
(name of principals in firm and position)

________________________________________________ .

that he executed the foregoing instrument on behalf of said firm for the uses and purposes stated
herein. If a corporation, the seal affixed to the foregoing instrument is such corporate seal and it was
so affixed by order of the Board of Directors of said corporation, and that by like order, he signed
thereeto his name and official designation.

________________________________________________ .
(Notary Public) (Seal)

My commissioner expires: ________________________________ .
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

(DATE)

VOTED, that:

___________________________________

______________

(NAME) (OFFICER)

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

(OFFICER)

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
SIGNATURE PAGE

DATED: ________________________________

BY: ______________________________________________________
    (Signature and Title of Person Authorized to Sign Bid)

    ______________________________________________________
    (Name of General Bidder)

    ______________________________________________________
    (Business Address)

    ______________________________________________________
    (Social Security Number – Federal Tax ID No.)

Telephone Number: (_____)___________________________________

Email: ______________________________________________________

(SEAL: IF BID IS BY A CORPORATION)

ATTEST: ___________________________________________________

The proposed surety company on the bond to be given as follows:

    ______________________________________________________
    (Contact Name)

    ______________________________________________________
    (Name of Surety)

    ______________________________________________________
    (Address of Home Office)

    ______________________________________________________
    (Massachusetts Address, if different)

    ______________________________________________________
    (Business Telephone)
CERTIFICATE OF NON-COLLUSION

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

____________________________________  ______________________________________
Signature of person signing proposal  Agency Name
TAX COMPLIANCE CERTIFICATE
MASS. GENERAL LAWS, CH. 62c, s: 49A(b)

I hereby certify that I have complied with all laws of the Commonwealth of Massachusetts Relating to taxes.

Signed under the pains and penalties of perjury.

(1) Individual Contractor

________________________________________

Contractor’s Name and Signature)

(2) Corporation, Association or Partnership

________________________________________

(Contractor’s Name)

Federal Tax ID Number, or Social Security Number

________________________________________

By: ____________________________________

(Authorized Signature)

Note to Contractor: Please sign at (1) or (2), whichever applies.
§ 47A. Taxation

1983 Enactment. St. 1983, c. 233, § 35, by § 101 made effective upon passage, was approved July 1, 1983. Emergency declaration by the Governor was filed on the same date.

Library References
Licenses ← 22. S.J.S. Licenses § 34, 38, 39.

§ 48. Liability of lessee for tax due from lessor

The lessee of real estate or tangible personal property of any corporation, company or association subject to taxation under chapter sixty-three shall also be liable for the payment of the tax due from the lessor under chapter sixty-three. Upon such payment, the lessee may, in the absence of an agreement to the contrary, retain it out of the rent of the property, or recover it in an action against the lessor.

Added by St. 1976, c. 415, §22.

1976 Enactment. This section was derived from c. 63, §74.

§ 49. Information for collection of taxes; injunction

Taxes due from a company, association or corporation may be collected by an information brought in the supreme judicial court by the attorney general at the relation of the commissioner. The court may issue an injunction upon such information, restraining the further prosecution of the business of the company, association or corporation until such taxes, with interest and costs thereon, have been paid and until the returns required by this chapter have been filed.

Added by St. 1976, c. 415, §22.

1976 Enactment. This section was derived from c. 63, §74.

Cross References
Penalties and forfeitures imposed by chapter 63 or § 74 of this chapter, collection remedies under this section and §47 of this chapter, see c. 63, §80.

§ 49A. Certification of compliance with tax laws as prerequisite to obtaining license or governmental contract

(a) Any person applying to any department, board, commission, division, authority, district or other agency of the commonwealth or any subdivision of the commonwealth, including a city, town or district, for a right or license to conduct a profession, trade or business, or for the renewal of such right or license, shall certify upon such application, under penalties of perjury, that he has complied with all laws of the commonwealth relating to taxes. Such right or license shall not be issued or renewed unless such certification is made.

(b) No contract or other agreement for the purposes of providing goods, services or real estate space to any of the foregoing agencies shall be entered into, renewed or extended with any person unless such person certifies in writing, under penalties of perjury, that he had complied with all laws of the commonwealth relating to taxes.

(c) Any such agency, which has been notified by the commissioner pursuant to section forty-seven A that a person who holds a license or certificate of authority issued by such agency or who has agreed to furnish goods, services or real estate space to such agency has neglected or refused to file any returns or to pay any tax required under this chapter and that such person has not filed in good faith a pending application for abatement of such tax or a pending petition before the appellate tax board contesting such tax, shall refuse to reissue, renew or extend such license, certificate of authority, contract or agreement until the agency receives a certificate issued by the commissioner that the person is in good standing with respect to any and all returns due and taxes payable to the commissioner as of the date of issuance of said certificate, including all returns and taxes referenced in the initial notification.


1983 Enactment. St. 1983, c. 233, §36, by §101 made effective upon passage, was approved July 1, 1983. Emergency declaration by the Governor was filed on the same date.

1985 Amendment. St. 1985, c. 593, §22, purported to amend par. (c) by substituting “forty-seven A” for “forty-seven” as appearing in line 14 of the 1984 GLM but apparently intended to substitute such amendment where appearing in line 15 of the 1984 GLM.

St. 1985, c. 593, was approved Dec. 18, 1985. Emergency declaration by the Governor was filed on the same date.


1986 Legislation

St. 1986, c. 557, §72, an emergency act, approved Dec. 8, 1986, in par. (c) substituted “forty-seven A” for “forty-seven” as apparently intended by the 1985 amendment.

Library References Licenses ← 22. C.J. S. Licenses §§ 34, 38, 39.
CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY

This certification is required pursuant to Executive Order 112A6 (30 R.R. 123 1935). The implementing rules and regulations, provide that any bidder or prospective contractor, or any of their proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity cause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the bidder has not filed a compliance report due under applicable instructions, such bidder shall be required to submit a compliance report within seven (7) calendar days after bid opening. No contract shall be awarded unless such report is submitted.

CERTIFICATION BY BIDDER

NAMES AND ADDRESS OF BIDDER (Include Zip Code):

1. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
   
   Yes  No

2. Compliance reports were required to be filed in connection with such contract or subcontract.
   
   Yes  No

3. Bidder has filed all compliance reports due under applicable instructions, including SF-100.
   
   Yes  No

4. Have you ever been or are you being considered for sanction due to violation of the Executive of 112A6, as amended?
   
   Yes  No

Name and Title of Signatory (Please Type)

Signature: ___________________________ Date: ___________________
RIGHT-TO-KNOW LAW

A bidder will not be eligible for award of this contract under this invitation for bids unless such bidder has submitted as part of its bid the following certification which will be deemed a part of the resulting contract.

CERTIFICATION

The Bidder hereby certifies that, if awarded this contract, he will fully comply with the Massachusetts Right-To-Know Law, c.470 of the Acts of 1983, (the Act). In addition, he shall:

1. obtain a Material Safety Data Sheet (MSDS), for all substances or mixtures of which appear on the Massachusetts Substance List that he or any of his subcontractors brings to or uses on the work site and will keep a copy of the MSDS on the work site of this contract;

2. label each container of a substance or mixture of substances on the Massachusetts Substance List, as required, in section 7 of the Act;

3. provide the same training and non-technical instruction that he is required to provide under section 15 of the Act to all Quincy personnel. Training shall include instructing on the nature and effects of any substance or mixture of substances listed on the Massachusetts Substance List which the Bidder or any of his subcontractors brings to or uses on the worksite.

4. provide to Quincy DPW employees on the work site the same protective equipment that the bidder or any of his subcontractors provides to his employees.

____________________________________
Signature of Authorized Representative of Bidder

Bidder's Name: __________________________________________

Bidder's Address: ________________________________________
NON-COLLUSION AFFIDAVIT

A bidder will not be eligible for award of this contract under this invitation for bids unless such bidder has submitted as part of its bid the following certification which will be deemed a part of the resulting contract.

State of ____________________________  Date: ____________________ 20_____
County of ____________________________

The undersigned being duly sworn, deposes and says that he is the:

______________________________________________________________________________
(sole owner, partner, president, treasurer, or other duly authorized official)

of ___________________________________________________________________________
(name of company - bidder - as appears in submitted proposal)

for work in __________________________________ on ____________________________
(City/Town)  (Bid Opening Date)

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

______________________________________________________________________________
Signature/Title of Person Making Affidavit

Sworn to before me this:

________________ day of ____________________________ 20_____

_____________________________________
(Notary Public)

My commission expires: ____________________________ 20____
CERTIFICATION
NON-SEGREGATED FACILITIES

The Bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under this control, where segregated facilities are maintained. The Bidder certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments and that he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion or national origin, because of habit, local custom or otherwise. The Bidder agrees that (except where he has obtained identical certification from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000.00 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his file.

Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. ss.1001.

Date: ______________________, 20___

______________________________
(Name of Bidder)

Official Address (including Zip Code) By:

____________________________________
(Title)

____________________________________
AFFIDAVIT
REGARDING PRIOR LABOR DISPUTES

The Bidder must execute and complete the following statements as to whether it has been the subject of, or otherwise been involved in, any labor dispute during the past five (5) years. If the Bidder has been the subject of, or otherwise been involved in any labor dispute during this period, the bidder must also provide a detailed description of each labor dispute, including the name and location of the project worked on, the nature of the dispute was resolved. For these purposes, "labor disputes" shall include picketing or any other activity which disrupted or delayed the work.

I __________________________, being first duly sworn, do hereby depose/state:

(Name)

1. I make each of the following statements with full authorization to bind

_________________________________________ to each of the representations made below.

(Name of Bidder)

2. ___________________________________ has/has not been involved in a labor dispute

(Name of Bidder)

as described above, within the past five (5) years.

3. (Complete only if bidder has been involved in dispute).

The dispute(s) occurred on the following project(s). (Use separate sheet if necessary)

<table>
<thead>
<tr>
<th>Name and Location of Project</th>
<th>Date Dispute Began</th>
<th>Date Concluded</th>
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<tbody>
<tr>
<td>a.</td>
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<tr>
<td>b.</td>
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</table>

Attach separate sheet and give full description of the nature of each dispute and an explanation of how it was resolved. (Please give a full description below, for each such dispute).

Signed under the penalty of perjury this _____ day of ________________ , 20___.

BY: _________________________________________

on behalf of: ___________________________________(Company name)
(To be typed onto letterhead of the Certified Public Accountant)

City of Quincy
City Solicitor's Office
1305 Hancock Street
Quincy, MA 02169

Attn: James S. Timmins
City Solicitor

RE: ______________________________
    Project Name

Dear Mr. Timmins:

Please be advised that I have reviewed the statement on internal accounting controls prepared by/for ______________________________ (Name of Company), in connection with the above captioned project. This statement is required under Massachusetts General Laws, Chapter 30, Section 39R. In our opinion, representations of management are consistent with our evaluation of the system of internal accounting controls. In addition, we believe that they are reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the firm's financial statements.

Yours sincerely,

____________________________________________
Certified Public Accountant

Note: This form is to be completed only when the contract exceeds $100,000, and is for the purchase of materials or for the construction, renovation, etc. of public works or public buildings.
CERTIFICATION

INTERNAL ACCOUNTING

The Contractor certifies that it has internal accounting controls, as required by Chapter 30, Section 39R and that the Contractor will:

1. maintain accurate and detailed accounts for a six (6) year period after the final payment;

2. file regular statements of management concerning internal auditing controls;

3. file an annual audited financial statement; and

4. submit a statement from an independent certified public accountant that such CPA has examined management's internal auditing controls and expresses an opinion as to their consistency with management's statements in (2) above, and whether such statements are reasonable with respect to transactions and assets that are substantial in relation to designer's financial statements. General Laws, Chapter 7, Section 301 (e).

Signed under the pains and penalties of perjury:

_____________________________________
Name of Company

_____________________________________
Authorized Signature

Note: This form is to be completed only when the contract exceeds $100,000 and is for the purchase of materials or for the construction, renovation, etc. of public works or public buildings.
CERTIFICATION OF GENERAL BIDDERS ON PUBLIC CONSTRUCTION PROJECTS

1. CERTIFICATION REGARDING HEALTH AND SAFETY

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations application to awards made subject to section 44A.

2. CERTIFICATION REGARDING NON-COLLUSION AND DEBARMENT

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word “person” shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Date: __________________

__________________________________________
Name of General Bidder

By ________________________________
Signature

__________________________________________
Print name and title

__________________________________________
Business Address

__________________________________________
Street Address City and State
CERTIFICATION OF SUB- BIDDERS (IF ANY) ON PUBLIC CONSTRUCTION PROJECTS

1. CERTIFICATION REGARDING HEALTH AND SAFETY

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupation Safety and Health Administration that is at least ten hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards of subcontracts subject to section 44F.

2. CERTIFICATION REGARDING NON-COLLLUSION AND DEBARMENT

The undersigned further certifies under penalties of perjury that this subbid is in all responses bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the “person” shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Date ____________________

__________________________________________
Name of Sub-bidder

By _________________________________________
Signature

__________________________________________
Print Name and Title

__________________________________________
Business Name

__________________________________________
Street Address, City and State

OSHA-10
SECTION 00520

AGREEMENT

This Agreement is made this ________________ day of ________________ in the year two thousand nineteen between the City of Quincy, MA, as requested by its Department of Public Works hereinafter called Owner and ________________ hereinafter called Contractor.

Owner and Contractor hereby agree as follows:

ARTICLE 1  WORK

1.1 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described with the following title: “Adams Shore/Houghs Neck Seawall Repairs & Improvements”.

ARTICLE 2  ENGINEER

2.1 The Project has been designed by Tighe & Bond, Inc., One University Ave #100, Westwood, MA 02090 who is hereinafter called Engineer. Engineer will act as Owner’s representative, assuming all duties and responsibilities, 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 3  CONTRACT TIMES

3.1 Dates for Substantial Completion and Final Payment

A. With Notice to Proceed being issued the Contractor will be authorized to proceed with submittals and precast forming. Work associated with field construction will be substantially completed ready for final payment in accordance with Paragraph 15.06 of the General Conditions no later than 250 days starting not earlier than March 15th, 2020. This start date is weather dependent and subject to approval by the Owner and Engineer.

3.2 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. 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 $1,000 for each day that expires after the time specified in Paragraph 3.1 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner $1,000 for each day that expires after the time specified in Paragraph 3.1 for completion and readiness for final payment until the Work is completed and ready for final payment.
ARTICLE 4 CONTRACT PRICE

4.1 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the prices stated in Contractor’s Bid, attached hereto as an exhibit.

4.2 The total amount will be adjusted by measurement of actual installed quantities in strict conformity with the provisions contained herein.

ARTICLE 5 PAYMENT PROCEDURES

5.1 Applications for Payment shall be processed in accordance with Article 15 of the General Conditions and in accordance with Massachusetts General Law.

5.2 Owner shall make progress payments on account of the Contract Price on the basis of processed Applications for Payment monthly during construction, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract.

5.3 Owner shall retain from progress payments 5 percent of the value of Work completed.

ARTICLE 6 CONTRACTOR’S REPRESENTATIONS

6.1 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 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; 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.

E. Based on the information and observations referenced in Paragraph 6.1 above, Contractor does not consider that any 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.

F. 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.

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

ARTICLE 7 CONTRACT DOCUMENTS

7.1 Contents

A. The Contract Documents consist of the following:

1. This Agreement (pages 00520-1 to 00520-6, inclusive);
2. Performance Bond;
3. Payment Bond;
4. General Conditions (title pages, table of contents, and pages 00700-1 to 00700-65, inclusive);
5. Supplementary Conditions (pages 00800-1 to 00800-13, inclusive);
6. General Requirements (Division 1);
7. Specifications (Divisions 2 through 16);
8. Drawings consisting of a complete set of 81 sheets, inclusive, with each sheet bearing the following general title: Adam Shore / Houghs Neck Seawall Repairs and Improvements;
9. Addenda (numbers _____ to _____, inclusive);
10. Exhibits to this Agreement (enumerated as follows):
   a. Contractor’s Bid (pages 00410-1 to 00410-11, inclusive);
   b. Documentation submitted by Contractor prior to Notice of Award;
11. 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. Written Amendments;
   c. Work Change Directives;
   d. Change Order(s).

B. The documents listed in Paragraph 7.1.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 8 MISCELLANEOUS

8.1 Terms

A. Terms used in this Agreement will have the meanings indicated in the General Conditions and the Supplementary Conditions.
8.2 Assignment of Contract
A. Unless expressly agreed to elsewhere in the Contract, 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, money that may become due and money that is 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.

8.3 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.

8.4 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.

8.5 Contractor Certifications
A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.5:
1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing 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.

8.6
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 identified by Owner and Contractor or on their behalf.
This Agreement will be effective on ______________________, _____ (which is the Effective Date of the Agreement).

OWNER:

________________________
By: ______________________
Title: _____________________
[CORPORATE SEAL]
Attest ____________________
Address for giving notices:
________________________
________________________
________________________

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution of other documents authorizing execution of Owner-Contractor Agreement.)

CONTRACTOR:

________________________
By: ______________________
Title: _____________________
[CORPORATE SEAL]
Attest ____________________
Address for giving notices:
________________________
________________________
________________________

License No. ________________
(Where applicable)

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)
Certified as to the availability of funds:

________________________
Date

________________________
Signed

________________________
Title

END OF SECTION
INDEMNITY AGREEMENT

In consideration of the award of Contract No.______________________________
by the City of Quincy, hereinafter referred to as INDEMNITEE, to the CONTRACTOR/BIDDER:

________________________________________________________

hereinafter referred to as INDEMNITOR, and for other good and valuable consideration, said
INDEMNITOR agrees to hold INDEMNITEE, City of Quincy, and its various department and employees
harmless from any and all liability, loss or damage that INDEMNITEE may suffer as the result of claims,
demands, costs, including attorneys fees, or judgement or other actions against it by reason of any and all
work done by or on behalf of the INDEMNITOR in connection with the above-referenced contract.

INDEMNITOR,

_________________________________

By Duly Authorized Agent

Date:_____________________________
NOTICE TO PROCEED

TO: ____________________  DATE: ____________________

__________________________  Project: ____________________

You are hereby notified to commence WORK on or before ________________.

In accordance with contract documents the contract time is: With Notice to Proceed being issued, the Contractor will be authorized to proceed with submittals and precast forming. Work associated with field construction will be substantially completed ready for final payment in accordance with Paragraph 15.06 of the General Conditions no later than 250 days starting not earlier than March 15th, 2020. This start date is weather dependent and subject to approval by the Owner and Engineer.

BY:

Name: Alfred J. Grazioso
Title: Commissioner of Public Works

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by:

(Company Name)

Signature: ____________________  Date: ____________________

Print Name: ____________________  Title: ____________________

Q0021/07/05/19  00550-1  Notice to Proceed
PERFORMANCE BOND

CONTRACTOR (name and address):

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

OWNER (name and address):

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

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

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

CONTRACTOR AS PRINCIPAL

________________________ (seal)
Contractor’s Name and Corporate Seal

By: __________________________
Signature

__________________________
Print Name

__________________________
Title

Attest: ______________________
Signature

__________________________
Title

SURETY

__________________________ (seal)
Surety’s Name and Corporate Seal

By: __________________________
Signature (attach power of attorney)

__________________________
Print Name

__________________________
Title

Attest: ______________________
Signature

__________________________
Title

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

CONTRACTOR (name and address):

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

OWNER (name and address):

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

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

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

CONTRACTOR AS PRINCIPAL

Contractor's Name and Corporate Seal

By: ____________________________ (seal)

Signature

Print Name

Title

Attest: ____________________________

Signature

Surety

SURETY

Surety’s Name and Corporate Seal

By: ____________________________ (seal)

Signature (attach power of attorney)

Print Name

Title

Attest: ____________________________

Signature

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:
CERTIFICATE OF INSURANCE

This is to certify that the (Company) has issued the policies listed below, that these policies are written in accordance with the Company's standard policies and endorsements, except as indicated below or as noted in the attachments herewith, which policies and endorsements will be made available to ENGINEER and OWNER upon request, that they provide coverage and limits of liability shown with respect to the insurance indicated that they are in force on this date, that all deductible amounts are indicated below, and that this Certificate is furnish in accordance with and for the purpose of satisfying the requirements of OWNER and ENGINEER in connection with the award and performance of a contract or agreement between:

(OWNER) and

1. Name of Insured
2. Address of Insured
3. Location and Description of Work

Contract No.

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<tr>
<th>Coverage and Limits of Liability</th>
<th>Bodily Injury</th>
<th>Property Damage</th>
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<td>(at least as shown below)</td>
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<th>Aggregate</th>
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B. Comprehensive General Liability


Bodily Injury | Property Damage |
$1,000,000. | $1,000,000. |
$1,000,000. | $1,000,000. |

C. Auto Liability


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D. Worker’s Compensation

Compensation Statutory State’s Coverage B Limits $1,000,000. if applicable

E. Builder’s Risk Insurance - All Risk Completed Value form

As called for in Contract or Agreement

CONTRACTUAL LIABILITY

CONTRACTOR shall at all times indemnify and save harmless OWNER, ENGINEER and their respective officers, agents and employees on account of any and all claims, damages, losses, litigation, expenses, counsel fees and compensation arising out of injuries (including death) sustained by or alleged to have been sustained by the officers, agents and employees of said OWNER or ENGINEER or of CONTRACTOR, his subcontractors, or material men, and from injuries (including death sustained by or alleged to have been sustained by the public, any or all persons on or near the Work, or by any other person or property, real or personal (including property of said OWNER or ENGINEER caused in whole or in part by the acts, omissions, or neglect of CONTRACTOR including but not limited to any neglect in safeguarding the work or through the use of unacceptable materials in contracting the Work by CONTRACTOR, any subcontractor, material man, or anyone directly or indirectly employed by them or any of them while engaged in the performance of the contract, including the entire elapsed time from the date ordered to start work or the actual start, whichever occurs first, until completion of the one year correction period, as certified by OWNER or ENGINEER.

Policies A, B, C & D shall remain in effect during the one year correction period.

Such insurer as is herein certified applies to all operations of the insured in connection with, and necessary and incidental to, the work herein described at the locations stated.

It is hereby understood and agreed that the above policies will not be restricted, suspended, materially changed, nor canceled without 15 days advance notice by registered mail to OWNER and ENGINEER.

Authorized Representative Signature __________________________
Address __________________________

Q0019/07/05/19 00621-1 Certificate of Insurance
STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

Prepared by

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

Issued and Published Jointly by

ACEC
AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

National Society of Professional Engineers®
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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term’s singular and plural forms, will have the meaning indicated in the definitions below. 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, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

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

5. Bidder—An individual or entity that submits a Bid to Owner.

6. Bidding Documents—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. Bidding Requirements—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. Change Order—A document 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, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. Change Proposal—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. Claim—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer’s decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer’s decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer
has declined to address. A demand for money or services by a third party is not a Claim.

11. Constituent of Concern—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. Contract—The entire and integrated written contract between the Owner and Contractor concerning the Work.

13. Contract Documents—Those items so designated in the Agreement, and which together comprise the Contract.

14. Contract Price—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. Contract Times—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. Contractor—The individual or entity with which Owner has contracted for performance of the Work.

17. Cost of the Work—See Paragraph 13.01 for definition.

18. Drawings—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. Effective Date of the Contract—The date, indicated in the Agreement, on which the Contract becomes effective.

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

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

22. Hazardous Environmental Condition—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

23. Laws and Regulations; Laws or Regulations—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. **Liens**—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. **Milestone**—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. **Notice of Award**—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.

27. **Notice to Proceed**—A written notice 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.

28. **Owner**—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. **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.

30. **Project**—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. **Project Manual**—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

32. **Resident Project Representative**—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.

33. **Samples**—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

34. **Schedule of Submittals**—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.

35. **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.

36. **Shop Drawings**—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
37. **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, and such other lands furnished by Owner which are designated for the use of Contractor.

38. **Specifications**—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. **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.

40. **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.

41. **Successful Bidder**—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. **Supplementary Conditions**—The part of the Contract that amends or supplements these General Conditions.

43. **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 a Subcontractor.

44. **Technical Data**—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. **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 but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

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

47. **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; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
48. **Work Change Directive**—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 **Terminology**

A. The words and terms discussed in the following paragraphs 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 Article 10 or any other provision of the Contract Documents.

C. **Day:**

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

D. **Defective:**

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

   a. does not conform to the Contract Documents; or

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

   c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

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. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

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. Bonds: 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 Contractor’s Insurance: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. Evidence of Owner’s Insurance: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 Copies of Documents
A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 Before Starting Construction
A. Preliminary Schedules: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), 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;
   2. a preliminary Schedule of Submittals; and
3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 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 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, 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 and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 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 2.03.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 the component parts of the Work.

2.06 Electronic Transmittals

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient’s use of software application packages, operating systems, or
computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

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

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 Reference Standards

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, 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, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract 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, reference standard, 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 part of the Contract Documents prepared by or for Engineer. 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 part of the Contract Documents prepared by or for Engineer.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies:

1. Contractor’s Verification of Figures and Field Measurements: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,
error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. **Contractor’s Review of Contract Documents:** If, before or 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) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) 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 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

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

B. **Resolving Discrepancies:**

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
   a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); 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 **Requirements of the Contract Documents**

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer’s written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.
3.05 **Reuse of Documents**

A. Contractor and its Subcontractors and Suppliers 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 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; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner’s express written consent, or violate any copyrights pertaining to such Contract Documents.

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.

**ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK**

4.01 **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 Contract 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 Contract. 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 Contract, whichever date is earlier.

4.02 **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 such date.

4.03 **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.

4.04 **Progress Schedule**

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 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 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. 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, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 Delays in Contractor’s Progress

A. If Owner, Engineer, 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 Times and Contract Price. 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.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor’s performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. 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. Such an adjustment shall be Contractor’s sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;

3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and

4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 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.

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 permanent improvements are to be made 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.

5.02 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor’s operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, 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 any such claim, and against all 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 directly or indirectly, in whole or in part.
by, or based upon, Contractor’s performance of the Work, or because of other actions
or conduct of the Contractor or those for which Contractor is responsible.

B. **Removal of Debris During Performance of the Work:** During the progress of the Work the
Contractor shall keep the Site and other adjacent 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 and adjacent areas 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 of 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 structures or land to stresses or pressures that will endanger
them.

5.03 **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
   adjacent to the Site;
2. those drawings known to Owner of physical conditions relating to existing surface or
   subsurface structures at the Site (except Underground Facilities); and
3. Technical Data contained in such reports and drawings.

B. **Reliance by Contractor on Technical Data Authorized:** Contractor may rely upon the
accuracy of the Technical Data expressly identified in the Supplementary Conditions with
respect to such reports and drawings, but such reports and drawings are not Contract
Documents. If no such express identification has been made, then Contractor may rely
upon the accuracy of the Technical Data (as defined in Article 1) contained in any
geotechnical or environmental report prepared for the Project and made available to
Contractor. Except for such reliance on 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.
5.04  Differing Subsurface or Physical Conditions

A. Notice by Contractor: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site 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 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; 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 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. Engineer’s Review: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner’s obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor’s resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer’s findings, conclusions, and recommendations.

C. Owner’s Statement to Contractor Regarding Site Condition: After receipt of Engineer’s written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations, in whole or in part.

D. Possible Price and Times Adjustments:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, 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 fall within any one or more of the categories described in Paragraph 5.04.A;

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 Paragraph 13.03; and,
c. 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.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
   a. Contractor knew of the existence of such condition at the time Contractor made a 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 otherwise; or
   b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor’s making such commitment; or
   c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor’s entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner’s issuance of the Owner’s written statement to Contractor regarding the subsurface or physical condition in question.

5.05 Underground Facilities

A. Contractor’s Responsibilities: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent 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 do not warrant or guarantee 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 information and data regarding existing Underground Facilities at the Site;
   b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
   c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
   d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. Notice by Contractor: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then 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 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. **Engineer’s Review**: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor’s resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer’s findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. **Owner’s Statement to Contractor Regarding Underground Facility**: After receipt of Engineer’s written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations in whole or in part.

E. **Possible Price and Times Adjustments**:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
   
   a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
   
   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 Paragraph 13.03;
   
   c. 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; and
   
   d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor’s entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner’s issuance of the Owner’s written statement to Contractor regarding the Underground Facility in question.
5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

2. Technical Data contained in such reports and drawings.

B. **Reliance by Contractor on Technical Data Authorized:** Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on 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 removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) 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 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. 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, then within 30 days of Owner’s written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. 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, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner’s own forces or others in accordance with Article 8.

I. 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 (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual’s or entity’s own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual’s or entity’s own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.
ARTICLE 6 — BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

A. Contractor shall furnish a performance bond and a payment bond, 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. 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 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

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

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then 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 bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 Insurance—General Provisions

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is
maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

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

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner’s termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party’s interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor’s interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor’s liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 Contractor’s Insurance

A. **Workers’ Compensation:** Contractor shall purchase and maintain workers’ compensation and employer’s liability insurance for:

1. claims under workers’ compensation, disability benefits, and other similar employee benefit acts.
2. United States Longshoreman and Harbor Workers’ Compensation Act and Jones Act coverage (if applicable).
3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor’s employees (by stop-gap endorsement in monopolist worker’s compensation states).
4. Foreign voluntary worker compensation (if applicable).

B. **Commercial General Liability—Claims Covered:** Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
   1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor’s employees.
   2. claims for damages insured by reasonably available personal injury liability coverage.
   3. 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.

C. **Commercial General Liability—Form and Content:** Contractor’s commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
   1. Products and completed operations coverage:
      a. Such insurance shall be maintained for three years after final payment.
      b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
   2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor’s contractual indemnity obligations in Paragraph 7.18.
   3. Broad form property damage coverage.
   4. Severability of interest.
   5. Underground, explosion, and collapse coverage.
   6. Personal injury coverage.
   7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
   8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, “Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured” or its equivalent.

D. **Automobile liability:** Contractor shall purchase and maintain automobile liability insurance against 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. The automobile liability policy shall be written on an occurrence basis.

E. **Umbrella or excess liability:** Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. **Contractor’s pollution liability insurance:** Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result
of pollution conditions arising from Contractor’s operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. Additional insureds: The Contractor’s commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; 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 (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. Contractor’s professional liability insurance: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. General provisions: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.
2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
5. be appropriate for the Work being performed and provide protection from claims that 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.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.
6.04 **Owner’s Liability Insurance**

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner’s option, may purchase and maintain at Owner’s expense Owner’s own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner’s liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner’s liability policies for any of Contractor’s obligations to the Owner, Engineer, or third parties.

6.05 **Property Insurance**

A. **Builder’s Risk**: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder’s risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder’s risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as “insureds.”

2. be written on a builder’s risk “all risk” policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; 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. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder’s risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. extend to cover damage or loss to insured property while in transit.

7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder’s risk insurance.

8. allow for the waiver of the insurer’s subrogation rights, as set forth below.

9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

10. not include a co-insurance clause.

11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.

12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. Notice of Cancellation or Change: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. Deductibles: The purchaser of any required builder’s risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. Partial Occupancy or Use by Owner: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder’s risk policy, or through Contractor) will provide notice of such occupancy or use to the builder’s risk insurer. The builder’s risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder’s risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder’s risk insurance.

E. Additional Insurance: If Contractor elects to obtain other special insurance to be included in or supplement the builder’s risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor’s expense.

F. Insurance of Other Property: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.
6.06 Waiver of Rights

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder’s risk policy, 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 insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the 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 Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, 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 or Contractor as trustee or fiduciary, 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 occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.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, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, 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 builder’s risk insurance and any other property insurance applicable to the Work.

6.07 Receipt and Application of Property Insurance Proceeds

A. Any insured loss under the builder’s risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insurer that purchased the
policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder’s risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

**ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES**

**7.01 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.

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.

**7.02 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, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner’s written consent, which will not be unreasonably withheld.

**7.03 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, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work 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.

7.04 “Or Equals”

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item 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 is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that 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, Engineer shall deem it an “or equal” item. For the purposes of this paragraph, 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;

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

      4) it is not objectionable to Owner.

   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.

B. Contractor’s Expense: Contractor shall provide all data in support of any proposed “or equal” item at Contractor’s expense.

C. Engineer’s Evaluation and Determination: Engineer will be allowed a reasonable time to evaluate each “or-equal” request. Engineer may require Contractor to furnish additional data about the proposed “or-equal” item. Engineer will be the sole judge of acceptability. No “or-equal” item will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an “or-equal”, which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
D. **Effect of Engineer’s Determination:** Neither approval nor denial of an “or-equal” request shall result in any change in Contract Price. The Engineer’s denial of an “or-equal” request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. **Treatment as a Substitution Request:** If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 **Substitutes**

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. 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:

   a. shall certify that the proposed substitute item will:

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

      2) be similar in substance to that specified, and

      3) be suited to the same use as that specified.

   b. will state:

      1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

      2) 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

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

   c. will identify:

      1) all variations of the proposed substitute item from that specified, and
2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. **Engineer’s Evaluation and Determination**: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer’s determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

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

D. **Reimbursement of Engineer’s Cost**: Engineer will record Engineer’s costs in evaluating a substitute proposed or submitted by Contractor. 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.

E. **Contractor’s Expense**: Contractor shall provide all data in support of any proposed substitute at Contractor’s expense.

F. **Effect of Engineer’s Determination**: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer’s denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 Concerning Subcontractors, Suppliers, and Others

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor’s Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner’s requirement of replacement.

G. 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 the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. 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.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. 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.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
O. 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 money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 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.

7.08 Permits

A. Unless otherwise provided in the Contract Documents, 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 the submission of Contractor’s Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.
7.09 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.

7.10 Laws and Regulations
   A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor’s compliance with any Laws or Regulations.
   
   B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and 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 such Work or other action. It shall not be Contractor’s responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor’s obligations under Paragraph 3.03.
   
   C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor’s Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

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

7.12 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, other work in progress, 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 Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

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

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

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.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 at its expense (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 protection 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 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor’s duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 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.

7.14 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.

7.15 Emergencies

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

7.16 Shop Drawings, Samples, and Other Submittals

A. Shop Drawing and Sample Submittal Requirements:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
   a. reviewed and coordinated the 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 and equipment 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 of that submittal, and that Contractor approves the 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 set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. Submittal Procedures for Shop Drawings and Samples: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. Shop Drawings:
   a. Contractor shall submit the number of copies required in the Specifications.
   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 7.16.D.

2. **Samples:**
   a. Contractor shall submit the number of Samples required in the Specifications.
   b. Contractor shall 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 7.16.D.

3. 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. **Other Submittals:** Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

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 or to safety precautions or programs incident thereto.
   3. Engineer’s review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
   4. Engineer’s review and approval of a Shop Drawing or Sample 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 7.16.A.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 will document any such approved variation from the requirements of the Contract Documents in a Field Order.
   5. Engineer’s review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
   6. Engineer’s review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
   7. Neither Engineer’s receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

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 to obtain required approval of an item with no more than three submittals. Engineer will record Engineer’s time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer’s charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer’s charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 **Contractor’s General Warranty and Guarantee**

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

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

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other 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;
6. the issuance of a notice of acceptability by Engineer;
7. any inspection, test, or approval by others; or
8. any correction of defective Work by Owner.
D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor’s performance obligations to Owner for the Work described in the assigned contract.

7.18 Indemnification

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

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers’ compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer’s officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 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 Laws and Regulations.

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, 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, 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 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 Other Work

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner’s employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner’s employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner’s employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. 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.

D. If the proper execution or results of any part of Contractor’s Work depends upon work performed by others under this Article 8, 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.
8.02  *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner’s employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

   1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
   2. an itemization of the specific matters to be covered by such authority and responsibility; and
   3. the extent of such authority and responsibilities.

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

8.03  *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner’s employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor’s rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. 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.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner’s contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner’s employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor’s failure to take reasonable and customary measures with respect to Owner’s other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.
D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor’s failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor’s actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) 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 any such claims, and against all 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 damage, delay, disruption, or interference.

ARTICLE 9 – OWNER’S RESPONSIBILITIES

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

9.02 Replacement of Engineer
   A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer’s status under the Contract Documents shall be that of the former Engineer.

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

9.04 Pay When Due
   A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 Lands and Easements; Reports, Tests, and Drawings
   A. Owner’s duties with respect to providing lands and easements are set forth in Paragraph 5.01.
   B. Owner’s duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
   C. Article 5 refers to Owner’s identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 Insurance
   A. Owner’s responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 Change Orders
   A. Owner’s responsibilities with respect to Change Orders are set forth in Article 11.
9.08 **Inspections, Tests, and Approvals**
A. Owner’s responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

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

9.10 **Undisclosed Hazardous Environmental Condition**
A. Owner’s responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 **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 (including obligations under proposed changes in the Work).

9.12 **Safety Programs**
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.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

**ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION**

10.01 **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.

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

B. Engineer’s visits and observations are subject to all the limitations on Engineer’s authority and responsibility set forth in Paragraph 10.08. 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.

10.03 Project Representative

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. 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.

10.04 Rejecting Defective Work

A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 Shop Drawings, Change Orders and Payments

A. Engineer’s authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. 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, are set forth in Paragraph 7.19.

C. Engineer’s authority as to Change Orders is set forth in Article 11.

D. Engineer’s authority as to Applications for Payment is set forth in Article 15.

10.06 Determinations for Unit Price Work

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 Decisions on Requirements of Contract Documents and Acceptability of Work

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 Limitations on Engineer’s Authority and Responsibilities

A. Neither Engineer’s authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor’s failure to perform the Work in accordance with the Contract Documents.

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

D. Engineer’s review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.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 10.08 shall also apply to the Resident Project Representative, if any.

10.09 Compliance with Safety Program

A. While at the Site, Engineer’s employees and representatives will comply with the specific applicable requirements of Owner’s and Contractor’s safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. Change Orders:
   a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
   b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. Work Change Directives: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive’s effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an
adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. **Field Orders:** Engineer may authorize minor changes in the Work if the changes 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. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 **Owner-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. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 **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, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 **Change of Contract Price**

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. 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, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on
the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor’s fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. **Contractor’s Fee**: When applicable, 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 13.01.B.1 and 13.01.B.2, the Contractor’s fee shall be 15 percent;
   b. for costs incurred under Paragraph 13.01.B.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 11.01.C.2.a and 11.01.C.2.b is that the Contractor’s fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
   d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
   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 11.04.C.2.a through 11.04.C.2.e, inclusive.

### 11.05 Change of Contract Times

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor’s progress.

### 11.06 Change Proposals

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under
the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. **Procedures:** Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. **Engineer’s Action:** Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor’s supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer’s inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. **Binding Decision:** Engineer’s decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. **Resolution of Certain Change Proposals:** If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

### 11.07 Execution of Change Orders

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

1. 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;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner’s acceptance of defective Work under Paragraph 14.04 or Owner’s correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer’s recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 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.

ARTICLE 12 – CLAIMS

12.01 Claims

A. Claims Process: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer’s decisions regarding Change Proposals;
2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. Submittal of Claim: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor’s knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. Review and Resolution: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. Mediation:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim
3. Owner and Contractor shall each pay one-half of the mediator’s fees and costs.

E. Partial Approval: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. Denial of Claim: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. Final and Binding Results: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 Cost of the Work

A. Purposes for Determination of Cost of the Work: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. Costs Included: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work 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 13.01.C, 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, and 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

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

5. Supplemental costs including the following:
   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor’s employees incurred in discharge of duties connected with the Work.
   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
   c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
   d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
   e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
   f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), 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 communication 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 that Contractor is required by the Contract Documents to purchase and maintain.

C. 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 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor’s fee.

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

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

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

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. Contractor’s Fee: When the Work as a whole 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, Change Proposal, Claim, set-off, or other 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 11.04.C.

E. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, 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.

13.02 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*: Contractor agrees that:

1. 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

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

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

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

13.03 *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. Payments to Contractor for Unit Price Work will be based on actual quantities.

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. 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 the following paragraph.

E. Within 30 days of Engineer’s written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price 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;

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

3. Contractor believes that it 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 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction 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.

14.02 Tests, Inspections, and Approvals

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

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

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

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
   1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
   2. to attain Owner’s and Engineer’s acceptance of materials or equipment to be incorporated in the Work;
   3. by manufacturers of equipment furnished under the Contract Documents;
   4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
   5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor’s purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. 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. Such uncovering shall be at Contractor’s expense unless Contractor had given Engineer timely notice of Contractor’s intention to
cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 **Defective Work**

A. **Contractor’s Obligation**: It is Contractor’s obligation to assure that the Work is not defective.

B. **Engineer’s Authority**: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. **Notice of Defects**: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. **Correction, or Removal and Replacement**: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. **Preservation of Warranties**: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner’s special warranty and guarantee, if any, on said Work.

F. **Costs and Damages**: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 **Acceptance of Defective Work**

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer’s confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages 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. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 **Uncovering Work**

A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer’s observation, and then replace the covering, all at Contractor’s expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then 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, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages 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 pending Contractor’s full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. 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, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 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, then 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.

14.07 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, 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, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, 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, 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 incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. 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 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

A. Basis for Progress Payments: The Schedule of Values established as provided in Article 2 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 during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. 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, a warehouse bond, 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.

C. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, 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 13.03, 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; 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 money 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 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer’s opinion to protect Owner from loss because:

   a. the Work is defective, requiring correction or replacement;

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

   c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. **Payment Becomes Due:**

1. Ten days after presentation of the Application for Payment to Owner with Engineer’s recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. **Reductions in Payment by Owner:**

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

   a. claims have been made against Owner on account of Contractor’s conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor’s conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

   b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

   c. Contractor has failed to provide and maintain required bonds or insurance;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

   e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

   f. the Work is defective, requiring correction or replacement;

   g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

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

   i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

   j. liquidated damages have accrued as a result of Contractor’s failure to achieve Milestones, Substantial Completion, or final completion of the Work;

   k. 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;

   l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, 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, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

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 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 Contractor’s Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

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 preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner’s objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner’s use or occupancy of the Work following Substantial Completion, review the builder’s risk insurance policy with respect to the end of the builder’s risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner’s use or occupancy of the Work.
E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. 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 punch list.

15.04 Partial Use or Occupancy

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. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be 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 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work 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 15.03 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 6.05 regarding builder’s risk or other property insurance.

15.05 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, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 Final Payment

A. Application for Payment:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of
inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
   a. all documentation called for in the Contract Documents;
   b. consent of the surety, if any, to final payment;
   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
   d. a list of all disputes that Contractor believes are unsettled; and
   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) 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, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

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 have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer’s recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer’s opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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 15.07. 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. Completion of Work: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer’s written recommendation of final payment.

D. Payment Becomes Due: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer’s recommendation,
including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 Waiver of Claims

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor’s failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor’s continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 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 Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner’s written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;

2. correct such defective Work;

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 to 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. 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 repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

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

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
E. Contractor’s obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 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 written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will constitute a default by Contractor and 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);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor’s disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor’s repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, 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 complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.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 the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses,
and damages exceeds 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.

F. 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, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 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; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) 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 16.03.

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 are not intended to preclude Contractor from submitting a Change Proposal 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 17 – FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

A. Disputes Subject to Final Resolution: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. Final Resolution of Disputes: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 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, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 Computation of Times

A. When any period of time is referred to in the Contract 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.

18.03 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. 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.
18.04  *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05  *No Waiver*

A. A party’s non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06  *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07  *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08  *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.
SECTION 00800
SUPPLEMENTARY CONDITIONS

PART 1 AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2013 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings indicated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings indicated below, which are applicable to both the singular and plural thereof.

The address system used in the Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix “SC” added thereto.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 Add the following after paragraph 1.01A.4:

1.01A.4.a. Filed Sub-Bidder – The individual or entity who submits a Bid to the General Bidder for projects subject to MGL Chapter 149, Section 44F.

1.01A.4.b. General Bidder – The individual or entity who submits a Bid directly to the Owner for projects subject to MGL Chapter 149, Section 44E.

1.01A.4.c. General Contractor – The individual or entity with whom the Owner has entered into the Agreement for projects subject to MGL Chapter 149, Section 44E.

SC-1.01 Delete paragraph 1.01A.38 in its entirety and insert the following in its place:

1.01A.38. Specifications – Sections included under Division 1 through Division 16 of the Project Manual.

SC-1.01 Add the following language at the end of the first sentence of paragraph 1.01A.40:

or has been completed except for work having a contract price of less than one percent of the then adjusted total Contract Price.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.02 Delete paragraph 2.02A in its entirety.

ARTICLE 3 –DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.01 Replace paragraph 3.01E with the following paragraph:
3.01E In the event of conflicts, inconsistencies or discrepancies among the Contract Documents, to the extent applicable, the better quality or greater quantity of work shall be provided without change to the Contract Price. In the event of such conflicts, inconsistencies or discrepancies which do not relate to the quality or quantity of work, the Contractor shall request clarifications or interpretations from the Engineer as provided herein.

SC-3.01 Add the following new paragraph immediately after paragraph 3.01E:

3.01F Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01 Delete paragraph 4.01A in its entirety and insert the following in its place:

4.01A The Contract Times will commence to run on the date specified in the Notice to Proceed.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 Add the following new paragraphs immediately after paragraph 5.03B.3:

5.03C

SC-5.04 Add the following new paragraph immediately after paragraph 5.04D.4:

5.04D.5 Adjustment resulting from subsurface or latent physical conditions will be in accordance with Massachusetts General Law Chapter 30, Section 39N referenced in Part II of the Supplementary Conditions.

ARTICLE 6 - BONDS AND INSURANCE

SC-6.03 Add the following new paragraph immediately after paragraph 6.03B.3:

6.03B.4 Insurance certificate(s) shall also contain the following:

1. Confirmation that the General Liability policy covers only the Work under this Contract, with project specific limits.
2. Confirmation that automobile insurance covers all Scheduled, Hired and Non-Owned vehicles.
3. Names of all additional insureds as specified herein.

SC-6.03 Add the words “and Paragraph 6.04” after the words “Paragraph 6.03” in Paragraph 6.03I.
SC 6.03  Add the following new paragraph immediately after Paragraph 6.03.J:

6.03.K  The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the amounts indicated in Section 00621 or greater where required by Laws and Regulations:

1.  Workers’ Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

2.  Contractor’s Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions which shall include completed operations and product liability coverages for not less than the amounts indicated in Section 00621:

3.  Automobile Liability under Paragraph 6.03.D. of the General Conditions including all scheduled, hired and non-owned vehicles for not less than the amounts indicated in Section 00621:

6.  Additional Insureds: In addition to Owner and Engineer, include as additional insureds the following:

SC-6.04  Delete paragraph 6.04 in its entirety and insert the following in its place:

6.04  Contractor shall purchase and maintain a separate Owner’s Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insureds. This insurance shall provide coverage for not less than the amounts indicated in Section 00621:

A.  Insurance coverage for the Contractor’s Comprehensive General and Excess Liability policies and for the Owner’s Protective Liability policy shall be written by one and the same insurance company to avoid the expense of duplicate and/or overlapping coverage and to facilitate and expedite the settlement of claims.

B.  The Owner’s Protective Liability policy shall protect from claims which may arise from operations under the Contract, including operations performed for a named insured by independent contractors and general inspection or monitoring by a named insured. The policy also shall protect against Automobile Non-Ownership Liability in connection with the Contractor’s operations under the Contract, whether such operations be by itself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

SC-6.05  Add the following new subparagraph after subparagraph 6.05.A.1:

6.05.A.1.a  In addition to Owner, Contractor, and all Subcontractors, include as insureds the following:

1)  Tighe & Bond (53 Southampton Rd, Westfield, MA 01085)
ARTICLE 7 - CONTRACTOR’S RESPONSIBILITIES

SC-7.02 Add the following new paragraph immediately after paragraph 7.02B.

7.02C Whenever Owner shall notify Contractor in writing that any person on the Work appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the consent of Owner.

SC-7.06 Add the following language at the end of paragraph 7.06O.2:

Contractor shall make payments to Subcontractors in accordance with Massachusetts General Law Chapter 30, Section 39F which is referenced in PART II of these Supplementary Conditions.

SC-7.06 Add the following language at the end of Paragraph 7.06L:

except as required otherwise by Massachusetts General Law Chapter 149, Section 44F.

SC-7.07 Delete paragraph 7.07B in its entirety and replace it with the following:

7.07B Not used.

SC-7.08 Delete the word “Owner” in the last sentence of Paragraph 7.08A and replace with the word “Contractor.”

SC-7.08 Add the following new paragraph immediately after paragraph SC-7.08A:

7.08B The Owner has obtained the following permits and approvals for the Project. The Contractor is required to comply with the permit provisions. Copies of the permits are appended to this section.

A. MassDEP Chapter 91 Waterways License
B. City of Quincy Order of Conditions
C. MassDEP 401 Water Quality Certificate
D. ACOE Authorization under the MA General Permit CZM Federal Consistency Certification

SC-7.10 Add the following new paragraph immediately after paragraph 7.10C.

7.10D Contractor shall comply with all applicable provisions of Chapter 30, Section 39R of the Massachusetts General Laws regarding Contractor’s records.

SC-7.18 Add the following new paragraph immediately after paragraph 7.18.C.
7.18D If, through acts of neglect on the part of Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the Work, Contractor shall settle with such other Contractor or Subcontractor by agreement or arbitration if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against Owner on account of any such damage alleged to have been sustained, Owner shall notify Contractor, who shall indemnify, defend, and save harmless Owner against any such claim.

ARTICLE 8 - OTHER WORK AT THE SITE

ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:

B. The Resident Project Representative (RPR) will be Engineer’s representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR’s actions.

1. RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor.

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, or Suppliers.

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.

5. Advise on, issue directions regarding, or assume control over security or 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.
ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

SC-11.06 Insert the following sentence at the end of Paragraph 11.06.A.2:

If Engineer does not take action on the Change Proposal and neither Owner nor Contractor submit a letter to the other party indicating that the Change Proposal is deemed denied, then the Change Proposal shall be deemed denied after 60 days of Engineer’s receipt of the Contractor’s supporting data, thereby commencing the time for appeal of the denial under Article 12.

ARTICLE 13 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01 Delete the word “superintendents,” in the second sentence after the word “limitation,” in paragraph 13.01B.1.

SC-13.01 Delete paragraph 13.01B.5.c in its entirety and replace with the following:

13.01B.5.c The fair rental and operating cost of all machinery and equipment used on the extra work for the period of such use. The fair rental and operating cost for all machinery and equipment shall be based upon the most recent edition of “Rental Rate Bluebook for Construction Equipment” (the “Bluebook”), published by Equipment Watch (equipmentwatch.com), or a similar publication approved by Engineer and adjusted for regional and age adjustments as specified in the “Bluebook.” Rental periods corresponding to the overall period of use shall be used, except if a piece of equipment used on extra work is already on the job, or has previously been rented for a long period of time (months), then the long-term rental rate (monthly) shall be used in determining costs. The hourly rental rate for long-term rental equipment will be determined by the monthly rental rate divided by 176.

For the situation where equipment is on the job and available for use but cannot be used due to a delay or suspension of a portion or all of the Contract activities, a rental standby rate may be paid if the Contractor can conclusively demonstrate to the satisfaction of the Engineer that: (1) the equipment cannot be used elsewhere on the Project or demobilized and remobilized at a cost lower than the cost of standby time, (2) that the equipment cannot be put in use due to factors beyond the Contractor’s control, and (3) the equipment on standby would have been used as part of the Work that is suspended or put on hold. The standby rate will be calculated as no more than 50% of the rental rate as listed in the “Bluebook” and adjusted for regional and age adjustments. Lesser standby rates may apply if the Owner or Engineer can demonstrate that the Contractor’s standby cost is less than this rate. The standby rate will not include operating costs. A standby rate will not be paid for equipment which is being employed for portions of the Work which are still underway. A standby rate will also not be paid for equipment which is readily demobilized including construction equipment categorized as “shop tools” or “miscellaneous” in the “Bluebook.” Standby rates for durations of less than four hours will not be considered.
SC-13.01  Insert in the first sentence after the word “architects,” the word “superintendents,” in paragraph 13.01C.5

SC-13.01  Add the following new paragraph immediately after paragraph 13.01C.5:

13.01C.6  Costs of or rental of small tools; costs of or rental of buildings.

13.02C  Not used.

SC-13.03  Delete Paragraph 13.03B in its entirety and replace it with the following:

13.03B  Since subject to change upon determination of actual quantities, estimated quantities of items of Unit Price Work are not guaranteed and serve to facilitate comparison of Bids and to determine an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

ARTICLE 14 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.02  Insert after the word “notice” the words “(minimum 24 hours)” in paragraph 14.02A.

SC-14.03  Delete paragraph 14.03B in its entirety and replace with the following:

14.03B  *Engineer’s Authority:* At any time during the progress of the Work, Engineer shall have the authority to determine whether Work is defective, and reject defective Work, even though such work has been previously inspected and paid for.

SC-14.06  Add the following new paragraph immediately after paragraph 14.06A.

14.06B  If Owner stops work under Paragraph 14.06, Contractor shall not be entitled to an extension of Contract Time nor to an increase in Contract Price.

ARTICLE 15 - PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.01  Insert the following sentence at the end of paragraph 15.01B.1:

The Certificate of Insurance for stored materials must list Tighe & Bond and the City of Quincy as additional insureds.

SC-15.01  Delete paragraph 15.01C.1 in its entirety and insert the following in its place:

15.01C.1  Progress Payments will be made in accordance with Massachusetts General Law Chapter 30, Section 39G, which is referenced in Part II of these Supplementary Conditions.
SC-15.01 Delete paragraph 15.01D.1 in its entirety and insert the following in its place:

15.01D.1 Progress Payments will be made in accordance with Massachusetts General Law Chapter 30, Section 39G, which is referenced in Part II of these Supplementary Conditions.

SC-15.03 Delete the second sentence in Paragraph 15.03A in its entirety.

SC-15.03 Add the following new paragraph immediately after paragraph 15.03A:

15.03A.1 Substantial Completion shall be as defined in Chapter 30, Section 39G of the Massachusetts General Laws.

SC-15.03 Delete paragraph 15.03C in its entirety and insert the following in its place:

15.03C If, after consultation with Owner, Engineer considers and the Owner agrees that the Work is substantially complete, Engineer will prepare and deliver to Contractor, in a form approved by Owner, a Certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be included with the certificate a list of items to be completed or corrected before final payment.

SC-15.03 Delete the word “preliminary” from paragraph 15.03D.

SC-15.03 Add the following new paragraph immediately after paragraph 15.03F:

15.03G. The procedure for Substantial Completion shall be in accordance with Chapter 30, Section 39G of the Massachusetts General Laws.

SC-15.04 Add the following new paragraph immediately after paragraph 15.04A.3:

15.04A.4 Owner may at any time request Contractor in writing to permit Owner to take over operation of any part of the Work although it is not substantially complete. 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 to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If Contractor does not object in writing to Owner and Engineer that such part of the Work is not ready for separate operation by Owner, Engineer will finalize the list of items to be completed or corrected and will deliver such lists to Owner and Contractor together with a written recommendation as to the division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, maintenance, utilities, insurance, warranties, and guarantees for that part of the Work which will become binding upon Owner and Contractor at the time when Owner takes over such operation (unless they shall have otherwise agreed in writing and so informed Engineer). During such operation and prior to Substantial Completion of such part of the Work, Owner shall allow Contractor
reasonable access to complete or correct items on said list and to complete other related Work.

Paragraph 15.04.A.4 shall be renumbered to 15.04.A.5

SC-15.06 Delete paragraph 15.06.D in its entirety and insert the following in its place:

D. **Payment Becomes Due:** Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, or other time period in accordance with applicable laws and regulations, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer’s recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION

SC-16.01 Delete paragraph 16.01.A in its entirety and insert the following in its place:

16.01.A Owner may order, at any time and without cause, suspension of the Work in accordance with Massachusetts General Law Chapter 30, Section 39O, which is referenced in Part II of the Supplementary Conditions.

SC- 16.02 Add the following new paragraph immediately after paragraph 16.02.A.4:

16.02.A.5 If Contractor abandons the Work, or sublets this Contract or any part thereof, without the previous written consent of Owner, or if the Contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 Add the following paragraph after paragraph 17.01:

17.02 Venue
   A. Any suit by either party arising under this Contract shall be brought only in the Superior Court in the county where the Project is located. The parties hereto waive any argument that this venue is improper or that the forum is inconvenient.

ARTICLE 18 - MISCELLANEOUS

SC-18.08 Add the following new paragraphs immediately after paragraph 18.08.

18.09 Wage Rates
   A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to the employment of labor, and to the schedule of minimum wage rates established in compliance with
laws shall be a part of these Contract Documents. Copies of the wage schedules are included in Part II of these Supplementary Conditions. If it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administering the laws mentioned above. Such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation.

B. The schedules of wages referred to above are minimum rates only, and Owner will not consider any claims for additional compensation made by Contractor because of payment by Contractor of any wage rate in excess of the applicable rate contained in these Contract Documents. All disputes in regard to the payment of wages in excess of those specified in the schedules shall be resolved by Contractor.

C. Per MGL Chapter 149, Section 27, Contractor shall comply with annual updates to the prevailing wage schedule which shall be effective on the anniversary date of the execution of the Contract.

D. The said schedules of wages shall continue to be the minimum rates to be paid during the life of this Agreement and a legible copy of said schedules shall be kept posted in a conspicuous place at the site of the work.

18.10 US EPA Phase II Storm Water Program

Comply with requirement of the US EPA Phase II Storm Water Program for Construction Activities Greater than 1 Acre.

PART II – FEDERAL AND STATE GOVERNMENT PROVISIONS

Federal and State Government Provisions referenced or included herein, have been selected from those to which specific references have been made elsewhere in the Contract Documents. Each and every other provision of law or clause required by law to be inserted in this Contract shall be deemed to be also inserted herein in accordance with paragraph 3.01.F of the Supplementary Conditions.

1.0 FEDERAL GOVERNMENT PROVISIONS

1.1 FmHA Compliance Statement

1.4 FmHA Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions

1.5 FmHA Certification for Contracts, Grants and Loans

1.6 FmHA Supplemental General Conditions EOCD

2.0 COMMONWEALTH OF MASSACHUSETTS PROVISIONS

2.1 The Owner and Contractor agree that the following Commonwealth of Massachusetts Provisions apply to the work to be performed under this Contract and that these provisions supersede any conflicting provisions of this Contract.
2.2 Massachusetts General Laws

2.3.1 Chapter 30, Section 39M

2.4 520 CMR 14.00 Excavation Trench Safety

2.5 State Wage Rates

2.6 Massachusetts Construction Grants Policy Memoranda

2.7 Conservation Commission Order of Conditions

END OF SECTION

J:\Q\Q0019 Quincy, MA Consultant Review Services\Q0019-010 Adams Shore Houghs Neck Seawall\SPEC\00\00800.docx
Attachments to Supplementary Conditions (00800)
Awarding Authority: City of Quincy

City/Town: QUINCY

Description of Work: Adams Shoe/Houghs Neck Seawall - Replace the existing seawall which includes the repair and reconstruction of the revetment along the existing seawall, public access to Adams Shore in Quincy MA.

Job Location: Adams Shoe/Houghs Neck

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
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### Apprenticeship Schedule

#### BOILERMAKER - Local 29

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### Notes:

- Apprentice to Journeyworker Ratio: 1:4

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### BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

**BRICKLAYERS LOCAL 3 (QUINCY)**

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**Notes:**
- Apprentice to Journeyworker Ratio: 1:5

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### 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"

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For apprentice rates see "Apprentice- LABORER"

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**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80

Step 1&2 $30.69/ 3&4 $36.59/ 5&6 $53.59/ 7&8 $59.55

Apprentice to Journeyworker Ratio: 1:5

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All Aspects of New Wood Frame Work
## Carpenter (Wood Frame) - Zone 2

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## Carpenter (Wood Frame) - Zone 2

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### Notes:
- % Indentured After 10/1/17: 45/45/55/55/70/70/80/80
- Step 1&2 $19.45/ 3&4 $26.96/ 5&6 $34.19/ 7&8 $36.95
- Apprentice to Journeyworker Ratio: 1:5

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## Cement Masonry/Plastering

**Bricklayers Local 3 (Quincy)**

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**Effective Date - 01/01/2020**

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**Notes:**

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

Apprentice to Journeyworker Ratio: 1:3

**CHAIN SAW OPERATOR**

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For apprentice rates see "Apprentice- LABORER"

**CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES**

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

**COMPRESSOR OPERATOR**

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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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**

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For apprentice rates see "Apprentice- LABORER"

### DEMO: BACKHOE/LOADER/HAMMER OPERATOR

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For apprentice rates see "Apprentice- LABORER"

### DEMO: BURNERS

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For apprentice rates see "Apprentice- LABORER"

### DEMO: CONCRETE CUTTER/SAWYER

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**Effective Date:** 03/01/2019

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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**

**Effective Date:**
- 01/01/2019: $59.47, $15.58, $17.51, $0.00, $92.56
- 01/01/2020: $61.42, $15.73, $18.41, $0.00, $95.56
- 01/01/2021: $63.47, $15.88, $19.31, $0.00, $98.66
- 01/01/2022: $65.62, $16.03, $20.21, $0.00, $101.86

**Effective Date:** 01/01/2019

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate  
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**Effective Date:** 01/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate  
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**Notes:**
- Steps 1-2 are 6 mos.; Steps 3-5 are 1 year
- Apprentice to Journeyworker Ratio: 1:1

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**Issue Date:** 07/15/2019  **Wage Request Number:** 20190715-050  **Page 11 of 41**
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*For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"*

| **FENCE & GUARD RAIL ERECTOR**<br> *LABORERS - ZONE 1* | 06/01/2019 | $39.40 | $7.85 | $15.85 | $0.00 | $63.10 |
| 12/01/2019 | $40.40 | $7.85 | $15.85 | $0.00 | $64.10 |
| 06/01/2020 | $41.39 | $7.85 | $15.85 | $0.00 | $65.09 |
| 12/01/2020 | $42.37 | $7.85 | $15.85 | $0.00 | $66.07 |
| 06/01/2021 | $43.39 | $7.85 | $15.85 | $0.00 | $67.09 |
| 12/01/2021 | $44.40 | $7.85 | $15.85 | $0.00 | $68.10 |

*For apprentice rates see "Apprentice- LABORER"*

| **FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY**<br> *OPERATING ENGINEERS LOCAL 4* | 05/01/2019 | $43.68 | $11.50 | $15.60 | $0.00 | $70.78 |
| 11/01/2019 | $44.68 | $11.50 | $15.60 | $0.00 | $71.78 |
| 05/01/2020 | $45.83 | $11.50 | $15.60 | $0.00 | $72.93 |
| 11/01/2020 | $46.83 | $11.50 | $15.60 | $0.00 | $73.93 |
| 05/01/2021 | $47.98 | $11.50 | $15.60 | $0.00 | $75.08 |
| 11/01/2021 | $48.98 | $11.50 | $15.60 | $0.00 | $76.08 |
| 05/01/2022 | $50.13 | $11.50 | $15.60 | $0.00 | $77.23 |

*For apprentice rates see "Apprentice- OPERATING ENGINEERS"*

| **FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY**<br> *OPERATING ENGINEERS LOCAL 4* | 05/01/2019 | $45.17 | $11.50 | $15.60 | $0.00 | $72.27 |
| 11/01/2019 | $46.18 | $11.50 | $15.60 | $0.00 | $73.28 |
| 05/01/2020 | $47.33 | $11.50 | $15.60 | $0.00 | $74.43 |
| 11/01/2020 | $48.34 | $11.50 | $15.60 | $0.00 | $75.44 |
| 05/01/2021 | $49.50 | $11.50 | $15.60 | $0.00 | $76.60 |
| 11/01/2021 | $50.51 | $11.50 | $15.60 | $0.00 | $77.61 |
| 05/01/2022 | $51.67 | $11.50 | $15.60 | $0.00 | $78.77 |

*For apprentice rates see "Apprentice- OPERATING ENGINEERS"*

| **FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY**<br> *OPERATING ENGINEERS LOCAL 4* | 05/01/2019 | $22.48 | $11.50 | $15.60 | $0.00 | $49.58 |
| 11/01/2019 | $23.07 | $11.50 | $15.60 | $0.00 | $50.17 |
| 05/01/2020 | $23.74 | $11.50 | $15.60 | $0.00 | $50.84 |
| 11/01/2020 | $24.33 | $11.50 | $15.60 | $0.00 | $51.43 |
| 05/01/2021 | $25.01 | $11.50 | $15.60 | $0.00 | $52.11 |
| 11/01/2021 | $25.61 | $11.50 | $15.60 | $0.00 | $52.71 |
| 05/01/2022 | $26.28 | $11.50 | $15.60 | $0.00 | $53.38 |

*For apprentice rates see "Apprentice- OPERATING ENGINEERS"*

| **FIRE ALARM INSTALLER**<br> *ELECTRICIANS LOCAL 103* | 03/01/2019 | $51.10 | $13.00 | $18.88 | $0.00 | $82.98 |

*For apprentice rates see "Apprentice- ELECTRICIAN"*

| **FIRE ALARM REPAIR / MAINTENANCE**<br> *COMMISSIONING ELECTRICIANS LOCAL 103* | 03/01/2019 | $38.33 | $13.00 | $16.82 | $0.00 | $68.15 |

*For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"*
### Classification:

- **FIREMAN (ASST. ENGINEER)**
  - Operating Engineers Local 4

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

### Classification:

- **FLAGGER & SIGNALER**
  - Laborers - Zone 1

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For apprentice rates see "Apprentice- LABORER"

### Classification:

- **FLOORCOVERER**
  - Floorcoverers Local 2168 Zone I

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**Notes:** Steps are 750 hrs.

- % After 09/1/17; 45/45/55/70/70/80/80 (1500hr Steps)
- Step 1&2 $30.55/ 3&4 $36.49/ 5&6 $53.33/ 7&8 $59.33

**Apprentice to Journeyworker Ratio:** 1:1

### Classification:

- **FORK LIFT/CHERRY PICKER**
  - Operating Engineers Local 4

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

### Classification:

- **GENERATOR/LIGHTING PLANT/HEATERS**
  - Operating Engineers Local 4

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)  
GLAZIERS LOCAL 35 (ZONE 2)

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**GLAZIER - Local 35 Zone 2**

**Apprentice - GLAZIER - Local 35 Zone 2**

**Effective Date - 07/01/2019**

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**Notes:**
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio: 1:1**

HOISTING ENGINEER/CRANES/GRADALLS  
OPERATING ENGINEERS LOCAL 4

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### Operating Engineers - Local 4

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**Notes:**

- Apprentice to Journeyworker Ratio: 1:6

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### 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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For apprentice rates see "Apprentice - Electrician"

### HVAC (Testing and Balancing - Air)

**Sheetmetal Workers Local 17 - A**

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For apprentice rates see "Apprentice- SHEET METAL WORKER"

| HVAC MECHANIC                        | 03/01/2019     | $53.19    | $10.95 | $19.74  | $0.00                     | $83.88     |
|                                      | 09/01/2019     | $54.69    | $10.95 | $19.74  | $0.00                     | $85.38     |
|                                      | 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                     | 06/01/2019     | $39.90    | $7.85  | $15.85  | $0.00                     | $63.60     |
|                                      | 12/01/2019     | $40.90    | $7.85  | $15.85  | $0.00                     | $64.60     |
|                                      | 06/01/2020     | $41.89    | $7.85  | $15.85  | $0.00                     | $65.59     |
|                                      | 12/01/2020     | $42.87    | $7.85  | $15.85  | $0.00                     | $66.57     |
|                                      | 06/01/2021     | $43.89    | $7.85  | $15.85  | $0.00                     | $67.59     |
|                                      | 12/01/2021     | $44.90    | $7.85  | $15.85  | $0.00                     | $68.60     |

For apprentice rates see "Apprentice- LABORER"

| INSULATOR (PIPES & TANKS)            | 09/01/2018     | $47.09    | $12.50 | $15.60  | $0.00                     | $75.19     |
|                                      | 09/01/2019     | $49.59    | $12.50 | $15.60  | $0.00                     | $77.69     |

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

| HYDRAULIC DRILLS                     | 06/01/2019     | $39.90    | $7.85  | $15.85  | $0.00                     | $63.60     |
|                                      | 12/01/2019     | $40.90    | $7.85  | $15.85  | $0.00                     | $64.60     |
|                                      | 06/01/2020     | $41.89    | $7.85  | $15.85  | $0.00                     | $65.59     |
|                                      | 12/01/2020     | $42.87    | $7.85  | $15.85  | $0.00                     | $66.57     |
|                                      | 06/01/2021     | $43.89    | $7.85  | $15.85  | $0.00                     | $67.59     |
|                                      | 12/01/2021     | $44.90    | $7.85  | $15.85  | $0.00                     | $68.60     |

For apprentice rates see "Apprentice- LABORER"

| INSULATOR (PIPES & TANKS)            | 09/01/2018     | $47.09    | $12.50 | $15.60  | $0.00                     | $75.19     |
|                                      | 09/01/2019     | $49.59    | $12.50 | $15.60  | $0.00                     | $77.69     |

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

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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                    | $78.16     |

| IRONWORKERS LOCAL 7 (BOSTON AREA)                              |                             |                      |        |        |                           |            |

Issue Date: 07/15/2019  Wage Request Number: 20190715-050  Page 16 of 41
### 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:**

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**Notes:**

Apprentice to Journeyworker Ratio: 1:5

LABORER: CARPENTER TENDER

LABORERS - ZONE 1

For apprentice rates see "Apprentice- LABORER"

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LABORER: CEMENT FINISHER TENDER

LABORERS - ZONE 1

For apprentice rates see "Apprentice- LABORER"

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LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER

LABORERS - ZONE 1

For apprentice rates see "Apprentice- LABORER"

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LABORER: MASON TENDER

LABORERS - ZONE 1

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For apprentice rates see "Apprentice- LABORER"

| LABORER: TREE REMOVER                      | 06/01/2019     | $39.15    | $7.85  | $15.85  | $0.00                     | $62.85     |
| LABORERS - ZONE 1                          | 12/01/2019     | $40.15    | $7.85  | $15.85  | $0.00                     | $63.85     |
|                                            | 06/01/2020     | $41.14    | $7.85  | $15.85  | $0.00                     | $64.84     |
|                                            | 12/01/2020     | $42.12    | $7.85  | $15.85  | $0.00                     | $65.82     |
|                                            | 06/01/2021     | $43.14    | $7.85  | $15.85  | $0.00                     | $66.84     |
|                                            | 12/01/2021     | $44.15    | $7.85  | $15.85  | $0.00                     | $67.85     |

This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"

| LASER BEAM OPERATOR                        | 06/01/2019     | $39.40    | $7.85  | $15.85  | $0.00                     | $63.10     |
| LABORERS - ZONE 1                          | 12/01/2019     | $40.40    | $7.85  | $15.85  | $0.00                     | $64.10     |
|                                            | 06/01/2020     | $41.39    | $7.85  | $15.85  | $0.00                     | $65.09     |
|                                            | 12/01/2020     | $42.37    | $7.85  | $15.85  | $0.00                     | $66.07     |
|                                            | 06/01/2021     | $43.39    | $7.85  | $15.85  | $0.00                     | $67.09     |
|                                            | 12/01/2021     | $44.40    | $7.85  | $15.85  | $0.00                     | $68.10     |

For apprentice rates see "Apprentice- LABORER"

| MARBLE & TILE FINISHERS                    | 02/01/2019     | $40.91    | $10.75 | $18.97  | $0.00                     | $70.63     |
| BRICKLAYERS LOCAL 3 - MARBLE & TILE       | 08/01/2019     | $41.49    | $10.75 | $19.61  | $0.00                     | $71.85     |
|                                            | 02/01/2020     | $42.00    | $10.75 | $19.61  | $0.00                     | $72.36     |
|                                            | 08/01/2020     | $43.08    | $10.75 | $19.76  | $0.00                     | $73.59     |
|                                            | 02/01/2021     | $43.59    | $10.75 | $19.76  | $0.00                     | $74.10     |
|                                            | 08/01/2021     | $44.71    | $10.75 | $19.92  | $0.00                     | $75.38     |
|                                            | 02/01/2022     | $45.18    | $10.75 | $19.92  | $0.00                     | $75.85     |
### Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile

**Effective Date:** 02/01/2019

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**Notes:**
- Apprentice to Journeyworker Ratio: 1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH  
BRICKLAYERS LOCAL 3 - MARBLE & TILE

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**Notes:**

Apprentice to Journeyworker Ratio: 1:5

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### 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**

### MORTAR MIXER

**LABORERS - ZONE 1**

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**For apprentice rates see "Apprentice- LABORER"**

### OILER (OTHER THAN TRUCK CRANES, GRADALLS)

**OPERATING ENGINEERS LOCAL 4**

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**For apprentice rates see "Apprentice- OPERATING ENGINEERS"**

### OILER (TRUCK CRANES, GRADALLS)

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**For apprentice rates see "Apprentice- OPERATING ENGINEERS"**

### OTHER POWER DRIVEN EQUIPMENT - CLASS II

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**For apprentice rates see "Apprentice- OPERATING ENGINEERS"**

### PAINTER (BRIDGES/TANKS)

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**Notes:**
- Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:** 1:1

### PAINTER (SIGN, PICTORIAL & DISPLAY)

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### Apprentice - PAINTER SIGN - Local 35 Zone 2

**Effective Date:** 06/01/2013

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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.*

PAINTERS LOCAL 35 - ZONE 2

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### Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New

#### Effective Date - 07/01/2019

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**Notes:**

- Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:** 1:1

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PAINTER (SPRAY OR SANDBLAST, REPAIN)

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#### Effective Date - 07/01/2019

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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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**PAINTER (TRAFFIC MARKINGS)**

*LABORERS - ZONE 1*

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**PAINTER / TAPER (BRUSH, NEW)***

*If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*

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**Issue Date:** 07/15/2019

**Wage Request Number:** 20190715-050
## Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

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**Notes:**
- Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:** 1:1

### PAINTER / TAPER (BRUSH, REPAINT)

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**Effective Date:** 01/01/2020

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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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For apprentice rates see "Apprentice- PILE DRIVER"

### PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)

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### PILE DRIVER

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**Effective Date:** 08/01/2018

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**Notes:**

Apprentice to Journeyworker Ratio: 1:5

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**PIPFITTER & STEAMFITTER**

**PIPEFITTERS LOCAL 537**

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### Apprentice - PIPEFITTER - Local 537

**Effective Date:** 03/01/2019

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**Effective Date:** 09/01/2019

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**Notes:**
- **1:3; 3:15; 1:10 thereafter** / Steps are 1 yr.

**Apprentice to Journeyworker Ratio:**

**PIPELAYER**

`LABORERS - ZONE 1`

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For apprentice rates see "Apprentice- LABORER"

**PLUMBERS & GASFITTERS**

`PLUMBERS & GASFITTERS LOCAL 12`

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### Apprentice - PLUMBER/GASFITTER - Local 12

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**Effective Date:** 09/01/2019

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**Notes:**
- **1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
- Step4 with lic$63.17, Step5 with lic$70.47

### Apprentice to Journeyworker Ratio:**

**PNEUMATIC CONTROLS (TEMP.)**

*PIPEFITTERS LOCAL 537*

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*For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"*

**PNEUMATIC DRILL/TOOL OPERATOR**

*LABORERS - ZONE 1*

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*For apprentice rates see "Apprentice- LABORER"*

**POWDERMAN & BLASTER**

*LABORERS - ZONE 1*

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*For apprentice rates see "Apprentice- LABORER"*
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Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate
--- | --- | --- | --- | --- | --- | ---
ROOFER (Inc. Roofer Waterproofing & Roofer Dampproofg) | 02/01/2019 | $43.36 | $11.50 | $15.90 | $0.00 | $70.76

**Apprentice - ROOFER - Local 33**

**Effective Date - 02/01/2019**

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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:**

ROOFER SLATE / TILE / PRECAST CONCRETE

| Effective Date - | 02/01/2019 | $43.61 | $11.50 | $15.90 | $0.00 | $71.01 |

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

**TEAMSTERS JOINT COUNCIL NO. 10 ZONE A**

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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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Notes:
Apprentice to Journeyworker Ratio: 1:1

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Notes:

- Apprentice to Journeyworker Ratio: 1:3

**TEST BORING DRILLER**
*LABORERS - FOUNDATION AND MARINE*

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For apprentice rates see "Apprentice- LABORER"

**TEST BORING DRILLER HELPER**
*LABORERS - FOUNDATION AND MARINE*

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For apprentice rates see "Apprentice- LABORER"

**TEST BORING LABORER**
*LABORERS - FOUNDATION AND MARINE*

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Issue Date: 07/15/2019       Wage Request Number: 20190715-050       Page 40 of 41
### Classification

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### 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, 3:3, 4:4, 5:5, 6:6, 7:7, 8:8, 9:9, 10:10, 11:11, 12:12, 13:13, 14:14, etc.

**** APP to JM; 1:1, 2:2, 3:3, 4:4, 5:5, 6:6, 7:7, 8:8, 9:9, 10:10, 11:11, 12:12, 13:13, 14:14, etc.
A. Massachusetts State Wage Rates
B. MassDEP Chapter 91 Waterways License

PERMIT TO BE INCLUDED UPON ISSUANCE
C. City of Quincy Order of Conditions
A. General Information

1. From: Quincy Conservation Commission
2. This issuance is for (check one):
   a. ❑ Order of Conditions  b. ❑ Amended Order of Conditions
3. To: Applicant:
   a. First Name
   b. Last Name
   c. Organization
   d. Mailing Address
   e. City/Town
   f. State
   g. Zip Code

4. Property Owner (if different from applicant):
   a. First Name
   b. Last Name
   c. Organization
   d. Mailing Address
   e. City/Town
   f. State
   g. Zip Code

5. Project Location:
   a. Street Address
   b. City/Town
   c. Assessors Map/Plat Number
   d. Parcel/Lot Number
   lat: 42.265d194m s, Long: -70.98d0134m s
A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):
   Norfolk
   a. County
   b. Certificate Number (if registered land)
   c. Book
   d. Page

7. Dates:
   a. Date Notice of Intent Filed
   b. Date Public Hearing Closed
   c. Date of Issuance

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):
   Adams Shore/Houghs Neck Seawall Repairs & Improvements
   a. Plan Title
   b. Prepared By
   c. Signed and Stamped by
   d. Final Revision Date
   e. Scale
   f. Additional Plan or Document Title
   g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

   Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

   d. ☐ Private Water Supply   e. ☐ Fisheries   f. ☐ Protection of Wildlife Habitat
   g. ☐ Groundwater Supply   h. ☐ Storm Damage Prevention i. ☐ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

   Approved subject to:

   a. ☑ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.
B. Findings (cont.)

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. A description of the performance standards which the proposed work cannot meet is attached to this Order.

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act’s interests, and a final Order of Conditions is issued. A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).

3. ☐ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) ___________________ a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

<table>
<thead>
<tr>
<th>Resource Area</th>
<th>Proposed Alteration</th>
<th>Permitted Alteration</th>
<th>Proposed Replacement</th>
<th>Permitted Replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. ☐ Bank</td>
<td>a. linear feet</td>
<td>b. linear feet</td>
<td>c. linear feet</td>
<td>d. linear feet</td>
</tr>
<tr>
<td>5. ☐ Bordering</td>
<td>a. square feet</td>
<td>b. square feet</td>
<td>c. square feet</td>
<td>d. square feet</td>
</tr>
<tr>
<td>Vegetated Wetland</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. ☐ Land Under</td>
<td>a. square feet</td>
<td>b. square feet</td>
<td>c. square feet</td>
<td>d. square feet</td>
</tr>
<tr>
<td>Waterbodies and Waterways</td>
<td>e. c/y dredged</td>
<td>f. c/y dredged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. ☐ Bordering Land</td>
<td>a. square feet</td>
<td>b. square feet</td>
<td>c. square feet</td>
<td>d. square feet</td>
</tr>
<tr>
<td>Subject to Flooding</td>
<td>e. cubic feet</td>
<td>f. cubic feet</td>
<td>g. cubic feet</td>
<td>h. cubic feet</td>
</tr>
<tr>
<td>Cubic Feet Flood Storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. ☐ Isolated Land</td>
<td>a. square feet</td>
<td>b. square feet</td>
<td>c. cubic feet</td>
<td>d. cubic feet</td>
</tr>
<tr>
<td>Subject to Flooding</td>
<td>e. cubic feet</td>
<td>f. cubic feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cubic Feet Flood Storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. ☐ Riverfront Area</td>
<td>a. total sq. feet</td>
<td>b. total sq. feet</td>
<td>c. square feet</td>
<td>d. square feet</td>
</tr>
<tr>
<td>Sq ft within 100 ft</td>
<td></td>
<td></td>
<td>e. square feet</td>
<td>f. square feet</td>
</tr>
<tr>
<td>Sq ft between 100-200 ft</td>
<td>c. square feet</td>
<td>d. square feet</td>
<td>e. square feet</td>
<td>f. square feet</td>
</tr>
<tr>
<td></td>
<td>g. square feet</td>
<td>h. square feet</td>
<td>i. square feet</td>
<td>j. square feet</td>
</tr>
</tbody>
</table>
B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

<table>
<thead>
<tr>
<th></th>
<th>Proposed Alteration</th>
<th>Permitted Alteration</th>
<th>Proposed Replacement</th>
<th>Permitted Replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Designated Port Areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Land Under the Ocean</td>
<td>a. square feet</td>
<td>b. square feet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. c/y dredged</td>
<td>d. c/y dredged</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Barrier Beaches</td>
<td>Indicate size under Coastal Beaches and/or Coastal Dunes below</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Coastal Beaches</td>
<td>171,620 a. square feet</td>
<td>171,620 b. square feet</td>
<td>cu yd</td>
</tr>
<tr>
<td></td>
<td>5,240 a. square feet</td>
<td>5,240 c. nourishment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Coastal Dunes</td>
<td>23,050 a. linear feet</td>
<td>23,050 b. linear feet</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Rocky Intertidal Shores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Salt Marshes</td>
<td>a. square feet</td>
<td>b. square feet</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Land Under Salt Ponds</td>
<td>a. square feet</td>
<td>b. square feet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. c/y dredged</td>
<td>d. c/y dredged</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Land Containing Shellfish</td>
<td>171,620 a. square feet</td>
<td>171,620 b. square feet</td>
<td>c. square feet</td>
</tr>
<tr>
<td>20</td>
<td>Fish Runs</td>
<td>Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>a. c/y dredged</td>
<td>b. c/y dredged</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Land Subject to Coastal Storm Flowage</td>
<td>228,580 a. square feet</td>
<td>228,580 b. square feet</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Riverfront Area</td>
<td>Sq ft within 100 ft</td>
<td>Sq ft between 100-200 ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. total sq. feet</td>
<td>b. total sq. feet</td>
<td>c. square feet</td>
<td>d. square feet</td>
</tr>
<tr>
<td></td>
<td>g. square feet</td>
<td>h. square feet</td>
<td>i. square feet</td>
<td>j. square feet</td>
</tr>
</tbody>
</table>
B. Findings (cont.)

23. ☐ Restoration/Enhancement **:
   a. square feet of BVW
   b. square feet of salt marsh

24. ☐ Stream Crossing(s):
   a. number of new stream crossings
   b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. The work is a maintenance dredging project as provided for in the Act; or
   b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
   c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.

5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).

6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on November 7, 2021 unless extended in writing by the Department.

7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
C. General Conditions Under Massachusetts Wetlands Protection Act

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry’s Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

   “Massachusetts Department of Environmental Protection” [or, “MassDEP”]

   “File Number 059-1415”

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

19. The work associated with this Order (the “Project”)
   (1) ☐ is subject to the Massachusetts Stormwater Standards
   (2) ☒ is NOT subject to the Massachusetts Stormwater Standards

If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
   i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
   ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
   iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;
iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;

v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

   i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

   ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.
C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:
   1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
   2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
   3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):


20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.
D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☑ Yes ☐ No

2. The Quincy Conservation Commission hereby finds (check one that applies):

   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

      1. Municipal Ordinance or Bylaw
      2. Citation

      Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

   b. ☑ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

      Quincy Wetlands Protection Act

      1. Municipal Ordinance or Bylaw
      2. Citation

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

   1. A copy of the Order of Conditions and Approved Plans shall be on-site during all operations.
   2. Prior to any activity on site, the Applicant shall inform the Commission of the Name and Contact information of the on-site Construction Supervisor as well as the start date of the project.
   3. Erosion and sediment control shall be maintained at all times and not removed until approved by the Commission.
   4. Comply with: comment letters from all City Departments; All DEP & Commission Requests...
E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance. Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

John T. Brennan
Tori LeBate
E.J. Iorio

Jeffrey Graeber
Maureen C. Glynn
Thomas Carroll
William Keener

by hand delivery on

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.
G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry’s Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Quincy
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Quincy
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Babcock St., & Sea St. to Chickatabot Rd. 059-1415
Project Location MassDEP File Number

Has been recorded at the Registry of Deeds of:

Norfolk
County

for: City of Quincy
Property Owner

and has been noted in the chain of title of the affected property in:

Book
Page

In accordance with the Order of Conditions issued on:

November 7, 2018
Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant
D. MassDEP 401 Water Quality Certification
December 17, 2018

Paul Costello  
City of Quincy Department of Public Works  
55 Sea Street  
Quincy, MA 02169

Re: 401 WATER QUALITY CERTIFICATION  
Application for BRP WW 07, Major project dredging

At: QUINCY Bay, QUINCY

401 WQC Transmittal No: X280912  
Wetlands File No:  
ACoE Application No:

Dear Mr. Costello

The Department has reviewed your application for Water Quality Certification (WQC) referenced above. In accordance with the provisions of Section 401 of the Federal Clean Water Act as amended (33 U.S.C. §1251 et seq.), MGL c.21, §§ 26-53, and 314 CMR 9.00, the Department has determined there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law.

The waters of Quincy Bay are designated in the Massachusetts Surface Water Quality Standards as Class SA. Such waters are designated "as excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation." Anti-degradation provisions of these Standards require that "existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."

Background: The City of Quincy encompasses about 27 miles of heavily developed coastline, almost half of which relies upon seawalls for the protection of residents and their homes, local infrastructure, utilities, and surrounding natural ecologies. The seawalls were constructed at various times between the 1930s and 1950s, and the portion located in the Houghs Neck neighborhood is in poor condition, and has suffered significant loss of backfill material due to large storm events. Beach access stairs exhibit concrete deterioration despite repairs done in 2013.
There are also at least 15 known outfalls in the Houghs Neck neighborhood and their conditions ranged from poor to good.

After the recent devastation caused by three northeasters in March 2018, emergency action was taken to temporarily reinforce coastal structures and prevent storm-related flooding. A project which provides more lasting resilience to the threat of severe weather patterns and sea level rise associated with climate change should be beneficial.

**Proposed project:** The proposed project entails reconstructing and strengthening of seawalls along Houghs Neck and Adams Shore by replacing the deteriorated precast concrete seawall units and cast-in-place leveling pads, increasing the wall height by two feet, resetting 30% of the revetment stone within existing footprints, and reconstructing outfall pipes within the project area.

Approximately 3,615 yd$^3$ of sediment will need to be dredged in support of reconstructing storm water outfall pipes and approximately 285 yd$^3$ for resetting the revetment stones. The total volume below the Mean High Tide (MHT) line is 6930 yd$^3$ which include the revetment stones. Associated tasks include removal of grout from voids in revetments, replacement of public access stairs, and slope stabilization with natural fiber blankets and erosion-control vegetation.

Conventional construction equipment such as an excavator will be used to dredge the sediment and remove the existing revetment. Dredging within the intertidal zone will be performed in the dry during daily low tides. As the times of these low tides change from day to day, the intertidal zone work hours will also vary and will be subject to periodic weather-related shut-downs.

The dredged material will be stockpiled within the work limit of the outfalls as depicted on C-507 through C-509. Upland areas adjacent to the outfalls – depicted on sheets C-107/C-108, C-123/C-124 and C-127 include proposed limits of laydown and staging areas in proximity to the outfalls that may be used for stockpiling.

**Sediment sampling data:** Four sediment samples were collected for gradation and chemical analysis. Results of the gradation showed 1.7 percent, 2.1 percent, 2.6 percent and 3.3 percent of sediment particles passing the No. 200 U.S. Standard Series Testing Sieve.

Chemical analysis detected the presence of several polycyclic aromatic hydrocarbons (PAHs), metals, and polychlorinated biphenyl congener BZ #138 in low concentrations, below the Reportable Concentration (RC) S-1 criteria of the Massachusetts Contingency Plan (MCP).

**Dredged Material Dewatering:** Based on the results of the gradation analysis, very little or no dewatering would be required given the sandy nature of the sediment at the working area. In addition, the dredging will be conducted in low tides.

**Beneficial Reuse of sediments:** The dredged material will be reused as backfill material for the trench of the outfall pipes. As an option, the dredged material may be disposed of at an offsite licensed facility (Tracy Adamski, personal communication).

**Rare Species and Rare Wildlife Habitat:** The site is not located within the Priority Habitats of Rare Species, Estimated Habitats of Rare Wildlife, and Certified Vernal Pools in accordance with the Massachusetts Natural Heritage Atlas, 14th Edition.
Division of Marine Fisheries (DMF): According to a letter dated June 18, 2018 from DMF to the Secretary of Energy and Environmental Affairs, time-of-year restriction for dredging for this project may be required.

Public Notice: The public notice of the 401 WQC application was published in the Patriot Ledger on July 10, 2018. The Department did not receive any comment during the 21-day public comment period, which ended on July 31, 2018.

Section 61 Findings: Pursuant to M.G.L. Chapter 30, Sections 61 to 62I (M.E.P.A.) this project was reviewed as EOEA No. 15861 and the Secretary's Certificate on the Environmental Notification Form, issued on July 6, 2018 determined that an Environmental Impact Report (EIR) was not required.

Therefore, based on information currently in the record, the Department grants a 401 Water Quality Certification for this project subject to the following conditions to maintain water quality, to minimize impact on waters and wetlands, and to ensure compliance with appropriate state law. The Department further certifies in accordance with 314 CMR 9.00 that there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law. Finally, the Department has determined that upon satisfying the conditions and mitigation requirements of this approval, the project provides a level of water quality necessary to protect existing uses and accordingly finds that the project to be implemented satisfies the Surface Water Quality Standards at 314 CMR 4.00.

1. The Contractor shall take all steps necessary to assure that the proposed activities will be conducted in a manner that will avoid violations of the anti-degradation provisions of the Massachusetts Surface Water Quality Standards that protect all waters, including wetlands.

2. Prior to the start of work or any portion of the work thereafter, the Department shall be notified of any change(s) in the proposed project or plans that may affect waters or wetlands. The Department will determine whether the change(s) require a revision to this Certification.

3. Dredging in accordance with this Certification may begin following the 21-day appeal period and once all other permits have been received.

4. Work in waters and wetlands shall conform to Part C - Description of Proposed Dredging Site, and plans/figures submitted in this application to the Department, 49 sheets prepared by Tighe & Bond, Inc.:

<table>
<thead>
<tr>
<th>Sheet No.</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-102</td>
<td>Key Plan</td>
<td>April 17, 2017</td>
</tr>
<tr>
<td>C-102 thru C-129</td>
<td>Design Plan &amp; Elevation View</td>
<td>May 11, 2018</td>
</tr>
<tr>
<td>C-130</td>
<td>Design Plan</td>
<td>May 11, 2018</td>
</tr>
<tr>
<td>C-501</td>
<td>Typical sections</td>
<td>May 11, 2018</td>
</tr>
<tr>
<td>C-502 thru C-506</td>
<td>Details</td>
<td>May 11, 2018</td>
</tr>
<tr>
<td>C-507 thru C509</td>
<td>Proposed Outfall Details</td>
<td>May 11, 2018</td>
</tr>
<tr>
<td>C-701 thru C707</td>
<td>Resource Area Impact Plans</td>
<td>May 11, 2018</td>
</tr>
</tbody>
</table>
The above plans are unsigned and un stamped. The Department shall be notified if there are modifications and or deletions of work as specified in the plans. Depending on the nature and the scope of any change, approval by the Department may be required.

5. The Department shall be notified, attention David Wong at 617-292-5893, one week prior to the start of in-water work so that Department staff may inspect the work for compliance with the terms and conditions of this Certification.

6. The applicant and its contractor shall allow agents of the Department to enter the project sites to verify compliance with the conditions of this Certification.

7. The Certification remains in effect for the same duration as the federal permit that requires it or five years from the date of issuance of this Certification whichever comes first.

8. Future maintenance dredging is not authorized under this Certification.

9. If the dredged material is to be disposed of at an upland facility, the Department shall be notified in writing of the name and location of the upland licensed facility accepting the dredged material for disposal or reuse as daily landfill cover material. If the licensed facility is located out of state, documentation shall be provided to the Department that the dredged material disposal/reuse has been approved and will be accepted by the receiving State in accordance with 314 CMR 9.07(13)(b). The dredged material shall not be transported to the facility without concurrence of the Department.

10. If the dredged material is to be disposed of at an upland facility, Material Shipping Record (MSR) shall be used to track the dredged material to the approved licensed upland facility. A fully executed copy of the MSR shall be provided to the Department within 30 days of final shipment to the reused location or facility.

11. If the dredged material is to be disposed of at an upland facility, Best Management Practices (BMPs) shall be implemented during transportation of the dredged material to the licensed receiving facility. At a minimum, when transported upon public roadways, all dredged material shall have no free liquid as determined by the Paint Filter Test or other suitably analogous methodology acceptable to the Department, and a tarpaulin or other means shall be used to cover the dredged material during transport.

12. Disposal of any volume of dredged material at any location in tidal waters is subject to approval by this Department and the Massachusetts Coastal Zone Management office.

13. Within 30 days of completion of the reconstruction of the seawall and revetment in Houghs Neck/Adams Shore, the applicant shall provide a set of construction photographs depicting trenching and filling activity to the Wetlands and Waterways Program in the Boston Office, attn: David Wong. The photographs shall be marked or labeled with the WQC transmittal number and wetlands file number of the project.
14. If time-of-year (TOY) restriction is recommended by the DMF, no dredging shall occur between February 15th and June 30th in order to protect spawning, larval and juvenile development of winter flounder.

15. The applicant, or its contractor, shall make every feasible effort to complete the project within the permitted timeframe. Should the applicant, or their contractor, fail to complete the project and wish to request an amendment to the Certification for incursion into the no-dredge period, the written request shall be received by the Department by February 1st. The following information shall be included in the request:

a. project location and transmittal number,
b. the date on which dredging started,
c. the number of days and hours per day the dredge operated,
d. expected daily average production rate and the actual daily average production rate,
e. an explanation of why the project failed to remain on schedule,
f. an account of efforts made to get the project back on schedule,
g. a plan depicting the areas that remain to be dredged,
h. the number of cubic yards that remain to be dredged,
i. an accurate estimate of the number of days required to complete the project,
j. an evaluation of the impact of continued dredging on the species of concern,
k. a description of any efforts that will be made to minimize the impacts of the project on the species of concern, and a realistic assessment of any societal/financial effects of a denial of permission to continue dredging.

The Department will share the information with other resource agencies and a decision to grant or deny the amendment shall be made by February 15th. Requests for amendment received after February 1st will be considered at the Department’s discretion.

16. No later than four weeks after issuance of the Permit, the applicant shall submit a notification procedure outlining the reporting process to the Department for incidents, relating to the dredging activities, impacting surrounding resource areas and habitats such as, but not limited to, observed dead or distressed fish or other aquatic organisms, observed oily sheen on surface water, sediment spill, turbidity plume beyond the deployed BMP’s, and barging or equipment accident/spill. If at any time during implementation of the project any incident creates environment impacts such as those listed above, all site related activities impacting the water shall cease until the source of the problem is identified and adequate mitigating measures employed to the satisfaction of the Department.

This certification does not relieve the applicant of the obligation to comply with other applicable state or federal statutes or regulations. Any changes made to the project as described in the previously submitted Notice of Intent, 401 Water Quality Certification application, or supplemental documents will require further notification to the Department.

Certain persons shall have a right to request an adjudicatory hearing concerning certifications by the Department when an application is required:

a. the applicant or property owner;
b. any person aggrieved by the decision who has submitted written comments during the public comment period;

c. any ten (10) persons of the Commonwealth pursuant to M.G.L. c.30A where a group member has submitted written comments during the public comment period; or

d. any governmental body or private organization with a mandate to protect the environment, which has submitted written comments during the public comment period.

Any person aggrieved, any ten (10) persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c.30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to the Department, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within twenty-one (21) days from the date of issuance of this Certificate, and addressed to:

Case Administrator  
Department of Environmental Protection  
One Winter Street, 2nd Floor  
Boston, MA 02108.

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands and Waterways Program at:

Department of Environmental Protection  
One Winter Street, 5th Floor  
Boston, MA 02108.

A Notice of Claim for Adjudicatory Hearing shall comply with the Department’s Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information pursuant to 314 CMR 9.10(3):

a. the 401 Certification Transmittal Number and DEP Wetlands Protection Act File Number;

b. the complete name of the applicant and address of the project;

c. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;

d. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of “aggrieved person” found at 314 CMR 9.02;

e. a clear and concise statement that an adjudicatory hearing is being requested;

f. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Certificate, including specifically the manner in which it is alleged to be inconsistent with the Department’s Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Certification; and

g. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Environmental
Management (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
Commonwealth Master Lockbox  
P.O. Box 4062  
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory-hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Failure to comply with this certification is grounds for enforcement, including civil and criminal penalties, under MGL c.21 §42, 314 CMR 9.00, MGL c. 21A §16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

If you have questions about this decision, please contact David Wong at 617-292-5893.

Sincerely,

Leaondon Langley  
Director  
Wetlands and Waterways Program

closure: Departmental Action Fee Transmittal Form

ecc: Barbara Newman, Regulatory/Enforcement Division, U.S. Army Corps of Engineers  
696 Virginia Road, Concord, MA 01742-2751  
Robert Boeri, CZM, 251 Causeway Street, Suite 800, Boston, MA 02114  
Jillian Carr, DMF, 30 Emerson Ave., Gloucester, MA 01930  
Phil DiPietro, NERO  
David Wong, Boston Office  
Tracy Adamski, Tighe & Bond Inc., 53 Southampton Road, Westfield, MA 01085

cc: Quincy Conservation Commission, 1305 Hancock Street, Quincy, MA 02169

KC/X280912
Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108 • Phone: 617-292-5751
Communication For Non-English Speaking Parties
310 CMR 1.03(5)(a)

1 English:
This document is important and should be translated immediately. If you need this document translated, please contact MassDEP’s Diversity Director at the telephone numbers listed below.

2 Español (Spanish):
Este documento es importante y debe ser traducido inmediatamente. Si necesita este documento traducido, por favor póngase en contacto con el Director de Diversidad MassDEP a los números de teléfono que aparecen más abajo.

3 Português (Portuguese):
Este documento é importante e deve ser traduzida imediatamente. Se você precisa deste documento traduzido, por favor, entre em contato com Diretor de Diversidade da MassDEP para os números de telefone listados abaixo.

4(a) 中文（傳統）(Chinese (Traditional)):
本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與MassDEP的多樣性總監聯繫。

4(b) 中文（簡體中文）(Chinese (Simplified)):
本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與MassDEP的多樣性總監聯繫。

5 Ayisyen (fransayi) (Haitian) (French Creole):
Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.

6 Việt (Vietnamese):
Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP da dang tài các số điện thoại được liệt kê dưới đây.

7 ឬម៉ូរ៉ាស៊ុង (Kmer (Cambodian)):
ប្រការប្រភេទជាតិអាកាសស្ថានធម្មតារបារាំងប្រទេសកម្ពុជាដែលប្រឈឺព្រៃង្រួញក្នុងប្រការប្រភេទរ៉ាស៊ុងស្ថានធម្មតារបារាំង MassDEP និងអនុវត្តឱ្យប្រពន្ធរាត្តិប្រភេទ។
8 Kriolu Kabuverdianu (Cape Verdean):
Es documento é importante e deve ser traduzido imediatamente. Se bo precisa des documento traduzido, por favor contacta Director de Diversidade na MassDEP's pa es numero indicó li d'boche.

9 Русский язык (Russian):
Этот документ является важным и должно быть переведено сразу. Если вам нужен этот документ переведенный, пожалуйста, свяжитесь с директором разнообразия MassDEP по адресу телефонных номеров, указанных ниже.

10 العربية (Arabic):
هذه الوثيقة الهامة وينبغي أن تترجم على الفور. إذا كنت بحاجة إلى هذه الوثيقة المترجمة، يرجى الاتصال على أرقام الهواتف المدرجة أدناه

11 한국어 (Korean):
이 문서는 중요하고 즉시 번역해야합니다. 당신이 번역이 문서가 필요하면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다

12 հայերեն (Armenian):
Այս փաստաթղթը նպաստում է դիմական քայլների անցկացումներին. Եթե զբաղվում եք այս փաստաթղթով իրականացնելու համար MassDEP համագործակցության շրջանակների հիմանդրման գրավելու համար.

13 فارسی (Persian):
این سند مهم است و باید فورا ترجمه شده است. اگر شما نیاز به این سند ترجمه شده، لطفا با ما تماس ت努خ مدیر MassDEP در شماره تلفن های ذکر شده در زیر.

14 Français (French):
Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, s'il vous plaît communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

15 Deutsch (German):
Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Wenn Sie dieses Dokument übersetzt benötigen, wenden Sie sich bitte Diversity Director MassDEP die in den unten aufgeführten Telefonnummern.
16 Ελληνικά (Greek):
Το έγγραφο αυτό είναι σημαντικό και θα πρέπει να μεταφραστούν αμέσως.
Αν χρειάζεστε αυτό το έγγραφο μεταφράζεται, παρακαλούμε επικοινωνήσετε Diversity Director MassDEP κατά τους αριθμούς τηλεφώνου που αναγράφεται πιο κάτω.

17 Italiano (Italian):
Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, si prega di contattare la diversità Direttore di MassDEP ai numeri di telefono elencati di seguito.

18 Język Polski (Polish):
Dokument ten jest ważny i powinien być natychmiast przetłumaczone. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.

19 हिन्दी (Hindi):
यह दस्तावेज़ महत्वपूर्ण है और पुराना अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विभाग निदेशक से संपर्क करें.
E. ACOE Authorization Under the MA General Permits

PERMIT TO BE INCLUDED UPON ISSUANCE
SECTION 01110
SUMMARY OF WORK

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes

1.  Work of the Contract is shown and described in Drawings and Project Manual entitled:

Adams Shore/ Houghs Neck Seawall
Repairs & Improvements
Quincy, MA

Tighe & Bond, Inc.
Consulting Engineers
Westfield, Massachusetts

2.  The Work includes the following major items:

a.  Replacing 7,780 LF of precast seawall with an in-kind replacement at an elevation 2-to 4 ft higher than existing and resetting revetment;

b.  Replacing in kind or upsizing outfalls throughout the project work site including installation of new check valves;

c.  New storm sewers, manholes, catch basins, pavement repairs, surface restoration and appurtenant work.

B.  Related Requirements

1.  Section 00800 - Supplementary Conditions

1.2  SUBMITTALS

A.  Submittals

1.  Submit copies of permits or approvals required for the Work, prior to initiating the Work, including but not limited to the City of Quincy DPW Road Opening Permit (Attached to the end of this Section).

2.  Submit one copy of the Traffic Management Plan for approval by Owner and Engineer, prior to initiating the Work. See Section 01550.

3.  Submit one copy of Sequencing Plan for approval by Owner and Engineer, prior to initiating the Work. See Section 01325.

4.  Submit one site usage plan according to Section 01140 for review and approval by Owner and Engineer prior to commencing the Work.

5.  Submit a site specific HASP according to Section 01350 prior to commencing Work.

6.  See Section 01330 for other submittals.

1.3  PROJECT/SITE CONDITIONS
A. Permits

1. Obtain the permits and approvals listed below:
   a. National Pollution Discharge Elimination System (NPDES) Stormwater Permit
   b. Permits and licenses of a temporary nature necessary to perform the Work.
   c. Permits for disposal of construction wastes including disposal of cleared and grubbed materials.
   d. Other permits or licenses required for the Contractor’s operations or required elsewhere in the Contract Documents and not included herein.

2. Comply with the permits and approvals listed below (Copies are provided in Section 00800):
   a. MassDEP Chapter 91 Waterways License
   b. City of Quincy Order of Conditions
   c. MassDEP 401 Water Quality Certificate
   d. ACOE Section 404 Category II Authorization
   e. CZM Federal Consistency Certification

3. Obtain required time extensions to permits obtained by the Contractor, if construction authorized by permits has not been completed by the expiration date noted on these permits.

4. Permits require that a representative of the permitting authority or the Owner be present on site during construction or given the opportunity to observe conditions prior to backfilling or otherwise proceeding with construction. Notify the Owner, Engineer, and the permitting authority prior to performing Work that is governed by the permit.

5. Obtain permits and approvals from appropriate jurisdictional agencies and property owners for use of premises not furnished by the Owner, and for all off-site areas.

6. Submit copies of permits prior to performance of Work authorized by permits.

B. Existing Conditions

1. Use of Premises and Off-site Work
   a. The Work shall occur on the Owner’s property and temporary easements obtained by the Owner within the limits of Work shown on the Drawings.
   b. Land owned by the Owner is available for staging and is shown on the Drawings.
   c. Obtain permits and approvals for use of any land and access thereto that is deemed necessary for the Work, where such land is not available for use by the Owner, including land for temporary construction facilities, access and egress, or for storage of materials. Confine apparatus and storage to such additional areas.
d. Obtain permits and written approvals from appropriate jurisdictional agencies for the use of premises not available for use by the Owner, including all offsite staging areas, borrow pits and waste areas. Submit copies of all permits and approvals to the Owner prior to using areas.

e. Provide for the disposal of waste materials off-site in accordance with all applicable laws.

f. Adhere to the limits of Work and the Traffic Control Plan submitted and approved as noted in Section 01550, to minimize obstruction to traffic and inconvenience to the Owner, general public, and residents in the vicinity of the Work, and to protect people and property. Keep fire hydrants on or adjacent to the Work accessible to fire fighting equipment at all times.

g. Make temporary provisions for the use of sidewalks and maintain functioning gutters, stormwater systems, drainage ditches, and culverts.

h. Maintain public access to businesses and residences including driveways and parking lots at all times during the Work.

PART 2 PRODUCTS

2.1 MATERIALS FURNISHED BY OWNER – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION
SECTION 01140

WORK RESTRICTIONS

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes

1.  Work Schedule
2.  Construction Constraints
3.  Vehicle Access
4.  Available Work Area
5.  Site Usage Plan

B.  Related Requirements

1.  Section 01310 - Coordination
2.  Section 01325 - Scheduling of Construction

1.2  SUBMITTALS

A.  Incorporate the requirements of this Section in the project schedule submitted under Section 01325.

B.  Action Submittals

1.  Submit site usage plan within 30 days of the Notice to Proceed.

1.3  WORK SCHEDULE

A.  Conduct the Work during daylight hours on Monday through Friday, and within the time between 7:00 a.m. and 5:00 p.m. No work is to be done on Owner’s holidays, Saturdays, Sundays or outside of the work hours described above, unless authorized by owner in writing for special circumstances

B.  Any Work associated with field activities shall not be allowed before March 15th and after November 15th without prior authorization by the Engineer.

C.  Cutting of paved surfaces, excavation within any paved roadway, or pavement resurfacing activities is not allowed from November 15th to April 1st.

PART 2  PRODUCTS – NOT USED

PART 3  EXECUTION

3.1  CONSTRUCTION CONSTRAINTS

A.  The following are constraints for the Work. Incorporate these constraints into the schedule required to be submitted under Section 01325.

1.  All components of the existing facility must remain in operation throughout construction of the new facility unless otherwise specified herein or in Section 01310.
2. Contractor shall provide shore protection equivalent to the existing seawall structure during the duration of the Work.

3. Contractor shall secure access agreements during construction in coordination with the Owner and Engineer for all private properties where work will take place prior to the start of work as specified in Section 01310.

4. Contractor shall limit the use of the premises for his/her Work to minimize disruption to private properties.

5. Contractor shall coordinate with Owner for debris removal hauling location at the DPW yard.

6. Security of all materials and equipment stored on the site by the Contractor and its subcontractors shall be the full responsibility of the Contractor.

7. If directed by the Owner or Engineer, move any stored items or equipment which interfere with operations of Owner or the public, at no cost to the Owner.

8. Obtain and pay for use of additional storage or work areas if needed to perform Work.

3.2 VEHICLE ACCESS

A. No vehicles will be permitted to travel over the existing beach, except where vehicle access and crossing locations have been approved via permits for Contractor access.

3.3 AVAILABLE WORK AREA

A. Limits of construction are defined on the Drawings. No work will be permitted to be performed outside these boundaries.

3.4 SITE USAGE PLAN

A. Locations of available staging areas are shown on the Drawings.

B. Submit a site usage plan showing all proposed staging areas, locations of all office and storage trailers, and material laydown areas. The site usage plan should be a drawing showing the proposed locations and shall include on-site traffic modifications and temporary utilities as may be applicable.

END OF SECTION
SECTION 01270
MEASUREMENT AND PAYMENT

PART 1  GENERAL

1.1  DIVISION 0 AND DIVISION 1 WORK INCIDENTAL TO THE CONTRACT PRICE

A. No separate measurement or payment will be made for Work called for in Division 0 or Division 1 of the Specifications, unless specifically covered under the Bid items listed below. All costs associated with this Work will be considered incidental to the Contract Bid price.

B. Division 2 through Division 10 Work will be measured and paid for at the Contractor’s unit Bid price cost as indicated on the Bid form. Those payable Work items, and related prices as Bid, will be the basis for all compensation to the Contractor for Work performed under this Contract. Work not specifically included as a Bid item, but which is required to properly and satisfactorily complete the Work is considered ancillary and incidental to the Bid item Work, and payment for such Work is considered to be included in the values as Bid for payable items. Compensation for all unit Bid price Work will be made based on the measured quantity of Work under the appropriate Bid items.

1.2  INITIAL AND ONGOING MOBILIZATION AND DEMOBILIZATION (ITEM 1)

A. Measurement

1. There will be no measurement for initial and ongoing mobilization and demobilization to the Site as this Work will be on a lump sum basis.

B. Payment

1. Payment of the lump sum Bid price will be paid in two equal installments. The first installment will occur at the time the first payment requisition is submitted after the Contractor has initiated full-time construction activity. Payment for the second installment will be included in the first payment request after Substantial Completion has been reached, all equipment has been removed from the Site, and all punchlist items addressed. In no case will the total of both installments exceed 5 percent of the base Bid price.

1.3  TRAFFIC CONTROL (ITEM 2)

A. Measurement

1. There will be no measurement for traffic control as this Work will be on a lump sum basis.

B. Payment

1. Payment of the lump sum Bid price will be full compensation for all labor, equipment and materials required for or incidental to the traffic control Work.

2. Payments will be made on a monthly basis as a percentage of the lump sum Bid and the amount of Work for that particular month.

1.4  UNIFORMED TRAFFIC POLICE (ITEM 3)

A. Measurement
1. Measurement for uniformed traffic police will be on an hourly basis using the Police Department invoices.

B. Payment
   1. Payment will be made upon receipt of a copy of the Police Department invoices and a copy of the Contractor’s check to the Police Department.
   2. The Police Department invoices shall include the officer’s name, date, location, hours worked, and wage rate.

1.5 REMOVAL OF EXISTING SEAWALL UNITS (ITEM 4)

A. Measurement
   1. Measurement for the existing seawall unit removal will be a count of the number of existing seawall units to be removed as measured in the field by the Engineer.

B. Payment
   1. Payment of the Bid price for the existing seawall removal will be full compensation for removal and proper off-site disposal of the existing seawall unit, and all labor, equipment and materials required for or incidental to the Work.

1.6 MISCELLANEOUS DEMOLITION AND CLEANUP (ITEM 5)

A. Measurement
   1. There will be no measurement for miscellaneous demolition and cleanup as this Work will be on a lump sum basis.

B. Payment
   1. Payment of the lump sum Bid price will be full compensation for removal of all stairs and patios over the seawall and furnishing all labor, equipment, materials, and proper off-site disposal required for or incidental to the miscellaneous demolition and cleanup Work.

1.7 4-FOOT CONCRETE SEAWALL INCREASE (ITEM 6)

A. Measurement
   1. Measurement for 4-foot concrete seawall increase will be a count of the number of concrete seawall units.

B. Payment
   1. Payment of the Bid price for the 4-foot concrete seawall increase will be full compensation for furnishing and installing the concrete seawall units, and all labor, equipment and materials required for or incidental to the Work.

1.8 2-FOOT CONCRETE SEAWALL INCREASE (ITEM 7)

A. Measurement
   1. Measurement for 2-foot concrete seawall increase will be a count of the number of concrete seawall units.

B. Payment
1. Payment of the Bid price for the 2-foot concrete seawall increase will be full compensation for furnishing and installing the concrete seawall units, and all labor, equipment and materials required for or incidental to the Work.

1.9 SOLID CONCRETE STAIRWAY (ITEM 8)

A. Measurement
   1. Measurement for solid concrete stairways will be a count of the number of solid concrete stairways.

B. Payment
   1. Payment of the Bid price for the solid concrete stairways will be full compensation for furnishing and installing the solid concrete stairways, and all labor, equipment and materials required for or incidental to the Work.

1.10 PROCESSED GRAVEL BORROW (ITEM 9)

A. Measurement
   1. Measurement for processed gravel borrow will be by the cubic yard.

B. Payment
   1. Payment of the Bid price for processed gravel borrow will be full compensation for furnishing, hauling, placing, spreading, and compacting, and include all labor, equipment and materials required for or incidental to the Work.

1.11 REMOVAL AND RESETTING OF COASTAL REVETMENT STONE (ITEM 10)

A. Measurement
   1. Measurement for removal and resetting of costal revetment stone will on a linear foot basis. The length of removal and resetting of costal revetment stone will be the actual approved length of removal and resetting of costal revetment stone by the Engineer.

B. Payment
   1. Payment of the Bid price for removal and resetting of costal revetment stone will be full compensation for all labor, equipment and materials required for or incidental to the Work.

1.12 ARMOR STONE (ITEM 11)

A. Measurement
   1. Measurement for armor stone will be on a per ton basis.

B. Payment
   1. Payment of the Bid price for armor stone will be full compensation for excavation, hauling, and placing the armor stone and all labor, equipment and materials required for or incidental to the Work.

1.13 CALCIUM CHLORIDE FOR DUST CONTROL (ITEM 12)

A. Measurement
1. Measurement for calcium chloride will be on a per ton basis limited to that which is used as approved by the Engineer.

B. Payment
1. Payment of the Bid price for calcium chloride will be full compensation for all labor, equipment and materials required for or incidental to the Work.

1.14 SILT SOCK (ITEM 13)

A. Measurement
1. Measurement for the silt sock will be on a per linear foot basis as measured in the field by the Engineer.

B. Payment
1. Payment of the Bid price for the silt sock will be full compensation for furnishing the silt sock, and all labor, equipment and materials required for or incidental to the Work.

1.15 CATCH BASIN SEDIMENTATION CONTROL (ITEM 14)

A. Measurement
1. Measurement for catch basin sedimentation control will be a count of the catch basins where sedimentation control measures are implemented as approved by the Engineer.

B. Payment
1. Payment of the Bid price for sedimentation control at each catch basin will be full compensation for installation, maintenance and removal of the catch basin sedimentation control, thorough cleaning of the catch basins after the controls are removed, and all labor, equipment and materials required for or incidental to the Work.

1.16 48-INCH PRECAST CONCRETE MANHOLE (ITEM 15)

A. Measurement
1. Measurement for the 48-inch precast concrete manhole will be on a per unit basis, as measured in the field by the Engineer.

B. Payment
1. Payment of the Bid price for the 48-inch precast concrete manhole will be full compensation for furnishing and the 48-inch precast concrete manhole, and all labor, equipment and materials required for or incidental to the Work.

1.17 60-INCH PRECAST CONCRETE MANHOLE (ITEM 16)

A. Measurement
1. Measurement for the 60-inch precast concrete manhole will be on a per unit basis, as measured in the field by the Engineer.

B. Payment
1. Payment of the Bid price for the 60-inch precast concrete manhole will be full compensation for furnishing and the 60-inch precast concrete manhole, and all labor, equipment and materials required for or incidental to the Work.

1.18 MANHOLE FRAME & COVER (ITEM 17)
   A. Measurement
      1. Measurement for the manhole frame & cover will be on a per unit basis as measured in the field by the Engineer.
   B. Payment
      1. Payment of the Bid price for the manhole frame & cover will be full compensation for furnishing the manhole frame & cover, and all labor, equipment and materials required for or incidental to the Work.

1.19 STORM DRAIN PIPE (ITEMS 18 A,C, E, G, I, K, M, N AND P)
   A. Measurement
      1. Measurement for the storm drain pipe will be on a per linear foot basis as measured in the field by the Engineer.
   B. Payment
      1. Payment of the Bid price for the storm drain pipe will be full compensation for furnishing the storm drain pipe, and all labor, equipment and materials required for or incidental to the Work.

1.20 FLEX VALVE (ITEMS 18 B, D, F, H, J, L, AND O)
   A. Measurement
      1. Measurement for the flex valve will be on a per unit basis, as measured in the field by the Engineer.
   B. Payment
      1. Payment of the Bid price for the flex valve will be full compensation for furnishing the valve, and all labor, equipment and materials required for or incidental to the Work.

1.21 OUTFALL PIPE SUPPORT (ITEMS 19)
   A. Measurement
      1. Measurement for the outfall pipe support will be on a per unit basis as measured in the field by the Engineer.
   B. Payment
      1. Payment of the Bid price for the outfall pipe support will be full compensation for furnishing the outfall pipe support, including but not limited to helical anchors, anchor extensions, straps, hardware, and all labor, equipment and materials required for or incidental to the Work.

1.22 REMOVAL OF EXISTING OUTFALL PIPE (ITEM 20)
   A. Measurement
1. Measurement for the removal of existing outfall pipe will be on a per linear foot basis as measured in the field by the Engineer.

B. Payment
1. Payment of the Bid price for removal of existing outfall pipe will be full compensation for removal and proper disposal of existing outfall pipe, and all labor, equipment and materials required for or incidental to the Work.

1.23 FINE GRADING & COMPACTION (ITEM 21)
A. Measurement
1. Measurement for fine grading and compacting sidewalk and parking lot sub-base areas will be on a square yard basis as measured in the field by the Engineer.

B. Payment
1. Payment of the Bid price for fine grading and compaction will be full compensation for fine grading and compaction the sub grade of the sidewalk and parking lot areas, and all labor, equipment and materials required for or incidental to the Work.

1.24 PERMANENT BITUMINOUS CONCRETE REPAIR (ITEM 22)
A. Measurement
1. Measurement for permanent bituminous concrete repair will be on a square yard basis as measured in the field by the Engineer.

B. Payment
1. Payment of the Bid price for permanent bituminous concrete repair will be full compensation for furnishing, hauling, placing, spreading, and compacting the bituminous concrete, and all labor, equipment and materials required for or incidental to the Work.

2. .

1.25 NON-WOVEN GEOTEXTILE FABRIC (GEOTEX 1601) (ITEM 23)
A. Measurement
1. Measurement for the geotextile fabric will be on a square yard basis as measured in the field by the Engineer.

B. Payment
1. Payment of the Bid price for the geotextile fabric will be full compensation for furnishing the geotextile fabric, and all labor, equipment and materials required for or incidental to the Work.

1.26 LOAM AND SEED (ITEM 24)
A. Measurement
1. Measurement for loam and seed will be on a square yard basis as measured in the field by the Engineer. The length of the repair will be the actual length of the trench loamed and seeded. The width will be limited to that shown on the Drawings or the actual width of repair, whichever is less.
2. Measurement for payment under this item will be for loam and seed Work as required for lawn restoration and/or for "lawn quality" restoration of disturbed areas, based on the limits shown on the Drawings.

3. Placement of vegetative cover is incidental to the Contractor's excavation and other Work on this project. No separate measurement or payment for this Work will be made under this contract.

B. Payment
   1. Payment of the Bid price for loam and seed will be full compensation for all labor, equipment, materials and grading required for or incidental to the Work. Loaming and seeding outside of the limits shown on the Drawings may be required but will not be paid for under this item.

1.27 PROJECT PLAQUE (ITEM 25)
A. Measurement
   1. Measurement for the project plaque will be on a per unit basis as measured in the field by the Engineer.

B. Payment
   1. Payment of the Bid price for the project plaque will be full compensation for furnishing the project plaque, and all labor, equipment and materials required for or incidental to the Work.

1.28 LANDSCAPING (ITEM 26)
A. Measurement
   1. There will be no measurement for landscaping. This item is an allowance for reimbursement to the Contractor.

B. Payment
   1. The Contractor will be reimbursed for the actual charges associated with landscaping disturbed areas in the work zone, based on the submitted invoices to be approved by the Engineer. Invoices shall include materials, date, location, hours worked, and wage rates.

1.29 PRE-CONSTRUCTION SURVEY PICTURES OF PARCELS/DECKS/PROPERTIES (ITEM 27)
A. Measurement
   1. Measurement for pre-construction survey pictures of parcels/decks/properties will be on a per unit basis submitted to the Engineer.

B. Payment
   1. Payment of the Bid price for pre-construction survey pictures of parcels/decks/properties will be full compensation for all labor, equipment and materials required for or incidental to the Work.

1.30 ASBUILT SURVEY (ITEM 28)
A. Measurement
1. There will be no measurement for asbuilt survey as this Work will be on a lump sum basis.

B. Payment
1. Payment of the lump sum Bid price will be full compensation for all labor, equipment and materials required for or incidental to asbuilt survey Work.

1.31 RECUREVE BLOCK PRECAST FORMS (ITEM 29)

A. Measurement
1. There will be no measurement for recurve block precast forms as this Work will be on a lump sum basis.

B. Payment
1. Payment of the lump sum Bid price will be full compensation for all labor, equipment and materials required for or incidental to recurve block precast forms Work.

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION - NOT USED

END OF SECTION
SECTION 01310
COORDINATION

PART 1  GENERAL

1.1 SUMMARY

A.  Section Includes
   1.  Project Management
   2.  Coordination
   3.  Project Meetings

B.  Related Requirements
   1.  Section 01140 - Work Restrictions
   2.  Section 01325 - Scheduling of Construction

C.  Related Work Not Included
   1.  Operation of existing facilities will be performed by the Owner unless otherwise specified. The Owner will assist in arranging operation of any existing facilities or equipment required by the Contractor to connect to existing facilities, and the Contractor shall not operate existing valves or equipment. Only the Owner will operate Owner valves.

1.2 SUBMITTALS

A.  Incorporate the requirements of this Section, as well as Work which may impact the existing system operation, or the operations of any adjacent utility, in the project schedule submitted under Section 01325.

B.  Informational Submittals
   1.  Submit to the affected utility company, the Owner, and the Engineer, in writing, all requests for temporary shutdowns of facilities or interruption of operations. No shutdowns of the water or sewer system or interruptions to existing operations will be permitted except as outlined in this Section. Submit requests at least 2 weeks prior to the beginning of the Work requiring shutdown or interruption. No shutdown shall occur without the approval of the utility company or the Owner.

   2.  At the pre-construction conference, supply to the Owner the cell phone number of a responsible person who may be contacted during off-hours for emergencies 24 hours a day, seven days a week.

   3.  Prepare a contact list of phone numbers, including cell phone numbers, and emails for all Project personnel and submit to the Engineer at the pre-construction conference. Include Contractor, Owner, Engineer, and City of Quincy personnel including police, fire, and ambulance.

   4.  Submit to the Owner and Engineer, in writing, all requests for valve operations at least 2 weeks prior to commencing operation.

1.3 PROJECT MANAGEMENT
A. Retain a full-time Superintendent, satisfactory to the Owner and Engineer. The Superintendent shall not be changed except with the consent of the Owner and Engineer. The Superintendent shall be in full charge of the Work.

B. Complete the Work in a continuous uninterrupted operation. Use sufficient personnel and adequate equipment to complete the Work within the Contract Time.

1.4 COORDINATION

A. Do not interfere with the operation of the existing facilities.

B. Perform all coordination necessary to complete connections to the existing services.

C. Coordinate with appropriate utility companies, as well as with the Owner, where the Work crosses or is adjacent to existing utilities.

1.5 PROJECT MEETINGS

A. Pre-Construction Conference

1. The Contractor shall be prepared to discuss the following subjects at the Pre-Construction Conference. Documentation for these items is required to be submitted within the time frames included in individual specification sections.

   a. Project scheduling
   b. Sequencing of critical path Work items
   c. Traffic Management Plan
   d. Shop Drawing procedures
   e. Project changes and clarification procedures
   f. Use of sites, access to Work areas, office and storage areas, security and temporary facilities
   g. Contractor safety plan and representative
   h. Progress payments and procedures
   i. Required documentation
   j. Project personnel contact list

B. Progress Meetings

1. Progress meetings will be held every 2 weeks and at other times as requested by the Owner or as required by the Progress of the Work.

2. The Contractor’s Superintendent shall attend all progress meetings.

3. At a minimum, progress meetings will review Work progress, schedule, Shop Drawing submission schedule, Applications for Payment, and other matters needing discussion and resolution.

4. Review the schedule with all parties to be affected by upcoming work.

5. Review the monthly construction report required under Section 01325.
PART 2  PRODUCTS - NOT USED

PART 3  EXECUTION

3.1  GENERAL

A.  Notify DIGSAFE at 1-888-344-7233 at least 72 hours prior to any digging, trenching, rock removal, demolition, borings, backfill, grading, landscaping, or any other earth moving operations.

3.2  COORDINATION WITH THE OWNER’S OPERATIONS

A.  Notify the Owner and Engineer, in writing, a minimum of 1 week in advance of commencing Work on site. Work on site shall not occur until all permits are obtained.

B.  Notify the Owner and Engineer, in writing, a minimum of 1 week before commencing any work which may affect the Owner’s operations.

C.  Perform all construction activities so as to avoid interference with operations of the facility and the work of others.

D.  Coordinate the following operations with the Owner and the Engineer:

   1. Operation of existing valves. The opening and closing of existing valves will be performed by the Owner.

   2. 

E.  The Owner has the authority to order the Work stopped. Any costs and/or delays associated with these work stoppages due to the Contractor's operation shall be borne by the Contractor.

3.3  SEQUENCE OF CONSTRUCTION

A.  Constructing the proposed improvements while maintaining existing structures will require a specific sequence of construction. The Contractor will be allowed reasonable flexibility in scheduling the construction activities. Provide a detailed construction schedule as required in Section 01325.

3.4  SHUTDOWNS

A.  Water and sewer service shutdowns as a result of construction activities are not permitted, unless otherwise noted in this Section. Existing water and sewer mains owned by other utilities shall not be shut down unless authorized by the appropriate utility company and the Owner. Notify water and sewer system customers regarding interruptions in service at least one week in advance. Coordinate with the Owner regarding scheduling such notifications. An existing main shall not be shut off for more than 6 hours.

B.  Rescheduling or reactivation of any temporary shutdowns may be required if an emergency occurs in the distribution system, such as a major pipeline break or fire.

C.  Test all pipelines, valves and appurtenances and place in operating condition before the final tie-ins are made to connect new equipment to the existing facility.

D.  Furnish all labor, materials, tools and equipment necessary to provide temporary light, ventilation, safety personnel and equipment, gas monitoring equipment, supports and braces necessary to perform the tie-in work in a safe and secure manner. Observe all safety regulations in force at the existing facilities.
3.5 COORDINATION WITH RESIDENTS/PRIVATE PROPERTY OWNERS

A. Engineer will provide Contractor with a map and a list of parcels that are owned by private properties in the Work location.

B. Attached to this Section please find a sample construction access agreement to be signed by the private property owner prior to commencement of work. No work on private property shall proceed without the signed access agreement. One copy of the agreement shall be furnished to Engineer and one to the Owner. Contractor shall be responsible for keeping all originals – to be furnished to Engineer at the end of the project or during project intervals – whatever is agreed upon during project Construction Conference.

C. Contractor will mail (two times) the attached access agreements, to include City cover letter and City envelope. First, will be noted as first notice, and the second (after a period of 15 days) the Contractor will mail a second notice (to the non-responsive properties only). After another 15 day period Contractor will hand deliver the access agreements to each property that has not returned the proper document.

D. If after, all attempts above are made and the private property owner has not responded, the Contractor will supply the Engineer/Owner a list of those properties so that additional attempts of enforcement will be made by the City.

E. Owner will supply Contractor with a list of mailing addresses.

F. Notify the Owner and Engineer, in writing, a minimum of 1 week before commencing any work which may affect the Owner’s operations.

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

Thomas P. Koch
Mayor

Alfred J. Grazioso
Commissioner

CITY OF QUINCY
LICENSE TO ENTER UPON PRIVATELY OWNED LAND

I (We), ______________________, owner(s) of the property located at _______________________, Quincy, Massachusetts.

Revere, Massachusetts, grant(s) to the City of Revere, its officials, employees, and agents permission to enter upon said property for the following purpose:

City of Quincy, Massachusetts
Adams Shore/Houghs Neck Seawall Rehabilitation

I (We) also understand and agree, as follows:

1. I (We) represent and warrant that (I am) (we are) the owners of said property.

2. I am (We are) granting said permission of my (our) own free will.

3. Prior to entering upon the land for purposes of the above referenced project the City of Quincy, or its officials, employees or agents, shall notify persons on the property, if any, that it is going to enter the property. Said notification may be given in person, by telephone or by letter at any time prior to said entry, including immediately prior thereto.

4. Permission is granted without waiving any right or claim for any damages caused by said entry.

Owner 1 Signature: ________________________________ Date: __________

Owner 2 Signature: ________________________________ Date: __________

Mailing Address if Different: ____________________________

Contact Phone Number: ________________________________

Email Address: ________________________________________
SECTION 01320
CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes
   1. Photographs taken at specified intervals before, during and after construction.

1.2 SUBMITTALS
A. Informational Submittals
   1. Submit electronic files of each photograph on a CD or USB flash drive.

PART 2 PRODUCTS

2.1 CONSTRUCTION PHOTOGRAPHS
A. Electronic files shall be in .jpg format labeled by Street Name and Parcel ID # if applicable.

PART 3 EXECUTION

3.1 PRE-CONSTRUCTION PHOTOGRAPHY
A. Prior to the commencement of any Work under this Contract, take a minimum of 2 photographs at each location at 100 foot intervals along the entire length of the project. The photographs will serve as a record of the original conditions where construction activities will occur.

B. The area to be photographed shall include, but not be limited to, the area within and adjacent to the proposed construction, including roadways, utilities, driveways, landscaping, trees, structures and buildings.

C. Provide a minimum of 12 preconstruction photographs, or more as required to document the preconstruction condition of the Site and adjacent properties.

3.2 PROGRESS PHOTOGRAPHY
A. Take construction photographs of active work areas at least every 2 weeks throughout the life of the Contract. The photographs shall be indicative of the work that is currently in progress. A minimum of 3 photographs shall be taken at each scheduled interval at each location where Work is in progress.

B. Take photographs of each building site after removal of foundations and building debris and prior to backfilling and grading. The photographs shall show the entire foundation area.

C. Take photographs of all utility abandonments.

D. Take photographs of all relocated utility connections.

3.3 POST-CONSTRUCTION PHOTOGRAPHY
A. Provide post construction photography after all Work has been completed at each location. The locations to be photographed and the number of photographs required shall be as specified in Paragraph 3.1 for the preconstruction photography.

END OF SECTION
SECTION 01325

SCHEDULING OF CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes
   1. Progress Schedule

B. Related Requirements
   1. Section 01140 - Work Restrictions
   2. Section 01310 - Coordination

1.2 REFERENCES

A. The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry, an Associated General Contractors (AGC) of America publication.

1.3 PROGRESS SCHEDULE

A. Network Analysis

B. Graphically show the order and interdependence of activities, sequence of Work, how the start of a given activity depends on completion of preceding activities, and how completion of an activity may restrain the start of subsequent activities.

C. The Work shall be planned by the Contractor and his Project field superintendent in coordination with all Subcontractors and Suppliers whose Work is shown on the Progress Schedule.

D. Include, at a minimum, the following activities on the Progress Schedule:
   1. Project mobilization
   2. Submittal and approval of Shop Drawings
   3. Procurement of equipment and critical materials
   4. Installation of equipment and critical materials
   5. Fabrication of special equipment and material, and its installation and testing
   6. Final inspecting and testing
   7. Punchlist
   8. Final cleanup
   9. Other activities that may be critical to the Progress Schedule
10. All activities of the Owner and the Engineer which affect progress and/or affect required dates for completion of the Work

E. Take into consideration Shop Drawing submittal and approval time, the delivery times of equipment and materials, Subcontractors' Work, availability and abilities of workmen, weather conditions, any restrictions in operations at the Work site, and all other items that may affect completion of the Work within the Contract Time.

F. The Progress Schedule shall reflect the requirements and constraints outlined in Section 01310, Coordination.

G. The Progress Schedule shall reflect Work restrictions outlined in Section 01140.

H. Show information in such detail that duration times of activities will range from one to 15 days. The selection and number of activities shall be subject to the approval of the Owner and Engineer.

I. The Progress Schedule should show preceding and following event numbers for each activity, description of each activity, and activity duration in calendar days.

J. Submit the Progress Schedule on maximum sheet size 30-inches high by the width required.

1.4 SUBMITTALS

A. Informational Submittals

1. Submit four prints of the preliminary Progress Schedule prepared in accordance with Article 2.05 of Section 00700 and the requirements of this section. Progress schedule must be submitted within 10 days after the Effective Date of the Agreement. Progress Schedule must be approved by the Owner and Engineer before the first progress payment will be made.

2. Revised analyses - Within 10 days after receipt of the review comments, submit four prints of the Progress Schedule revised in accordance with those comments.

3. Periodic reports - On the first progress meeting of each month, submit four prints of the updated Progress Schedule, as well as a report of construction activities in the prior month.

4. Before initiating the Work, submit an estimated monthly rate of Contractor payments for the project. If the payment schedule deviates from the original projection, submit a revised rate of expenditure schedule.

1.5 PERIODIC REPORTS

A. At the first scheduled progress meeting of each month, present four copies of a construction report which details the Work performed during the preceding period. The report shall include the following at a minimum:

1. Actual progress of Work. Update the Progress Schedule accordingly.

2. The Progress Schedule, or revised Progress Schedule, should show the portions of the Progress Schedule impacted by the Work progress.

3. Activities or portions of activities completed during the reporting period, and their total value as basis for Contractor's periodic request for payment.
Payment made will be based on the total value of such activities completed or partially completed after verification by the Engineer.

4. State the percentage of the Work actually completed and scheduled as of the report date, and the progress along the critical path in terms of days ahead of or behind the dates defined in the Progress Schedule.

5. If the Work is behind the dates set forth in the Progress Schedule, also report progress along other paths with negative slack.

6. Include a narrative which includes:
   a. A description of problem areas, anticipated and current
   b. Delaying factors and their impact
   c. An explanation of corrective actions taken or proposed

7. Show the date of latest revision.

PART 2 PRODUCTS – NOT USED
PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Action Submittals
2. Informational Submittals

1.2 DEFINITIONS

A. Action Submittals – includes written and graphic information submitted by Contractor that requires Engineer’s approval.

B. Informational Submittals – includes information submitted by Contractor that does not require Engineer’s approval. The Engineer will acknowledge receipt of such documents and provide comments when the submittals lack the detail required by the Contract Documents.

1.3 ACTION SUBMITTALS

A. Shop Drawings

1. Shop Drawings as defined in the General Conditions, and as specified in individual work sections include, but are not necessarily limited to, custom-prepared data such as fabrication and erection/installation drawings, schedule information, piece part drawings, actual shopwork manufacturing instructions, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certification, as applicable to the Work.

2. Shop Drawings shall be of standardized sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard size drawings shall be

a. 24-inches by 36-inches
b. 22-inches by 34-inches
c. 11-inches by 17-inches
d. 8.5-inches by 11-inches

3. Submit Shop Drawings at the proper time so as to prevent delays in delivery of materials. Coordinate submittals for related or interdependent equipment.

4. Advise the Engineer in writing of any deviations from the requirements of the Contract Documents.

5. Check all Shop Drawings regarding measurements, size of members, materials, and details to determine if they conform to the Contract Documents. Shop Drawings found to be inaccurate, not in compliance, or otherwise in error shall be returned to the Subcontractors or Suppliers for correction before submission.
to the Engineer. Drawings that are current shall be marked with the date, name, and approval stamp of the Contractor.

6. All details on Shop Drawings submitted for approval shall show clearly the relation of the various parts to the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the Shop Drawings before being submitted for approval.

7. Detailed installation drawings (sewers, equipment, piping, electrical conduits and controls, HVAC work, and plumbing, etc.) shall be drawn to scale and fully dimensioned.

8. No material or equipment shall be purchased or fabricated until the required Shop Drawings have been submitted and approved. Materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by the Shop Drawings.

9. Until the necessary approval has been given, do not proceed with any portion of the work, the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which approval is required.

10. If submitted equipment requires modifications to the structures, piping, layout, or other details shown on the Drawings, details of the proposed modifications must also be submitted for approval. If such equipment and modifications are approved, perform all Work necessary to make such modifications at no additional cost to the Owner.

B. Product Data: Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing, and printed product warranties, as applicable to the Work.

C. Samples and color selection charts: Provide sample, when requested by individual Specification to establish conformance with the Specifications, and as necessary to define color, texture and pattern selections available.

D. Product Substitutions: In accordance with Section 01630.

E. Operation and Maintenance Manuals: In accordance with Section 01770.

F. Schedule of Values: In accordance with Section 01295.

G. Site Usage Plan: In accordance with Section 01140.

1.4 INFORMATIONAL SUBMITTALS

A. Schedule of Submittals
1. Submit a preliminary Schedule of Submittals within 10 days of the Effective Date of the Agreement in accordance with Article 2.05 of Section 00700.

B. Schedule of Manufacturers and Suppliers
   1. Submit a schedule of manufacturers and Suppliers within 7 days after Notice to Proceed including the names and addresses of the manufacturers and Suppliers of materials and equipment to be incorporated into the Work.

C. Schedule of Major Products
   1. Submit a schedule of major products within 30 days after Notice to Proceed including a complete list of major products proposed for use, with specification section number, name of manufacturer, trade name, and model number of each product.

D. Product Listing and Manufacturers Qualifications
   1. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards. Specifically identify the products, the anticipated schedule for delivery and storage, and the estimated value thereof for materials which the Contractor intends to request approval for off-site storage.

E. Certificates of Compliance
   1. General:
      a. Submit sworn certificates from the manufacturer or material supplier that the materials and fabrications provided under the Specification section conform with the Contract Documents.
      b. Certificates shall be signed by an officer of the manufacturer’s corporation and witnessed by a Notary Public.
   2. Welding: Submit in accordance with individual Specification sections.
   3. Installer: Prepare written statements on manufacturer’s letterhead certifying that installer complies with requirements as specified in individual Specification sections.
   4. Material Test: Prepared by qualified testing agency, on testing agency’s standard form, indicating and interpreting test results of material for compliance with requirements.
   5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency, or when specified in individual Specification sections.

F. Application for Payment
   1. Submit applications for payment in accordance with Section 01270, Measurement and Payment or Section 01290, Application and Certificate for Payment.
2. Submit schedule of stored materials when requesting payment for materials not yet installed.

G. Construction Photography and Videography: Provide preconstruction, progress, and post-construction photography and videography in accordance with Sections 01320 and 01321.

H. Contract Closeout Submittals: In accordance with Section 01770.

I. Contractor Design Data

1. Written and graphic information
2. List of assumptions
3. List of performance and design criteria
4. Summary of loads or load diagram
5. Calculations
6. List of applicable codes and regulations
7. Name and version of software
8. Information requested in individual Specification section

J. Manufacturer’s Instructions: Written or published information that documents manufacturer’s recommendations, guidelines, and procedures in accordance with individual Specification sections.

K. Schedules - Submit construction progress schedules and schedule updates in accordance with Section 01325.

L. Statement of Qualifications: Submit evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty subcontractor, trade, specialist, consultant, installer, and other professionals.

M. Submittals Required by Laws, Regulations, and Governing Agencies

1. Submit promptly notifications, reports, certifications, payrolls, and other required information as may be required, directly to the applicable federal, state, or local governing agency or their representative.
2. Transmit to Engineer for Owner’s records, one copy of correspondence and transmittals (including enclosures and attachments) between Contractor and governing agency.

N. Test and Inspection Reports

1. Submit test and inspection reports as required by individual Specification sections.
2. Test and inspection reports shall contain signature of person responsible for test or report.
3. Reports shall include identification of product and Specification, project name, date and time of test, type of test, location, test results, corrective action
required if report indicates test is not in compliance with Contract Documents, interpretation of test results, and other information as required in individual Specification sections.

O. Equipment Data: Submit information on equipment to be used in the performance of the Work as required by individual Specification sections.

P. Testing and Start-up Data: Prepare and submit testing procedures proposed to perform testing required by individual Specification sections.

Q. Vendor Training Plan: At least two weeks prior to scheduling training of Owner’s personnel, submit lesson plans for vendor training in accordance with individual Specification section and manufacturer’s Operations and Maintenance Manuals.

R. Health & Safety Plans: When specified in individual Specification sections, prepare and submit a Health and Safety Plan modified or supplemented to include job-specific considerations.

S. Submittals stamped by another Professional Engineer: When specified in individual Specification sections, prepare and submit calculations and/or drawings stamped by a Professional Engineer licensed in the State where the work is being performed.

T. Coordination Drawings: When specified in individual Specification sections, prepare and submit drawings to show how multiple system and interdisciplinary work will be coordinated. Examples are conduit routing diagrams, duct layouts, utility coordination drawings, sprinkler plans etc.

U. Work Plans: When specified in individual Specification sections, prepare and submit copies of all work plans needed to demonstrate to the Owner that Contractor has adequately thought-out the means and methods of construction and their interface with existing facilities.

V. Erosion Control Plan: When specified in Contract Documents or required by local ordinances or regulations, prepare and submit copies of erosion control plans.

W. Traffic Control Plan: When specified in Contract Documents or required by local ordinances or regulations, prepare and submit copies of traffic control plans.

X. Shutdown Requests: Submit notification of any outages required (electrical, flow processes, etc.) as may be required to tie-in new work into existing facilities. Unless otherwise specified, provide outage requests a minimum of 7 days notice shall be provided.

Y. Equipment Data: When specified in other Specification sections, information on equipment used by the Contractor to complete the Work, such as compaction equipment and closed-circuit television inspection equipment.

1.5 PROCEDURES

A. Coordination

1. Prepare and submit documentation in advance of fabrication and product manufacturer, so that the installation will not be delayed, other related work can be properly coordinated, and there is adequate time for review and resubmission, if required.
2. Provide no less than 30 days for review of submittals from the time received by the Engineer. For submittals of major equipment, that require more than 30 days to review, due to complexity and detail or those requiring review by multiple engineering disciplines, Engineer will notify Contractor of the circumstances and identify the anticipated date when the submittal will be returned.

3. Re-submittals will be subject to same review time.

4. No extension of time will be authorized due to failure to provide approvable submittals sufficiently in advance of the Work.

B. Review Shop Drawings, product data, and samples prior to submission and verify and determine:
   1. Field measurements
   2. Conformance with the Contract Documents. Advise the Engineer in writing of any deviations from the requirements of the Contract Documents.
   3. Delete or strike out information that is not applicable to the Work.

C. Upload the electronic submittal files via Procore. Access to Procore will be provided by the Engineer. Files must be in .pdf format. The submittals will be returned in electronic .pdf format via Procore.

D. In addition to the electronic submission requirement, submit three hard copies of each submittal: two for Owner and one for Engineer’s construction observer.
   1. Samples – Provide one unless otherwise noted in the individual Specification section. Sample will be retained by Engineer in the field.

E. Numbering: Submissions shall be accompanied by a transmittal form referencing the project name and applicable Specification section. Submittals shall be numbered sequentially, with the applicable Specification section and a hyphen preceding the number. (e.g. Submittal number 11330-01) Resubmittals shall bear the same transmittal number with a sequential letter suffix commencing with "A". (e.g. Submittal number 11330-01A)

F. Provide a copy of the Submittal certification form (copy attached at the end of this section) which shall be attached to every copy of each Submittal as required under Article 7.16 A.2 of Section 00700. Apply the Contractor’s stamp and initials or signature certifying that the submission has been thoroughly reviewed for completeness, compliance with the Contract Documents, coordination with adjacent construction and dimensional compatibility. Items submitted without the stamp or that are incomplete will be returned by the Engineer for rework and resubmission.

G. Provide a copy of the P.E. certification form (copy attached at the end of this section) which shall be attached to every copy of each Submittal stamped by another Professional Engineer. Items submitted without the completed certification form will be returned by the Engineer for resubmission.

H. Distribute copies of reviewed submittals along with the Engineer’s transmittal to concerned parties with instructions to promptly report any inability to comply with the provisions or integrate the requirements with interfacing work.
I. Partial and Incomplete Submittals

1. Shop Drawings shall be submitted as a complete package by Specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials, and samples associated with each Specification section be included as a single submittal for the Engineer’s review.

2. Engineer will return entire submittals if preliminary review deems it incomplete including:
   a. Missing or incomplete Submittal certification form
   b. Insufficient number of copies
   c. Missing content

3. Partial submittals may be considered, at Engineer’s option, only when necessary to expedite the Project.

4. Partial submittals shall be clearly identified as such on the transmittal to identify missing components.

J. Submittals not required by the Specification will be returned without review or action code.

K. Resubmission

1. Make corrections and modifications required by the Engineer and resubmit until approved.

2. Clearly identify changes made to submittals and indicate other changes that have been made other than those requested by the Engineer.

3. A maximum of two re-submissions of each shop drawing will be reviewed, checked and commented upon without charge to the Contractor (total of 3 submittals). Any additional submissions which are required by the Engineer to fulfill the stipulations of the Contract Documents will be charged to the Contractor as described in paragraph 7.16.E.2 of Section 00700.

L. Distribution

1. Distribute approved Shop Drawings and approved product data to the Project Site and elsewhere as required to communicate the information to Suppliers, Subcontractors, and field personnel.

1.6 ENGINEER’S REVIEW

A. The Engineer will review submittals for design, general methods of construction and detailing. The Engineer’s review and approval of submittals shall not be construed as a complete check nor does it relieve the Contractor from responsibility for any departures or deviations from the requirements of the Contract Documents unless he has, in writing, called the Engineer’s attention to such deviations at the time of submission. It will not extend to means, methods, technique, sequences, or procedures of construction (except where specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto.
B. The Engineer’s review of the submittals shall not relieve the Contractor from the responsibility for proper fitting of the Work, or the responsibility of furnishing any work required by the Contract Documents which may not be indicated on the submittals. The Contractor shall be solely responsible for any quantities shown on the submittals.

C. If the Contractor considers any correction indicated on the submittals to constitute a change to the Contract Documents, the Contractor shall provide written notice to the Engineer at least 7 working days prior to release for manufacture.

D. When the submittals have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

E. Action submittals as defined in paragraph 1.2 will be reviewed and returned under one of the following codes:

1. Approved (Action Code 1) is assigned when there are no notations or comments on the submittal. Equipment or materials may be released for manufacture, provided that it complies with requirements of the Contract Documents.

2. Approved as Noted (Action Code 2) is assigned when there are notations or comments on the submittal, but the equipment or materials may still be released for manufacture. All notations and comments must be incorporated in the final product. Resubmission is not necessary.

3. Revise and Resubmit (Action Code 3) is assigned when there are notations and comments requiring a resubmittal of the package. Work cannot proceed until the submittal is revised and resubmitted for review.

4. Not Approved (Action Code 4) is assigned when the submittal contains non-specified items or does not meet the requirements of the Contract Documents. It may also be assigned when there is a significant amount of missing material required for the Engineer to perform a complete review. The entire package must be resubmitted, revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the Contract Documents.

F. Informational submittals as defined in paragraph 1.2 do not require approval by the Engineer. Such submittals will be returned under one of the following codes:

1. Receipt Acknowledged (Action Code 5) is assigned when the submittal is provided for documentation purposes and is acknowledged as received. Comments may be noted using this action code.

2. Revise and Resubmit (Action Code 6) is assigned when there are notations and comments requiring a resubmittal of the package.

END OF SECTION
SUBMITTAL CERTIFICATION FORM

PROJECT: _______________________________________________________________

ENGINEER: ___________________  ENGINEER’S PROJECT NO.: __________________

CONTRACTOR: ___________________  CONTRACTOR’S PROJECT NO.: __________________

TRANSMITTAL NO.: ___________________  SUBMITTAL NO.: __________________

SPECIFICATION NO.: ___________________  DRAWING NO.: __________________

DESCRIPTION: ___________________________________________________________

MANUFACTURER: _________________________________________________________

The above referenced submittal has been reviewed by the undersigned and I/we certify that the materials and/or equipment meets or exceeds the project specification requirements; that field measurements, dimensions, quantities, specified performance criteria, installation requirements, materials, catalog numbers and related materials have been verified; that all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the work has been determined and verified; that review includes all information related to the contractor’s sole responsibility for means, methods, techniques, sequences, and procedures of construction and safety; and item has been coordinated with the overall project with:

☐ NO DEVIATIONS

☐ A COMPLETE LIST OF DEVIATIONS AS FOLLOWS:

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

SUBMITTED BY: ___________________  DATE: __________________

GENERAL CONTRACTOR’S STAMP
P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a professional engineer registered in the Commonwealth of Massachusetts and that he/she has been employed by

__________________________________________________________

(Name of Contractor)

(Insert P.E. Responsibilities)

In accordance with Specification Section ____________________________ for the

__________________________________________________________

(Name of Project)

The undersigned further certifies that he/she has performed the said design in conformance with all applicable local, state and federal codes, rules and regulations; and, that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the

__________________________________________________________

(Insert Name of Owner)

or Owner’s representative within seven days following written request therefor by the Owner.

<table>
<thead>
<tr>
<th>P.E. Name</th>
<th>Contractor’s Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature</td>
<td>Signature</td>
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<tr>
<td>Title</td>
<td>Title</td>
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<td>Address</td>
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</tbody>
</table>
SAMPLE AMERICAN IRON AND STEEL CERTIFICATION

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 (______________)

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. ____________
2. ____________
3. ____________

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 01350
HEALTH & SAFETY PLAN

PART 1  GENERAL

1.1 SUMMARY

A. Section Includes

1. Furnish all labor, equipment and materials and perform all operations in connection with monitoring air quality, decontaminating equipment and providing worker health and safety protection for all Contractor personnel.

2. Develop a site specific Health and Safety Plan (HASP) specifically addressing the potential hazards that may be encountered. This plan shall meet all OSHA requirements.

3. Review the requirements and data presented and supplement the program with any additional measures deemed necessary to fully comply with regulatory requirements and adequately protect personnel on the site.

1.2 REFERENCES

A. OSHA Regulation 29 CFR 1910.120
B. OSHA Regulation 29 CFR 1926.62
C. Massachusetts Contingency Plan, 310 CMR 40

1.3 DEFINITIONS

A. Site Safety Official (SSO) - The individual located on a hazardous waste site who is responsible to the Contractor and has the authority and knowledge necessary to implement the site safety and health plan and verify compliance with applicable safety and health requirements.

B. Uncontrolled Hazardous Waste Site - An area identified as an uncontrolled hazardous waste site by a governmental body, whether Federal, state, local or other where an accumulation of hazardous substances creates a threat to the health and safety of individuals or the environment or both.

1.4 SUBMITTALS

A. Informational Submittals

1. Submit the following prior to commencing work.

a. Site-specific HASP including the Emergency Response Plan for review, including provisions for decontamination and a contingency plan for unforeseen emergencies. The Engineer’s review is only to determine if the HASP meets basic regulatory requirements and the minimum requirements of this section. The review will not determine the adequacy of the HASP to address all potential hazards, as that remains the sole responsibility of the Contractor.
b. Current certification of employee's health and safety training and certification of employee's baseline medical exam status.

c. Certification of additional required health and safety training for supervisors.

d. Qualifications and experience of the SSO for approval.

2. Submit minutes of safety meetings at periodic progress meetings.

1.5 CONTRACTOR’S RESPONSIBILITIES

A. The Contractor is solely responsible for the health and safety of workers employed by the Contractor, any subcontractor and anyone directly or indirectly employed by any of them.

B. Work under this contract is not being performed on an “Uncontrolled Hazardous Waste Site,” as defined in 29 CFR 1910.120 and Article 1.3 B, above. Develop and follow a site specific Health & Safety Plan (HASP) in accordance with the requirements of 29 CFR 1910.120 and paragraph 1.6.

C. Provide a full-time SSO regardless of whether or not the Work is at a defined Uncontrolled Hazardous Waste Site.

D. Pre-arrange emergency medical care services at a nearby hospital, including establishment of emergency routes of travel.

E. Conduct weekly safety meetings with all site personnel, documenting attendance and topics covered.

F. Train all workers assigned to areas where contaminated media are likely to be encountered in accordance with 29 CFR 1910.120.

G. In areas where contaminated media are likely to be encountered, monitor air quality in and around work area using appropriate air monitoring equipment, as indicated in Part 2. Record all readings and maintain record on site. Stop work and/or upgrade respiratory protection or personal protective equipment levels if action levels established in the HASP are exceeded. Ensure that degree and type of respiratory protection provided is consistent with the monitored concentrations and individual chemical parameters. Lawfully dispose of all contaminated clothing and equipment that cannot be decontaminated.

H. At all times, prevent oil or other hazardous substances from entering the ground, sewers, drainage areas and piping systems.

1.6 HEALTH & SAFETY PLAN (HASP) REQUIREMENTS

A. HASP shall comply with the requirements of 29 CFR 1910.120.

B. The following items shall be addressed in the HASP:

1. safety and health hazard assessment;

2. procedures for emergency medical treatment and first aid;

3. map indicating route to hospital for emergency medical care;

4. Lead Exposure Control Plan (29 CFR 1926.62);
5. equipment decontamination procedures;
6. air monitoring procedures and action levels;
7. personal protective equipment and decontamination;
8. physical hazard evaluation and abatement including:
   a. equipment operation;
   b. confined space entry;
   c. slips and falls;
   d. building collapse;
   e. falling debris;
   f. encountering unmarked utilities;
   g. cold and heat stress;
   h. hot work (cutting and welding);
   i. excavation entry;
9. training requirements;
10. recordkeeping requirements;
11. emergency response plan that includes:
   a. names of three (3) Emergency Response Contractors, experienced in the removal and disposal of oils and hazardous chemicals, that the Contractor intends to use in the event of an emergency;
   b. evacuation routes and procedures;
   c. emergency alerting and response procedures.
12. emergency response plan to comply with 29 CFR 1910.120(l)

1.7 CONTINGENCY MEASURES & NOTIFICATIONS

A. The potential for encountering hazardous buried objects or materials that could pose a threat to human health or the environment exists. In the event that potentially hazardous materials are encountered during the work under this contract, the responsibilities of the Contractor and the Engineer are described herein.

B. The procedures and protocols to be used by the SSO in defining materials that are potentially hazardous include screening with a photo-ionization detector, odor, visual appearance of a material, and obvious oil or chemical contaminated materials.

C. Upon encountering suspected hazardous buried objects or materials as described above, cover the excavation immediately if no imminent danger, as defined by the SSO, is present. If there is an imminent danger, as defined by the SSO, Evacuate the area immediately. The SSO shall then notify the Engineer and the Owner of the situation.
D. Establish, properly barricade, and mark the area as an exclusion zone under the direction of the SSO. The SSO shall establish the exclusion zone boundaries based upon air quality monitoring using a photo-ionization detector and other equipment as appropriate. The exclusion zone shall be established at a minimum 50-foot radius around the location where the potentially hazardous material is encountered. Work within the exclusion zone shall be discontinued until the hazardous condition has been remediated and testing indicates that a hazard does not exist. Other activities of the site, outside the limits of the exclusion zone shall continue. Ambient air quality monitoring shall be performed by the SSO to demonstrate that ambient air quality in other portions of the site is not adversely impacted by the exclusion zone condition.

E. Notify the Engineer and the Owner regarding the presence of potentially hazardous materials. The Owner may direct the Contractor to notify regulators and to obtain necessary regulatory approvals for remediation.

F. Mobilize the appropriate equipment and personnel to sample and test the hazardous material within the exclusion zone to determine the remedial action required, subject to the Engineer’s direction. The Contractor may be directed to remove and legally dispose of the material. Compensation for the removal and disposal of hazardous material will be as a Change in Work and Change in Contract Price in accordance with the General Conditions, if not covered under a specific bid item.

PART 2 PRODUCTS

2.1 AIR MONITORING EQUIPMENT

A. All air monitoring equipment shall remain the property of the Contractor.

B. Contractor is responsible for monitoring fugitive dust emissions in accordance with applicable local, state, and federal regulations. Equipment shall be sensitive to particulate matter less than 10 micrometer in size (PM-10) at a level of 100 micrograms per cubic meter (mcg/m³). Contractor will outline the dust monitoring program in their Health & Safety Plan.

C. All readings must be recorded and be available for State (DEP and DPH) personnel to review.

PART 3 EXECUTION - NOT USED

END OF SECTION
SECTION 01420

REFERENCES

PART 1  GENERAL

1.1  SUMMARY
   A.  Section Includes

1.2  GENERAL
   A.  Comply with the requirements of standards referenced in the Contract Documents.

1.3  ABBREVIATIONS
   A.  Abbreviations used in the Specifications are defined as follows:
       1.  AA – Aluminum Association
       2.  AABC – Associated Air Balance Council
       3.  AASHTO – American Association of State Highway and Transportation Officials
       4.  ACI - American Concrete Institute
       5.  ACOE - U.S. Army Corps of Engineers
       6.  ADA – Americans with Disabilities Act
       7.  ADC – Air Diffusion Council
       8.  AFBMA – Antifriction Bearing Manufacturers Association
       9.  AGA – American Gas Association
      10.  AGC – Associated General Contractors of America
      11.  AGMA - American Gear Manufacturer Association
      12.  AI – Asphalt Institute
      13.  AIA – American Institute of Architects
      14.  AISC – American Institute of Steel Construction
      15.  AISI - American Iron and Steel Institute
      16.  AITC - American Institute of Timber Construction
      17.  AMCA – Air Movement and Control Association
      18.  ANSI – American National Standards Institute
      19.  APA – American Plywood Association
      20.  API – American Petroleum Institute
      21.  ARI – Air Conditioning and Refrigeration Institute
22. ASCE – American Society of Civil Engineers
23. ASHRAE – American Society of Heating, Refrigeration and Air Conditioning Engineers
24. ASME – American Society of Mechanical Engineers
25. ASPA – American Sod Producers Association
26. ASTM – American Society for Testing and Materials
27. AWG – American Wire Gauge
28. AWI - Architectural Woodwork Institute
29. AWPA – American Wood Preservers’ Association
30. AWS – American Welding Society
31. AWWA – American Water Works Association
32. BIA – Brick Institute of America
33. CDA – Copper Development Association
34. CLFMI – Chain Link Fence Manufacturer’s Institute
35. CPM - Critical Path Method
36. CPVC – Chlorinated Polyvinyl Chloride
37. CRSI – Concrete Reinforcing Steel Institute
38. CI – Cast Iron
39. DEP - Massachusetts Department of Environmental Protection
40. DCAM - Division of Capital Asset Management
41. DHI – Door and Hardware Institute
42. DI – Ductile Iron
43. EJCDC – Engineers’ Joint Contract Documents Committee
44. EJMA – Expansion Joint Manufacturers Association
45. EPDM – Ethylene Propylene Diene Monomer
46. EPT – Electrical Plastic Tubing
47. EVT – Equiviscous Temperature
48. FGMA - Flat Glass Marketing Association
49. FM – Factory Mutual
50. FS – Federal Specifications
51. GA – Gypsum Association
52. GFCI – Ground Fault Circuit Intempter
53. GPR - Ground Penetrating Radar
54. GPS – Global Positioning System
55. HVAC – Heating, Ventilating and Air Conditioning
56. IBC – International Building Code
57. IBR – Institute of Boiler and Radiator Manufacturers
58. ICBO – International Conference of Building Officials
59. ICS – Industrial Control and Systems
60. IEEE – Institute of Electrical and Electronics Engineers
61. IMI – International Masonry Institute
62. ISA – Instrument Society of America
63. JIC – Joint Industrial Council
64. LCD – Liquid Crystal Display
65. MADEP – Massachusetts Department of Environmental Protection
66. MBMA – Metal Building Manufacturer’s Association
67. MEC – Massachusetts Electric Code
68. MFMA Maple Flooring Manufacturers Association
69. MGL – Massachusetts General Law
70. ML/SFA – Metal Lath/Steel Framing Association
71. MSDS – Material Safety Data Sheets
72. MSS – Manufacturer’s Standardization Society
73. NAAMM – National Association of Architectural Metal Manufacturers
74. NAVD – North American Vertical Datum
75. NCMA – National Concrete Masonry Association
76. NEBB – National Environmental Balancing Bureau
77. NEC – National Electrical Code
78. NECA – National Electrical Contractors Association
79. NEMA – National Electrical Manufacturers Association
80. NFPA – National Fire Protection Association
81. NRCA – National Roofing Contractors Association
82. NRS – Non-rising Stem
83. NSF – National Sanitation Foundation
84. NSWMA – National Solid Waste Management Association
85. NWMA – National Woodwork Manufacturers Association
86. O&M – Operation and Maintenance
87. OSHA – Occupational Safety and Health Administration
88. PCA – Portland Cement Association
89. PCI – Precast/Prestressed Concrete Institute
90. PDOP – Positional Dilution of Precision
91. PLC – Programmable Logic Controller
92. PS – Product Standard
93. PVC – Polyvinyl Chloride
94. QA/QC – Quality Assurance/Quality Control
95. RCP – Reinforced Concrete Pipe
96. RCSHSB – Red Cedar Shingle and Handsplit Shake Bureau
97. RIS – Redwood Inspection Service
98. RTU – Remote Telemetry Unit
99. SCADA – Supervisory Control and Data Acquisition
100. SDI – Steel Deck Institute
101. SSPC – The Society for Protective Coatings
102. TCA – Tile Council of America
103. UL – Underwriter’s Laboratories
104. UPS – Uninterruptable Power Supply
105. USCS – Unified Soil Classification System
106. USDA – United States Department of Agriculture
107. WCLIB – West Coast Lumber Inspection Bureau
108. WOG – Water, Oil, Gas
109. WWPA – Western Wood Products Association

END OF SECTION
SECTION 01450
QUALITY CONTROL

PART 1  GENERAL

1.1 SUMMARY

A. Section Includes
   1. Quality assurance and control of the Work
   2. Testing and inspection services
   3. Cooperation with Owner’s independent testing agency
   4. Product test reports
   5. Manufacturer's field service

B. Related Requirements
   1. Section 01451 - Independent Testing Services
   2. Testing requirements are described in various Sections of the Project Manual.

1.2 SUBMITTALS

A. Informational Submittals
   1. Product test reports

1.3 QUALITY ASSURANCE

A. Monitor quality control over Suppliers, products, services, site conditions, and workmanship to produce Work of specified quality.

B. Comply fully with manufacturer's instructions. Should these instructions conflict with the Specifications, request clarification from the Owner before proceeding.

C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or requirements indicate higher standards or more precise workmanship.

1.4 TESTING SERVICES FURNISHED BY CONTRACTOR

A. Furnish all testing services required for materials and equipment proposed to be used in the Work, and quality control tests made in the field including:
   1. Concrete materials and mix designs
   2. Concrete in place
   3. Modified proctor analyses for all borrow materials used on the Project
   4. Modified proctor analysis of all subgrade material to be compacted during surface preparation and fine grading and compaction work
   5. Sieve analyses for all borrow materials used on the Project
6. Soil structure and nutrient analyses for all loam and topsoil used on the Project
7. Compaction tests performed during trench backfilling and compaction, rough grading and site preparation, fine grading and compaction of roadway and sidewalk subgrades, and placement of roadway and sidewalk subbase materials
8. Design of asphalt mixtures
9. Asphalt in place
10. Field welded joints
11. All other tests and engineering data as required in the Contract Documents.

B. Testing agencies must meet the requirements of Section 01451.
C. An independent commercial testing laboratory, with current Massachusetts certification, shall perform all tests that require the services of a laboratory to determine compliance with the Contract Documents. Independent testing laboratory requirements are defined under Section 01451.

D. Secure and deliver the required number of samples to the laboratory as required by the Contract Documents.
E. Notify Owner and Engineer of time, location and material being sampled.
F. Schedule necessary testing laboratory services.
G. Furnish written reports of each test within 48 hours of completion of testing.
H. Notify the Engineer 48 hours prior to operations requiring inspections and laboratory testing services so the Engineer may witness testing. All failed test areas shall be re-worked and re-tested until passing results are obtained.
I. The Owner may hire its own independent testing laboratory for quality control tests made in the field or laboratory on materials and equipment during and after their incorporation in the Work. Cooperate with the Owner and independent testing laboratory and furnish samples of materials, design, mix, equipment, tools, storage, and assistance as requested.
J. Re-work all failed test areas until passing results are obtained. All re-tests required as a result of the Contractor’s failure to perform the work in accordance with the Contract Documents shall be at the Contractor’s expense.

1.5 CODE COMPLIANCE TESTING
A. Provide inspections and tests required by codes or ordinances, or by a legally constituted authority having jurisdiction over the Work.

1.6 PRODUCT TEST REPORTS
A. Submit 2 copies of product test reports where required by the Contract Documents.

1.7 SUPPLIERS’ FIELD SERVICE
A. Provide qualified field service and installation personnel from material and equipment Suppliers to observe site conditions, installation techniques, quality of workmanship, equipment start-up, adjustment, and performance test where required
by the Contract Documents. Observations are to be reported and incorporated in the Work procedures.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01451
INDEPENDENT TESTING SERVICES

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes

1.  Independent testing services including geotechnical, concrete, grout and mortar, and welding inspection and testing
2.  Testing laboratory services

B.  Related Requirements

1.  Section 01450 - Quality Control
2.  Section 02315 - Excavation, Backfill, Compaction and Dewatering
3.  Section 02320 - Borrow Material
4.  Section 02740 - Bituminous Concrete Pavement
5.  Section 03300 - Cast-in-Place Concrete

1.2  REFERENCES

A.  General

1.  ASTM E329 – Standard Specifications for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction

B.  Soil Testing

1.  American Association of State Highway and Transportation Officials (AASHTO)

C.  Concrete Testing

1.  Cement and Concrete Reference Laboratory (CCRL)

D.  Welding Inspection

1.  AWWA D-100-96 or latest version - AWWA Standard for Welded Steel Tanks for Water Storage
3.  AWS B5.1 - Specifications for the Qualifications of Welding Inspectors
4.  AWS B5.15 - Specifications for the Qualifications of Radiographic Interpreters
5.  AWS ARE - 6 Test Methods for Evaluating Welded Joints
6.  AWS ARE - 10 Monitoring and Control of Welding and Joining Processes

E.  Coating Inspection
1. National Association of Corrosion Engineers (NACE)
2. SSPC – The Society for Protective Coatings

F. Masonry Inspection
1. ACI 530-02/ASCE 5-02 TMS 402-02 – Building Code Requirements for Masonry Structures
2. ACI 530.1-02/ASCE 6-02 TMS 602 – Specifications for Masonry Structures

1.3 SUBMITTALS
A. Informational Submittals
1. Qualifications, experience, and certifications of each proposed testing service
2. Certificate of calibration for testing equipment
3. Inspection and test reports

1.4 QUALITY ASSURANCE
A. General
1. Comply with the requirements of Section 01450, Quality Control, for testing and inspection requirements.
2. Testing services shall have the following general qualifications:
   a. Minimum five years as a firm with the type of testing specified.
   b. Ability to provide timely field testing services to minimize the impact of the testing requirements on construction progress.
   c. Certification to perform the specified services in the state in which the Work is to be performed.
3. Testing services proposed by the Contractor shall be subject to review by the Owner and Engineer. Any testing firm not acceptable to the Owner or Engineer will be rejected.

B. All testing agencies and laboratories must meet the requirements of ASTM E329.
C. Testing company shall have been in business for a minimum of the last 5 years providing applicable testing services.
D. Testing equipment shall be calibrated at maximum 12 month intervals by devices of accuracy traceable to National Bureau of Standards. Submit copy of certificate of calibration made by accredited calibration agency.
E. Testing shall be in accordance with applicable codes and regulations referenced in individual Specification Sections, and with selected standards of the American Society for Testing and Materials.
PART 3  EXECUTION

3.1  TESTING SERVICES – GENERAL

A. Provide testing services meeting the following:
   1. Provide qualified personnel promptly on notice.
   2. Perform inspections required by the Contract Documents. Sample and test materials and observe methods of construction to determine compliance with applicable standards and with the requirements of the Contract Documents.
   3. Take specimens and samples for testing, as required in individual Specification Sections. Provide all sampling equipment and deliver all specimens and Samples.
   4. Promptly notify the Owner and the Engineer of irregularities or deficiencies in the Work which are observed during performance of services.
   5. Promptly submit 2 copies of reports of inspections and tests to the Owner, and one copy to the Engineer including:
      a. Date issued
      b. Project title and number
      c. Testing laboratory or agency name and address
      d. Name and signature of inspector
      e. Date of inspection or sampling
      f. Record of temperature and weather
      g. Date of test
      h. Identification of product and Specification Section
      i. Location of Project
      j. Type of inspection or test
      k. Results of tests and observations regarding compliance with Contract Documents

B. Perform additional tests and services as required to assure compliance with the Contract Documents.

C. Obtain Owner’s approval of testing laboratory before performing testing services.

D. Coordinate with testing laboratory.

3.2  GEOTECHNICAL TESTING

A. Provide field testing and laboratory services for geotechnical soil testing required in Sections 02315 and 02320.

3.3  CONCRETE TESTING
A. Provide qualified independent field and laboratory testing service to perform the concrete testing required in Division 3 of the specifications.

B. The concrete testing laboratory shall have been inspected by the CCRL within the past five years.

C. The testing laboratory shall be licensed by the Commonwealth of Massachusetts.

D. Field testing technicians shall have a Grade 1 concrete field technician license as issued by the American Concrete Institute (ACI).

3.4 WELDING INSPECTION AND TESTING SERVICES

A. Provide qualified independent welding inspection services as required in Section 13200 of the specifications.

B. The welding inspector(s) shall be qualified under the requirements of AWS B5.1. Radiographic interpretation shall be performed by persons qualified under AWS B5.15.

3.5 COATING INSPECTIONS

A. The Owner will provide independent coating inspection services to inspect work described in Division 9 of the specifications.

3.6 COORDINATION WITH TESTING LABORATORY

A. Provide testing laboratory personnel access to site and manufacturer's operations.

B. Provide laboratory with representative samples of materials to be tested in required quantities.

C. Furnish labor and facilities:
   1. To provide access to Work to be tested.
   2. To facilitate inspections and tests.
   3. For laboratory's exclusive use for storage and curing of test samples.
   4. To provide forms for preparing concrete test beams and cylinders.

D. Notify laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.

E. Arrange with laboratory and pay for additional inspections, samples, and tests required for Contractor's convenience.

END OF SECTION
SECTION 01550
TRAFFIC REGULATION

PART 1  GENERAL

1.1  SUMMARY
A.  Section Includes
   1.  Traffic requirements
   2.  Traffic officers

1.2  PAYMENT PROCEDURES
   1.  Refer to 01290, Application and Certificate for Payment for procedures relating to payment for the Work.
   2.  Schedule, document and pay for traffic officers if they are required. Contractor will be reimbursed for payment of traffic officers only after invoices have been paid.
   3.  Owner will deduct from monies due Contractor for the following abnormal and unreasonable expenses:
      a.  Contractor caused delays in the prosecution of work that result in hiring traffic officers for more hours than would have been required during normal prosecution of work.
      b.  Reconstruction and/or reinstallation of any portions of the work, as a result of improper initial installation or defective material, for which traffic officers are required.
      c.  Traffic officers required at a site where Contractor is not working or outside of Contractor’s standard work day as a result of obstructions to traffic that remain in the traveled way.
      d.  All other incidents resulting from Contractor’s operations requiring traffic officers that would not normally be encountered during the progress of a well-organized project employing proper construction methods.
      e.  When traffic officers are requested for the convenience of Contractor and are not otherwise considered necessary to the work.

1.3  REFERENCES
A.  Manual of Uniform Traffic Control Devices, U.S. Department of Transportation

1.4  TRAFFIC REQUIREMENTS
A.  Arrange construction activity so that all streets shall remain open to at least one-way traffic during periods of actual work, and to unimpeded, two-way traffic during all other periods.

B.  Provide a traffic control plan to Engineer for approval showing traffic control signs, barrels, cones, traffic officers, including detour signs, meeting the approval of
Engineer, Owner and local Police Departments in accordance with the Manual of Uniform Traffic Control Devices.

C. Contractor shall review traffic control plan with Owner, and Engineer on a monthly basis to check if any updates are required for the plan and to account for other projects in the City.

D. Determine the location of each day’s work and implement the approved traffic control plan. If the plan requires the use of traffic officers, notify the Police Department.

E. Contractor shall have no claim of delay if he does not notify the Police Department of his scheduled location in time to arrange for traffic officers.

F. Hand deliver written notice to individual houses affected by driveway and side road closings or detours a minimum 24 hours in advance. A recommended parking area outside the work limits shall be included in the notice.

1.5 TRAFFIC OFFICERS

A. Uniformed traffic officers shall be required at locations deemed necessary by Owner, working in conjunction with local Police and Fire Departments, for the protection of the public.

B. The Police Chief or his representative, in consultation with Owner’s representative, will determine the number of officers required for the work.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION
SECTION 01560
TEMPORARY BARRIERS

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes
   1. Temporary Fencing System
B. Related Requirements
   1. Section 01720, Field Engineering

1.2 SUBMITTALS
A. Informational Submittals
   1. Submit information regarding the proposed temporary fencing system, including material of construction, plan layout, spacing of components, and anchorage.

1.3 TEMPORARY FENCING SYSTEM
A. Comply with the requirements of 520 CMR 14.00, and the local and/or regional permit required to be obtained as part of this regulation, for temporary fencing.
B. Provide temporary fencing system to prevent unauthorized access to active laydown and staging areas and areas under construction on the landward side of the seawall
C. Fencing system shall be installed such that the fence system cannot be moved by hand.
D. Provide temporary fencing system to prevent unauthorized access to active laydown and staging areas and areas under construction on the seaward side of the seawall or other areas where security fencing cannot be installed.
E. Do not move the fence system under any circumstances until the proposed pipeline is installed, the trench backfilled and compacted, and restoration activities complete.
F. The Contractor will retain ownership of the temporary fencing system after the completion of the Work.

1.4 SITE SECURITY
A. Provide 6-foot high chain link temporary fencing system to prevent unauthorized access to construction areas. The location of the temporary fence is shown on the drawings.
B. Do not move the fence system under any circumstances until the construction activities are complete.
C. Remove the temporary fencing system after the completion of the Work.

PART 2 PRODUCTS

2.1 MATERIALS

A. Temporary fencing shall be orange, 48” high and manufactured from high density polyethylene with 4” x 1” mesh size.

B. Temporary fencing material shall meet the following requirements within +/- 5%:

1. Machine Direction Breaking Load: 1210 lbs/ft
3. Machine Direction Breaking Elongation: 33%
4. Machine Direction Yield Point Elongation: 13%
5. Tensile Breaking Load: 340 lbs/ft
6. Tensile Yield Strength: 440 lbs/ft
7. Tensile Breaking Elongation: 21%
8. Tensile Yield Point Elongation: 8%

C. Site security fencing shall be a 6 foot high chain link fence supported by steel posts a minimum of 8 feet on center. Fence shall conform to the following requirements:

1. Posts, Rails, and Framework
   a. All pipes shall be galvanized cold-formed steel conforming to ASTM Designation A120, Schedule 40 latest requirements, and galvanized in conformance with ASTM A123 latest requirements.
   b. Member sizes for 6 foot fence are as follows:

<table>
<thead>
<tr>
<th>Nominal Size</th>
<th>O.D.</th>
<th>Weight/Lin. Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal, corner posts 3 in.</td>
<td>2.875</td>
<td>5.79 lbs.</td>
</tr>
<tr>
<td>Line posts 2-1/2 in.</td>
<td>2.375</td>
<td>3.65 lbs.</td>
</tr>
</tbody>
</table>

2. Fence Fabric: The fabric shall be woven aluminum-coated steel chain link conforming to ASTM Designation A491 in its entirety. The fabric shall be 9 gauge, 2 inch square mesh.

PART 3 EXECUTION

3.1 FENCE INSTALLATION

A. Install fence according to manufacturer’s instructions at locations specified in Paragraphs 1.3 above.
END OF SECTION

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SECTION 01570

TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Dust control
2. Drainage and erosion control
3. Haybales and siltation fence
4. Mulch
5. Sediment trapping devices
6. Temporary diversion piping

B. Related Requirements

1. Section 02920 – Lawns and Grasses

1.2 SUBMITTALS

A. Informational Submittals

1. Storm Water Pollution Prevention Plan (SWPPP)
2. Materials proposed for use in dust control
3. Haybales, siltation fence, mulch, and sediment trapping devices

1.3 COMPLIANCE WITH EPA PHASE II STORMWATER PROGRAM

A. The Project involves an overall disturbance of greater than 1 acre and is therefore under jurisdiction of the Environmental Protection Agency’s (EPA) Phase II Stormwater Program. Comply with the program in accordance with EPA’s 2017 Construction General Permit including the following:

1. Prepare a SWPPP and maintain a copy on site throughout construction period. The SWPPP must be kept current and shall be amended according to the conditions described in the permit.

2. Submit a Notice of Intent (NOI) 14 days prior to commencement of earth disturbing work.

3. Post a sign or other notice of permit coverage.

4. Comply with SWPPP including control of stormwater and non-stormwater discharges through use of structural and non-structural best management practices, inspections, maintenance and corrective action activities, spill prevention and emergency response.

5. Submit a Notice of Termination following completion of all construction activities and having met permit requirements for termination.
PART 2    PRODUCTS

2.1 HAYBALES
A. Haybales required for siltation control shall be wire tied bales of the type normally used for siltation or erosion control or construction projects.

2.2 FILTER FABRIC
A. Filter fabric siltation fencing shall be a woven filter fabric having a weight of at least 2.5 ounces per square yard, a thickness of at least 17 mils, a coefficient of permeability of not less than 0.0009 centimeters per second and allows a water flow rate of a minimum 40 gallons per minute per square yard. The material shall have a high sediment filtration capacity, high slurry flow and minimum clogging characteristics. The material shall be equal to FW-300 as manufactured by Mirafi, Inc., Charlotte, North Carolina; Amoco 2130 by Nilex, Inc., Centennial, CO; MISF 180 by Mutual Industries, PA; or equal.

2.3 SEDIMENT TRAPPING DEVICES
A. Sediment trapping devices shall be Siltsack®, Dandy Bag II®, or equal.

2.4 MULCH
A. Hay mulch shall consist of mowed cured grass, clover, alfalfa, timothy, oats, or wheat. No salt hay shall be used.

PART 3    EXECUTION

3.1 DUST CONTROL
A. Control dust during the Work. Use a mechanical street sweeper daily unless deemed unnecessary by the Owner or Engineer.
B. Prevent dust from becoming a nuisance or hazard. During construction, excavated material and open or stripped areas are to be policed and controlled to prevent spreading of the material.
C. Control dust during the work on-site using calcium chloride and/or water.
D. During the Work on-site, all paved road and driveway surfaces shall be scraped and broomed free of excavated materials on a daily basis. The surfaces shall be hosed down or otherwise treated to eliminate active or potential dust conditions and the natural road or wearing surface shall be exposed.
E. Ensure that the existing equipment, facilities, and occupied space adjacent to or nearby areas of the work do not come in contact with dust or debris as a result of concrete demolition, excavation or surface preparation for coatings.
F. Control dust by the construction of temporary wooden frame/polyethylene sheeting walls and covering enclosures separating adjacent or nearby areas and equipment from the Work site.
G. Submit for approval materials proposed for use for dust control, prior to start of the Work.

3.2 DRAINAGE AND EROSION CONTROL
A. Control erosion and siltation during the construction through mulching, haybales, siltation fencing, diversion and control of storm water run-off, ponding areas and similar methods.

B. Provide and maintain sediment trapping systems.

C. Discharge surface runoff from any disturbances to the site into silt containment basins. Utilize siltation prevention measures including haybale and geotextile fences before discharge to drainage systems.

D. Control surface waters within the construction area through the use of temporary culverts.

E. Install sediment trapping devices in catch basins located in existing paved areas with sediment trapping devices to minimize the transport of sediment through the subsurface stormwater collection system.

3.3 HAYBALES AND SILTATION FENCE

A. Place and maintain both haybales and a staked filter fabric siltation fence along the entire length of the proposed construction where shown on the Drawings or required by permit.

B. Install haybales by anchoring bales butted together to existing ground with at least 2 stakes per bale. The stake shall be a minimum of 1-inch square cross section and shall be long enough to penetrate 12 inches into the ground. Replace deteriorated haybales. Remove and dispose of the haybales following the successful growth of vegetation in the areas disturbed by the construction. Haybales shall not be removed until their removal is approved by the Engineer.

C. Install a filter fabric siltation fence in addition to the staked haybales, prior to construction and remove after full surface restoration has been achieved. Install the siltation fence parallel and immediately adjacent to the haybales as shown on the Drawings. Install as follows:

1. Hand shovel excavate a small trench on the upstream side of the desired fence line location.

2. Unroll the siltation fence system, position the post in the back of the trench (downhill side), and hammer the post at least 1½ feet into the ground.

3. Lay the bottom 6 inches of the fabric into the trench to prevent undermining by storm water run-off.

4. Backfill the trench and compact.

D. SILT SOCKS

1. Place and maintain silt socks along the entire length of the proposed construction between the area of construction and the ocean where shown on the Drawings or required by permit.

2. Install silt socks per manufacturer’s recommendations. Remove and dispose of the silt socks following the successful growth of vegetation in the areas disturbed by the construction. Silt socks shall not be removed until their removal is approved by the Engineer.
E. Perform work in accordance with City of Quincy, MA Conservation Commission Order of Conditions.

3.4 RESTORATION

A. Provide erosion control, seed and mulch and netting for surface restoration of areas disturbed during construction activities.

B. Provide temporary stabilization of disturbed areas that remain inactive greater than 14 consecutive days to minimize erosion. Methods to minimize erosion may include but are not limited to:
   1. Spreading straw and/or providing temporary planting stabilization.
   2. Installing jute netting.
   3. Preparing surfaces to increase the runoff flow path, reduce the runoff flow velocity, or create small storage pockets to retain surface flows. Methods of accomplishing this include using mechanical devices such as track equipment or sheep’s foot rollers.

C. Restore the ground surface in brush and/or woodland areas by machine spreading of existing stripped surface soils (loam and humus), liming, fertilizing, seeding and mulching, as well as installing jute netting where required by steep slopes.

D. Salvage existing loam and topsoil and stockpile this material for re-spreading where originally removed. On backfilling, grading shall be returned to preconstruction contours and the stockpile of loam shall be spread over areas disturbed during construction activities.

E. Place mulch on seeded areas. Use jute netting on areas having a slope greater than 3 horizontal to 1 vertical, to anchor the mulch until a satisfactory growth is obtained. If seeding is not possible because of the time of the year, apply mulch and netting to stabilize the area until such time as seed can be sown.

F. Provide grading, refertilizing, reseeding, remulching and/or netting to maintain the restored areas until the Work is accepted by the Owner.

G. Seed shall be as specified under Section 02920.

3.5 CLEANING

A. Remove any sediment that builds up around the haybales, silt socks, or catchbasins.

B. Clean sediment trapping devices periodically during the Work. Devices shall be cleaned on a weekly basis, or more frequently if the devices become clogged.

C. Clean catchbasins that collect sediment as a result of the Work.
SECTION 01582

PROJECT IDENTIFICATION

PART 1  GENERAL

1.1 SUMMARY
A. Section Includes
   1. Informational Signs
B. Related Requirements
   1. Section 01330, Submittal Procedures
   2. Section 01550, Traffic Regulation

1.2 SUBMITTALS
A. Action Submittals
   1. Information on paints to be used for items under this section.
   2. Layout of each sign.

1.3 QUALITY ASSURANCE
A. Finishes and painting shall resist weathering and fading for scheduled construction period.

1.4 MAINTENANCE
A. Maintain signs and supports in a neat, clean condition; repair damages to structures, framing or sign.

PART 2  PRODUCTS

2.1 SYSTEM DESCRIPTION
A. Informational Signs
   1. Provide six painted signs with painted lettering, or standard products:
      a. Size of signs and lettering: To meet Federal Highway Administration “Standard Alphabets for Highway Signs.”
      b. Colors: As required by regulatory agencies, otherwise uniform colors throughout Project.
      c. Furnish, erect, and maintain job instruction signs, including "DANGER," "KEEP OFF," as may be required to conduct the Work safely. Such signs shall be clean, maintained in good condition, and promptly removed when they have served their purpose.
   2. Erect at construction locations to provide required information.
B. Traffic Control Signs

1. Traffic control signs shall be as specified in Section 01550 and as indicated on the Drawings.

2.2 MATERIALS

A. Sign Materials

1. Structure and Framing: May be new or used, wood or metal, in sound condition, structurally adequate to work, and suitable for specified finish.

2. Sign Surfaces: Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints:
   a. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles.

3. Wrought Hardware: Galvanized.

4. Paint:
   a. Apply a coat of white alkyd primer wood oil to entire woodwork of sign.
   b. Apply 2 coats of white exterior latex paint to sign including framework.

B. Sign layout shall be approved by the Owner prior to fabrication.

PART 3 EXECUTION

3.1 PREPARATION

A. Project Identification Sign

1. Paint exposed surface of supports, framing and surface material; one coat of primer and one coat of exterior white paint.

2. Paint graphics in styles, sizes, and colors selected.

3. Sign to be minimum of 48 inches by 96 inches.

3.2 ERECTION

A. Project Identification Sign

1. Erect Project signs at locations approved by the Owner in the vicinity of the Bay Avenue.

2. Maintain in good condition until completion of the Project.
   a. Remove sign, framing, supports and foundations at completion of the Project.

END OF SECTION
SECTION 01600

PRODUCT REQUIREMENTS

PART 1   GENERAL

1.1 SUMMARY

A. Section Includes

1. Products and Materials
2. Product Delivery Requirements
3. Packaging, Handling and Storage Requirements
4. Inspection of Offsite Work

1.2 QUALITY ASSURANCE

A. Review all contract Drawings and Specifications with respect to specific system characteristics, applicability of materials and equipment for the intended purposes, sizes, orientation, and interface with other systems, both existing and proposed, and certify that the materials and equipment proposed will perform as specified prior to submitting shop drawings.

B. Provide sworn certificates as to quality and quantity of materials where specified or requested by the Engineer.

C. Obtain concurrence of the Engineer prior to processing, fabricating, or delivering material or equipment.

1.3 PRODUCTS AND MATERIALS

A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by a single manufacturer unless specified otherwise.

B. Use only new and first quality material in the Work. Material shall conform to the requirements of these Specifications and be approved by the Engineer. If, after trial, it is found that sources of supply that have been approved do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved materials from other approved sources.

C. Immediately remove defective materials and equipment from the site, at no additional cost to the Owner. The Contractor may be required to furnish sworn certificates as to the quality and quantity of materials before materials are incorporated in the Work.

D. Engineer has the right to approve the source of supply of all material prior to delivery.

1.4 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with manufacturer’s instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
D. Progressively deliver materials and equipment to the Site so there will be neither delay in progress of the Work nor an accumulation of material that is not to be used within a reasonable time.

E. Deliver products to the Site in their manufacturer's original container, with labels intact and legible.
   1. Maintain packaged materials with seals unbroken and labels intact until time of use.
   2. The Engineer may reject as non-complying such material and products that do not bear identification satisfactory to the Engineer as to the manufacturer, grade, quality, source, and other pertinent information.

1.5 PACKAGING, HANDLING AND STORAGE REQUIREMENTS

A. Provide storage and handling of all materials and equipment required for the Work.

B. Except as otherwise indicated in the Contract Documents, determine and comply with the manufacturer's recommendations on product storage, handling, and protection. Provide manufacturer's documentation on recommended storage procedures when requested by the Engineer.

C. Properly store and protect all equipment immediately upon its arrival. All equipment shall be stored in a clean, dry, heated, secured, and insured indoor facility satisfactory to the Engineer. Equip drive motors with thermostatically controlled strip heaters. Outdoor storage with plastic, canvas, plywood or other cover will not be allowed except where specific approval for designated items not containing electrical components or bearings is obtained from the Engineer. This approval does not relieve the Contractor of responsibility for proper protection of materials.

D. Familiarize workmen and subcontractors with hazards associated with materials, equipment, and chemicals specified herein and take all necessary safety precautions.

E. Areas available on the construction site for storage of material and equipment shall be as shown on the Drawings or approved by the Owner.

F. Materials and equipment to be incorporated in the Work shall be handled and stored by the manufacturer, fabricator, supplier, and Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft, or damage of any kind to the material or equipment.

G. Protect finished surfaces including floor surfaces, stairs, joints, and soffits of passageways from damage until accepted by the Engineer.

H. Promptly remove materials from the site of the Work which have become damaged or are unfit for the use intended or specified. The Contractor will not be compensated for the damaged materials or their removal costs.

I. Handle, haul, and distribute all materials and all surplus materials on the different portions of the Work, as necessary or required. Provide suitable and adequate storage room for materials and equipment during the progress of the Work, and be responsible for the protection, loss of, or damage to materials and equipment furnished, until the final completion and acceptance of the Work.

J. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.
K. All materials and equipment to be incorporated in the Work shall be placed so as to not damage any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the Work. Keep materials and equipment neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to the Owner.

L. No material or equipment will be permitted to be stored in any of the Owner's facilities, unless otherwise approved by the Engineer.

M. Do not store material or equipment in any wetland or environmentally sensitive area. Stockpile sites shall be level, devoid of mature stands of natural vegetation, and removed from drainage facilities and features, wetlands, and stream corridors.

N. Contractor shall be fully responsible for loss or damage to stored materials and equipment.

O. No item judged rusty, corroded or otherwise damaged during storage will be accepted. Any electrical or instrumentation item determined by the Engineer to be damaged shall be removed from the Site and replaced by a completely new item in first class condition. Items not properly stored will not be considered for any partial payment.

P. Provide protective and preventive maintenance during storage consisting of manually exercising equipment where required, inspecting mechanical surfaces for signs of corrosion or other damage, lubricating, applying any coatings as recommended by the equipment manufacturer as necessary for its protection and other precautions as necessary to assure proper protection of equipment stored.

Q. Treat ferrous surfaces not receiving finish coats of paint with rust preventive coating, and protect non-ferrous metal work and devices with suitable wrappings.

1.6 INSPECTION OF OFFSITE WORK

A. The Owner and Engineer will inspect Work performed away from the construction site during fabrication, manufacture, or testing, or before shipment. Give 2 weeks written notice regarding the place and time where such fabrication, manufacture, testing, or shipping will be done.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION
SECTION 01630

PRODUCT SUBSTITUTION DURING CONSTRUCTION

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes

   1.  Product substitution procedures

1.2  CONTRACTOR’S OPTIONS

A.  For materials or equipment (hereinafter products) specified only by performance or reference standard, select product meeting that standard, by any Supplier. To the maximum extent possible, provide products of the same generic kind from a single source.

B.  For products specified by naming several products or manufacturers, select any one of the products or Suppliers named, which fully complies with the Drawings and Specifications. Another “or-equal” product can also be considered by the Engineer if it complies with the provisions of Article 7.04, Section 00700. If a product proposed by the Contractor does not qualify as an “or-equal” item, then it can be considered as a proposed substitute item, and the Contractor must comply with the requirements of Article 7.05, Section 00700.

C.  For products specified by naming products or manufacturers and followed by words indicating that no “or-equal” item or substitution is permitted, there is no option and no substitution will be allowed.

D.  Where more than one choice is available as a Contractor's option, select product that is compatible with other products already selected or specified.

1.3  SUBSTITUTIONS

A.  If in the Engineer’s sole discretion a product proposed by the Contractor does not qualify as an “or-equal” item under the provisions of Article 7.04 of Section 00700, it can be considered a proposed substitute item. Submit information required under Article 7.05, Section 00700 for proposed substitutes.

B.  The Engineer will consider written requests from the Contractor for substitutions within 30 days after the Notice to Proceed. After this period, requests will be considered only in case of unavailability of product or other conditions beyond control of the Contractor.

C.  Submit 5 copies of request for substitutions. Submit a separate request for each proposed substitution. In addition to the submittal requirements outlined in Article 7.05 of Section 00700, include the following in each substitution request:

   1.  For products or Suppliers:

      a.  Product identification, including Supplier & manufacturer's name and address.

      b.  Manufacturer's literature with product description, performance and test data, and reference standards.
c. Samples, if appropriate.

d. Name and address of similar projects on which product was used, and date of installation.

2. For construction methods (if specified):
   a. Detailed description of proposed method.
   b. Drawings illustrating method.

3. Such other data as the Engineer may require to establish that the proposed substitution is equal to the product, Supplier or method specified.

D. The substitution request shall include written certification and statements that are outlined in Article 7.05 of Section 00700.

E. A request constitutes a representation that Contractor:
   1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
   2. Will provide same or better guarantees, warranties or bonds for proposed substitution as for specified product.
   3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
   4. Waives all claims for additional costs or time extension which may subsequently become apparent.
   5. Will reimburse Owner for review or redesign services associated with re-approval by authorities having jurisdiction.

F. A proposed substitution will not be accepted if:
   1. Acceptance will require changes in the design concept or a substantial revision of the Contract Documents.
   2. It will delay completion of the Work.
   3. It is intended or implied on a Shop Drawing and is not accompanied by a formal request for substitution from the Contractor.

G. The Contractor is responsible for all costs relating to substitution requests.

H. Approval of a substitution does not relieve the Contractor from the requirement for submission of Shop Drawings as set forth in the Contract Documents.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION
SECTION 01720

FIELD ENGINEERING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes
   1. Establishment of lines, benchmarks, and elevations required to layout and construct the Work
   2. Property line survey and delineation

1.2 SUBMITTALS

A. Informational Submittals
   1. Submit the qualifications of the Registered Professional Engineer and/or Registered Land surveyor to be hired to perform various portions of the Work, as applicable.
   2. Submit documentation verifying the accuracy of field engineering work.
   3. Submit 4 copies of final record drawings of field engineering layouts and as-built survey.
   4. Submit certificate signed by registered (licensed) engineer or surveyor certifying that elevations and locations of Work are in conformance with Contract Documents. Explain deviations.

1.3 RECORDS

A. Maintain a complete, accurate log of control and survey work as it progresses.

1.4 QUALITY ASSURANCE

A. Employ a qualified engineer, registered with the Commonwealth of Massachusetts as a Professional Engineer or a competent surveyor, registered with the Commonwealth of Massachusetts as a Land Surveyor, as required for the particular characteristics of the work being performed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROCEDURES

A. The Registered Professional Engineer or Land Surveyor provided shall establish and maintain lines, elevations and reference marks needed during the progress of the Work and shall re-establish stakes and marks placed by the Engineer that are lost or destroyed through the course of the Work. Verify such work by instrument or other appropriate means.

B. The Engineer shall be permitted at all times to check the lines, elevations and reference marks, set by the Contractor, who shall correct any errors disclosed by such check. Such a check shall not be construed to be an approval of the Contractor’s work.
and shall not relieve or diminish the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire Work.

C. Make, check, and be responsible for measurements and dimensions necessary for the proper construction of and the prevention of misfittings in the Work.

D. Furnish all protective stakes and temporary structures for marking and maintaining points and lines for the building of the Work, and give the Engineer such facilities and materials for verifying said lines and points as he may require.

E. Revisions to the layout and elevations of the Work as defined by the Contract Documents shall be approved by the Engineer.

F. Maintain and prepare final record drawings of field engineering layouts and as-built survey conducted after completion of the Work.

END OF SECTION
SECTION 01725

PRESERVATION AND RESTORATION OF PROJECT FEATURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Protection and replacement of trees, shrubs, patios, decks, signs, property markers, fences, and related project features.

2. Taking precautions, providing programs, and taking actions necessary to protect public and private property and facilities that are outside the demolition scope from damage.

1.2 DEFINITIONS

A. Underground Structures

1. Underground structures are defined to include, but not be limited to, sewer, water, gas, and other piping, and manholes, chambers, electrical and signal conduits, tunnels and other existing subsurface work located within or adjacent to the limits of the Work.

2. Underground structures known to the Engineer are shown on the Drawings to the extent that locations are available. This information is shown for the assistance of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete. The Contractor shall be responsible for checking on the actual locations of water, sewer, gas electric and telephone service connection lines to avoid potential interferences.

B. Surface Structures

1. Surface structures are defined as existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extension below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks and all other facilities that are visible above the ground surface.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 REPAIR/RESTORATION

A. Trees, shrubs, and similar items shall not be removed except where indicated on the drawings or as necessary to access the required demolition work, as approved by the Engineer. Items to be removed shall be clearly marked as directed by the Engineer. If objects not to be removed are damaged or removed, they shall be repaired or replaced to their original condition.
B. Trees and shrubs on private property, which are removed or damaged by the Contractor shall be replaced in kind.

C. Signs, fences, property markers, walls, guard rails, patios, decks and other public or private property that are outside the demolition scope shall be replaced in kind if damaged. Supports and protective devices required shall be provided.

D. Underground and Surface Structures

1. In the event of damage, injury or loss to existing utilities and structures that were not indicated to be removed or abandoned, whether shown on the Drawings or not, make all reasonable efforts to facilitate repairs and to mitigate the impact of such events upon the utility or structure owner’s normal operations. Restore the existing utility or structure to the condition required by the owner of the utility or structure or at least to the condition found immediately prior to the Work. In the event that the utility owner elects to make the repairs, provide all reasonable access and assistance, and reimburse the utility owner for the cost of repairs. If utility service is interrupted due to damage to facilities, alternate facilities shall be provided.

2. All other existing surface facilities, including but not limited to, guard rails, posts, guard cables, signs, poles, markers and curbs which are temporarily removed to facilitate the Work shall be replaced and restored to their original condition at the Contractor’s expense unless otherwise indicated in other sections of these specifications.

3. Wherever water, sewer, gas or petroleum mains, electric or telephone lines, cables or other utilities and structures are encountered and may be in any way interfered with, inform the Engineer and the appropriate utility company. Cooperate with the Engineer and utility company in the protection, removal, relocation, and replacement of structures and facilities.

4. Prior to proceeding with any demolition or construction, notify in writing owners of utilities and structures within the vicinity of the proposed Work.

5. Work affecting water distribution systems, which will take fire hydrants out of service, must be coordinated with the local fire department. The Contractor shall be prepared to restore fire flows in the event of an emergency or to provide for temporary fire flow service in accordance with the requirements of the local fire department.

6. Materials used for relocation or replacement of utilities and structures shall be of an equivalent material, type, class, grade and construction as the existing or as approved by the respective owners thereof, unless otherwise shown or specified.

7. When any survey monument or property marker, whether of stone, concrete, wood or metal, is in the line of any trench or other demolition or construction work and may have to be removed, notify the Engineer in advance of removal. Under no circumstances shall any monument or marker be removed or disturbed by the Contractor or by any of his Subcontractors, employees or agents, without the permission of the Engineer. Monuments or markers removed or disturbed shall be reset by a land surveyor licensed in the State where the Work is located at the Contractor’s expense. Should any monuments...
or markers be destroyed through accident, neglect or as a result of the Work under this Contract, the Contractor shall, at his own expense, employ a land surveyor licensed in the State where the Work is located to re-establish the monument or marker.

3.2 PROTECTION

A. The construction of certain portions of the project may require excavation within the root systems of trees. Roots with a diameter of 2 inches or more within the excavation shall not be cut. If necessary, excavation shall be made with small powered equipment or by hand to comply with this requirement. It may be necessary to excavate from more than one direction to avoid damage to the roots.

B. The trunks of trees that are to remain and are within the swing radius of the excavating machine bucket when fully extended shall be wrapped with burlap and 2 inch by 4 inch protective wood slats (8 inch spacing maximum) wired around the circumference of the trees to protect them from damage.

C. Tree limbs shall not be cut except upon written approval of the Owner and the Engineer. Tree limbs cut shall be painted with approved forestry paint manufactured specifically for that purpose.

D. Underground and Surface Structures

1. Sustain in their places and protect from direct or indirect injury underground and surface structures designated to remain within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure. Before proceeding with the work of sustaining and supporting such structure, satisfy the Engineer that the methods and procedures to be used have been approved by the party owning same.

2. Pay utility service company charges related to the temporary support of utility poles if required to complete the Work.

3. Assume risks associated with the presence of underground and surface structures within or adjacent to the limits of the Work. The Contractor shall be responsible for damage and expense for direct or indirect injury caused by his Work to any structure. Immediately repair damage caused by the Work to the satisfaction of the owner of the damaged structure.

END OF SECTION
SECTION 01770
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes
   1. Documentation required for the transfer of the completed Work to the Owner
   2. Final Cleaning

1.2 SUBMITTALS
A. Closeout Submittals
   1. As-built drawings
   2. Operation and maintenance manuals
   3. Evidence of payment and release of liens
   4. List of Subcontractors, service organizations, and principal vendors

1.3 SUBSTANTIAL COMPLETION
A. Refer to Article 15.03 in 00700, General Conditions, for procedures relating to obtaining Substantial Completion. Refer to 00520, Agreement, for Contract Times.

1.4 PROJECT CLOSEOUT DOCUMENTS
A. As-Built Drawings - Submit as-built drawings for review, approval, or comment. The as-built drawings shall show the completed work, including all deviations from the original Drawings. As-built drawings shall depict the location of all piping and valves installed under this Contract, as well as field changes. Take swing ties to all underground work from a minimum of two horizontal locations. Vertical dimensions to all below grade work shall also be obtained. All fittings, bends, valves and other appurtenances shall be shown. At a minimum, the following information shall be shown on the as-built drawings.
   1. Ties to all buried fittings (including tees, crosses, bends, reducers, wyes, offsets, adapters, sleeves, caps, plugs), valves, services and structures from two horizontal measurements to permanent surface reference points, and depth below permanent grade. Permanent surface reference points are manholes, catch basins, power poles, and above-grade structures.
   2. Ties to all surface structures (including manholes, catch basins, vaults, valve boxes, hydrants, curb stops, cleanouts, wet wells, outlets, etc.) from two horizontal measurements to permanent surface reference points. Re-station surface structures if stationed on Drawings.
   3. Ties to other utility crossings, abandoned pipelines, and sewer service stubs, from two horizontal measurements to permanent surface reference points include depth below permanent grade and spacing between crossing utilities.
4. Invert and rim elevation of all gravity pipelines and structures including manholes, catch basins, below-grade structures, wet wells, septic tanks and distribution boxes as appropriate.

5. Depth of ledge at changes in profile but not more than 25-foot intervals.

6. Changes to pipe size and materials.

B. Operation and Maintenance manuals - Provide four copies of operation and maintenance manuals for each type of equipment provided on the project. Manuals shall include as a minimum:

   1. The Operations and Maintenance Manual Certification Form (copy attached at the end of this Section) which shall be attached to every copy of each Operations and Maintenance Manual submitted.

   2. Detailed service, maintenance and operation instructions for each item supplied

   3. Special maintenance requirements, along with special calibration and test procedures

   4. Operating instructions

   5. Preventative maintenance instructions

   6. Corrective-maintenance instructions

   7. Complete parts lists with stock numbers and name, address, and telephone number of the local supplier

C. Provide warranties and bonds for items so listed in pertinent sections of the Project Manual.

D. Provide evidence of compliance with requirements of governmental agencies having jurisdiction.

E. As specified in Article 15.06.A of Section 00700, provide evidence that all Work, materials and equipment will pass to Owner free and clear of any Liens or other title defects upon final payment. Such evidence may take the form of receipts or releases from all Subcontractors and Suppliers and an affidavit from Contractor as to the completeness of the receipts and releases as described in Section 00700 Article 15.06.A.3.

F. Provide list of Subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.

1.5 FINAL PAYMENT

A. Refer to Article 15.05 and 15.06 in 00700, General Conditions, for procedures relating to final inspection and payment.

B. The Contract shall be considered complete and final payment made, only when:

   1. All provisions of the Contract Documents have been strictly adhered to.

   2. The project and premises have been left in good order, including removal of all temporary construction, Contractor-owned and extraneous materials.
PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CLEANING

A. Remove and entirely dispose of material or debris that has washed, flowed or has been placed in existing watercourses, ditches, gutters, drains, pipe, or structures, for work done under the Contract work limits. Leave ditches, channels, drains, pipes, structures, and watercourses in a clean and neat condition upon completion of the Work.

B. Restore or replace any public or private property damaged or removed during the course of the Work. Property shall be returned to a condition at least equal to that existing immediately prior to the beginning of operations. Complete all highway or driveway, walk, and landscaping work using suitable materials, equipment and methods. Perform restoration of existing property, signs or structures promptly as work progresses; do not leave restoration work until the end of the Contract Time.

END OF SECTION
O&M MANUAL CERTIFICATION FORM

PROJECT: _____________________________________________________________

ENGINEER: ______________________ ENGINEER’S PROJECT NO.: ______________

CONTRACTOR: ____________________ CONTRACTOR’S PROJECT NO.: _____________

TRANSMITTAL NO.: _______________ SHOP DRAWING NO.: ________________

SPECIFICATION NO.: ______________ DRAWING NO: _______________________

DESCRIPTION: __________________________________________________________

MANUFACTURER: _________________________________________________________

The above referenced O&M manual has been reviewed by the undersigned and I/we certify that the manual is customized as needed for this project, and contains the following items, where applicable for the materials or equipment provided:

- 3-ring binder with title on binder and binding edge
- Complete parts list of equipment supplied

- Electronic CD, when specified
- Complete specifications/data on each item

- Comprehensive index broken down into sections
- Detailed maintenance & operations instructions

- Dividers for sections and sub-sections
- “As constructed” layout & schematic drawings

- Warranties
- Wiring diagrams

- Troubleshooting information
- Lubrication & maintenance schedules

- Startup, operation & shutdown procedures
- Equipment performance curves

- Safety procedures
- List of spare parts supplied and current cost

- Manufacturer’s contact information
- Parts & service contact information

SUBMITTED BY: ______________________ DATE: ____________________________

GENERAL CONTRACTOR’S STAMP
SECTION 02075

GEOSYNTHETICS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes
   1. Temporary degradable erosion control blankets
   2. Permanent non-degradable erosion control blankets

1.2 REFERENCES

A. ASTM D1248 - Specification for Polyethylene Plastics Molding and Extrusion Materials
B. ASTM D1388 - Test Methods for Stiffness of Fabrics
D. ASTM D4218 - Test Method for Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique

1.3 SUBMITTALS

A. Product samples and data for all geosynthetics proposed for use on this project.
B. Manufacturer-approved construction quality assurance/quality control manual for all of the geosynthetics proposed for use on this project.
C. Manufacturing quality control testing data specified. Submit certification of required performance testing on all geosynthetics by an independent laboratory and label and identify all geosynthetic products delivered to the site.
D. Manufacturer’s recommended installation and fastening details for the erosion control blankets and turf reinforcement matrices. The following details are required:
   1. Typical stapling pattern and spacing. List staple density in terms of staples per square yard.
   2. Anchoring details for channels and slopes.
   3. Transverse blanket lap splice details, as well as longitudinal lap splice details if parallel blankets are to be installed.
   4. Termination details for the origin and termination of the channels and slopes.
E. Manufacturer’s recommended installation details including, orientation, overlap, and joining/seaming information for all geocomposite products.

1.4 QUALITY ASSURANCE

A. Obtain from the geosynthetic product manufacturers a warranty that their products are free from defects in materials and workmanship at the time of delivery to the project site.
B. Material found to be defective or which does not conform to these specifications will be rejected.

1.5 DELIVERY, STORAGE AND PROTECTION

A. The Engineer reserves the right to reject and require replacement of any damaged materials delivered to the site, at no additional cost to the Owner.

B. Stockpile and store the materials in accordance with the manufacturer’s recommendations.

C. Label and bag all geosynthetic rolls in packing that is resistant to photo degradation by ultraviolet (UV) radiation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Temporary Degradable Erosion Control Blankets
   1. “LANDLOK C2” as manufactured by SI Geosolutions, Inc.,
   2. “C125” as manufactured by North American Green,
   3. Or equal

B. Permanent Non-Degradable Erosion Control Blankets
   1. “P300” as manufactured by North American Green
   2. “LANDLOK TRM 450” as manufactured by SI Geosolutions, Inc.,
   3. Or equal

2.2 MATERIALS

A. Temporary, degradable erosion control blankets (ECBs) shall be composed of a core of 100% coconut fiber and two external confining meshes of non-degradable material. The minimum manufacturer’s suggested design life of the ECB shall be 12 months.
   1. As a minimum, degradable ECBs shall be recommended by the manufacturer for use on 2:1 slopes.

B. Permanent, non-degradable ECBs shall consist of a three-dimensional matrix of UV-stabilized polypropylene encased between two polypropylene nets. The blanket shall be cross-stitched on two inch centers maximum with polypropylene thread
   1. Each of the polypropylene nets shall have a mass per unit area of at least three pounds per one thousand square feet.
   2. Permanent, non-degradable ECBs shall be recommended by the manufacturer for use on 1:1 slopes and in drainage channels, and shall have a minimum, limiting shear stress of eight pounds per square foot, measured over 50 hours.

PART 3 EXECUTION

3.1 EXAMINATION

A. Inspect all products prior to the installation for any defects that may have been the result of storage and handling. The Engineer reserves the right to reject and require replacement of any damaged product, at no additional cost to the Owner.
3.2 INSTALLATION

A. Install geosynthetic products in accordance with the approved manufacturer’s QA/QC manuals, project details, and pertinent sections of these Specifications.

B. Before commencing stone placement, remove debris, including timbers, concrete, steel and other materials that might cut or damage the geotextile. Provide adequate ballast on generally horizontal geotextile and proper fastening on vertical geotextile to secure it in the intended locations until the stone work is complete. Provide stone bedding over geotextile (minimum necessary) if sharp pointed or sharp edge armor or underlayer stone is being placed with a sharp edge/point toward the geotextile.

3.3 QUALITY CONTROL

A. The Engineer may remove a sample (i.e. a strip that is 3 feet long by the entire roll width) from a maximum of 1 roll of each 10 rolls of all geosynthetic materials delivered to the project, and submit the samples to an independent laboratory for analysis of the product to ensure that the geosynthetics meet the specifications herein.

END OF SECTION
SECTION 02220
DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Demolition of approximately 6,800 linear feet of existing concrete seawall.
2. Demolition of ancillary structures and items within the Limit of Work indicated on the Drawings, but not specifically shown, such as laundry poles, patio slabs, privacy fences, and similar items.
3. Removal and lawful disposal of miscellaneous debris and solid waste located within the Limit of Work.
4. Removal and lawful disposal of timber and metal stairways labeled to be removed on the Drawings, unless otherwise noted for reinstallation or salvage.
5. Removal and lawful disposal of concrete stairways labeled to be removed on the Drawings.
6. Removal and lawful disposal of pavement and base material labeled to be removed on the Drawings.
7. Removal and lawful disposal of drainage piping and structures, including pipe which may be concrete encased, check valves, manholes and catch basins.

B. Related Sections

1. Section 01320 - Construction Photographs
2. Section 01350, Health & Safety Plan
3. Section 01725 - Preservation and Restoration of Project Features
4. Section 02315 - Excavation, Backfill, Compaction and Dewatering
5. Section 02920 – Lawns and Grasses

1.2 DEFINITIONS

A. Demolish – To tear down, segregate waste streams and lawfully recycle or dispose of all debris generated in the process including structure contents.

B. Limit of Work – Area delineated on Drawings that defines the extent of demolition work under the Contract.

1.3 SUBMITTALS

A. Informational Submittals

1. Methods of demolition and equipment proposed to demolish structures. This submittal should be sufficient to demonstrate a thorough understanding of the Work to be completed and the means that will be implemented to safely
complete the demolition within the Contract Time without damage to surrounding structures or resources.

2. Waste Management Plan to indicate the types of wastes to be generated and the proposed disposal or recycling locations. Include back-up disposal facilities.

3. Copies of any authorizations and permits required to perform the Work, including disposal/recycling facility permits.

B. The following records and disposal documentation must be maintained and kept current throughout the Project. These documents will be maintained in chronological order in a 3-ring binder with appropriate tabbed dividers. The binder will be reviewed for completeness at each progress meeting. Requests for periodic payments may be rejected, in whole or in part, if documentation is not current.

1. Records of the amounts of waste generated, by waste type
2. Evidence of lawful disposal or recycling of all wastes generated
3. Documentation of underground structures and utilities
4. Copies of any analytical results generated as a result of waste stream characterization

1.4 REGULATORY REQUIREMENTS

A. Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work of this section, including all costs, fees and taxes required or levied.

B. Notify and obtain such permits or approvals from agencies having jurisdiction over demolition prior to starting work.

C. Comply with all applicable federal, state, and local environmental, safety and health requirements regarding the demolition of structures and other site features and recycling or disposal of demolition debris, as applicable.

D. Conform to procedures identified in Section 01350- Health and Safety Plan if hazardous or contaminated materials are discovered.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 PROJECT MANAGEMENT

A. Provide a full-time Project Superintendent, fluent in English, who shall serve as a direct communication among the Contractor, subcontractors, and the Owner.

B. Require all subcontractors to provide a foreman or superintendent who is fluent in English. That individual must be on site at all times that the subcontractor is working.

3.2 EXAMINATION

A. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures and utilities prior to start of work and notify the Engineer in writing, of any hazardous conditions and/or discrepancies. Structures including, but not limited to, utilities, concrete walks and pads, miscellaneous signs, lamp posts, railings, and fencing may not be shown on the
Drawings, but may exist within the Limit of Work and shall remain unless otherwise noted.

1. Unknown Site Conditions - The information provided on the Drawings and in the Specifications is believed accurate. Field verify all information. Bear full responsibility for obtaining all locations of underground structures, utilities and their connections. Maintain services to buildings outside the limits of work.

3.3 PREPARATION

A. Remove and/or stabilize all overhead hazards, prior to commencing work near any structure. Where hazards can not be stabilized, mark and control areas below hazards to prohibit access below the hazards. This shall be performed with caution tape, saw horses, safety fence or other types of barricades as determined by applicable safety codes.

3.4 HAZARDOUS MATERIALS

A. Lead Paint
   1. Where activities may generate leaded dust or impact a leaded surface, regulate work area so that dust migration is contained properly within the regulated area. Once the work is complete, properly clean up and dispose of leaded dust and materials.

B. Oil and Hazardous Material Contamination
   1. There is no known soil contamination at the site. However, contaminated soil may be encountered during excavation. In the event that contaminated soil is encountered, contact the Engineer.

3.5 DEMOLITION

A. Demolish the structures, underground utilities and related appurtenances by methods that will not cause damage to surrounding structures, underground and overhead utilities, or other existing items and structures that are to remain in place.

B. Promptly and properly manage all debris as the demolition progresses. Construct and/or prepare material staging/stockpile areas at locations approved by the Engineer.

C. Precast Concrete Seawall Units
   1. Demolish all site features as called out to be removed within the Limit of Work as indicated on the Drawings.
   2. Segregate various building materials to facilitate recycling of salvageable materials.
   3. Barricade work area as necessary to protect workers and general public from falling debris.
   4. Do not leave unstable structures unattended. Plan the workday so that all structures are stable at the end of each work day.

D. Concrete and Timber Stairways
   1. Demolish all site features as called out to be removed within the Limit of Work as indicated on the Drawings.
2. Segregate various materials to facilitate recycling of salvageable materials.

3. Barricade work area as necessary to protect workers and general public from falling debris.

4. Do not leave unstable structures or revetment unattended. Plan the workday so that all structures and revetment are stable at the end of each work day.

E. Miscellaneous Site Structures and Features

1. Concrete Slabs – Demolish all concrete slabs including patios, aprons, steps, and parking pads and associated foundation walls (if any) within the Limit of Work as indicated on the Drawings.

2. Fences and Other Structures – Demolish all fences, play structures, clotheslines, sheds, within the Limit of Work as indicated on the Drawings.

3. Trees – Trees are an important resource and shall be treated as such. Unless specifically noted to be demolished, protect all trees and obtain approval of the Engineer prior to removing or pruning any other trees. Refer to Section 01725.

3.6 BITUMINOUS CONCRETE PAVEMENT REMOVAL OR RECLAMATION

A. Remove or reclaim bituminous concrete pavement within Limit of Work as indicated on the Drawings. Legally dispose of bituminous concrete pavement underlain with concrete off site along with the underlying concrete.

B. If reclamation is selected, where indicated on the Drawings, at interface of pavement to remain with pavement to be removed, at intersections, and/or where directed, saw cut existing pavement to its full depth. No jacking shall be acceptable when cutting existing pavement unless otherwise directed by the Owner. All cut lines shall be straight with a minimum of damage to pavement outside of saw cutting area. Saw cuts at intersections shall be made 6 feet from the sideline of the intersecting street unless otherwise directed by the Owner. Saw cuts for bituminous parking areas shall be made at the back edge of the sidewalk, or if no sidewalks are present, 2 feet from the sideline of the street.

C. Reclaim the bituminous concrete pavement by processing/grinding to a minimum depth of 12 inches and compacting in place.

D. After the reclamation process, the reclaimed base material shall conform to the following gradation requirements:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Required Grading Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>100</td>
</tr>
<tr>
<td>1”</td>
<td>70 – 100</td>
</tr>
<tr>
<td>½”</td>
<td>50 – 85</td>
</tr>
<tr>
<td>#4</td>
<td>35 – 70</td>
</tr>
<tr>
<td>40</td>
<td>10 – 35</td>
</tr>
<tr>
<td>200</td>
<td>2- 10</td>
</tr>
<tr>
<td>Asphalt Content</td>
<td>1.0 Min.</td>
</tr>
</tbody>
</table>
E. The equipment to be used must be able to effectively pulverize bituminous concrete pavements to produce a crushed material. The equipment must have the capability to adjust the crushers and screen to allow minor adjustments if the gradation of the crushed material does not fall within the gradation requirements during the crushing process. No culling out of oversized material will be permitted.

F. Remove ore relocate all obstacles located within the roadway or parking area including castings and utilities prior to pulverizing operations.

G. After pulverizing, the reclaimed base course shall be evenly spread and thoroughly compacted by rolling. Rolling shall continue until the base material has been compacted to 98% density. Blading and rolling shall be done alternately, as required to obtain a smooth, even and uniformly compacted base.

H. Do not perform work on the base course during freezing temperatures nor when the subgrade is wet. If the aggregate contains frozen materials or when the underlying course is frozen, the construction will be stopped.

I. Hauling equipment may be routed over completed portions of the base course, provided that no damage results and provided that such equipment is routed over the full width of the base course to avoid rutting or uneven compaction.

J. Contractor is responsible for quality control during construction. Sample materials from the project area and test for the following: optimum lab density, material gradation, residual asphalt content, field density and percent compaction. Conduct testing program at intervals representative of each 3,000 square yards of asphalt stabilized base course.

K. After being notified by the Contractor that a particular section/phase of the project is ready to be tested, the Owner may elect to perform his own quality assurance tests as a check. Any costs incurred as a result of failed tests or canceled tests shall be borne by the Contractor.

3.7 DISPOSAL

A. Legally dispose of or recycle all materials from demolition as well as equipment and other materials that are within the Limit of Work. The disposal site shall be permitted to accept the waste stream by the applicable State Agency. Perform the loading of demolition materials in a manner that prevents materials and activities from generating excessive dust and ensures no impact to beach areas or interference with roads, sidewalks and streets both onsite and offsite. Concrete conforming to the DEP policy for recycling, uncoated, crushed to less than 6” with no rebar may be accepted by the City of Quincy at DPW at no charge.

B. Provide evidence that the demolition materials have been received at a legal disposal, recycle, reuse or salvage location. Such proof may include truck weigh slips from an approved disposal facility or documentation of transfer of title. Transport of all materials off site shall be in accordance with applicable Department of Transportation Regulations. All materials leaving the site shall become the property of the Contractor.

3.8 SITE RESTORATION

A. Prior to any backfilling, document the location of any structures that remain in place through construction photographs and by obtaining swing ties to and elevations of any
structures to be buried. Progress payments may be withheld if current documentation is not maintained.

B. Backfill areas from which structures were removed to match the surrounding. Backfilling shall be conducted in accordance with Section 02315.

C. Restore damaged areas of the site or neighboring properties in accordance with Sections 01725 and stabilize slopes in accordance with the erosion and sedimentation control requirements of the Contract and the stormwater permit.

D. Loam and seed all disturbed areas in accordance with Section 02920.

END OF SECTION
SECTION 02315

EXCAVATION, BACKFILL, COMPACTION AND DEWATERING

PART 1   GENERAL

1.1 SUMMARY
A. Section Includes
   1. Excavation, backfill and compaction for seawalls, sidewalks, and roadways
   2. Excavation, backfill and compaction for subsurface utilities
   3. Excavation, backfill and compaction for the abandonment of existing pipe
B. Related Sections
   1. Section 01570 - Temporary Controls
   2. Section 02210 - Subsurface Investigations
   3. Section 02320 - Borrow Materials
   4. Section 02740 – Bituminous Concrete Pavement

1.2 REFERENCES
A. ASTM D1557-07 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
B. ASTM D1556-07 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
C. ASTM D2487-06e1 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
D. ASTM D6938-08a - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
E. 29 CFR Part 1926 Subpart P - OSHA Excavation Regulations 1926.650 through 1926.652 including Appendices A through F
F. 520 CMR 14.00 Excavation and Trench Safety
G. 780 CMR 1705.0 Requirements for Structural Tests and Inspections

1.3 DEFINITIONS
A. Benching - A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
B. Earth Retention Systems - Any structural system, such as sheeting and bracing or cofferdams, designed to retain in-situ soils in place and prevent the collapse of the sides of an excavation in order to protect employees and adjacent structures.
C. Excavation - Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.
D. Protective System - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include earth retention systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

E. Registered Professional Engineer - A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

F. Shield System - A structure that is designed to withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either pre-manufactured or job-built in accordance with 29 CFR 1926.652(c)(3) or (e)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

G. Sloping - A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

H. Temporary Dewatering System – A system to lower and control water to maintain stable, undisturbed subgrades at the lowest excavation levels. Dewatering shall be provided for all pipelines, structures and for all other miscellaneous excavations.

I. Trench - A narrow excavation (in relation to its length) made below the surface of the ground, of at least three feet in depth. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m).

1.4 SUBMITTALS

A. Modified Proctor Test (ASTM D1557) results and soil classification (ASTM D2487) for all proposed backfill materials at the frequency specified below:

1. For suitable soil materials removed during Excavation, perform one test for every 1,000 cubic yards of similar soil type. Similarity of soil types will be as determined by the Engineer.

2. For borrow materials; perform tests at frequency specified in Section 02320, Borrow Materials.

B. Compaction test results (i.e. ASTM D6938 or ASTM D1556) at a frequency of one test for every 100 cubic yards of material backfilled or at a minimum of one test per lift. The Engineer will determine the locations and lifts to be tested. The Contractor shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.

1. Methods and equipment proposed for compaction shall be subject to prior review by the Engineer. Compaction generally shall be done with vibrating equipment. Static rolling without vibration may be required by the Engineer on sensitive soils that become unstable under vibration. Displacement of, or damage to existing
utilities or structure shall be avoided. Any utility or structure damaged thereby shall be replaced or repaired as directed by the Engineer.

2. Additional compaction testing may be required when there is evidence of a change in the quality of moisture control or the effectiveness of compaction.
   a. Any costs associated with correcting and retesting as a result of a failure to meet compaction requirements shall be borne by the Contractor.

3. If all compaction test results within the initial 25% of the total anticipated number of tests indicate compacted field densities equal to or greater than the project requirements, the Engineer may reduce frequency of compaction testing. In no case will the frequency be reduced to less than one test for every 500 cubic yards of material backfilled.

4. The Contractor is cautioned that compaction testing by nuclear methods may not be effective where trenches are so narrow that trench walls impact the attenuation of the gamma radiation, when adjacent to concrete that impacts the accuracy of determining moisture content, or where oversize particles (i.e. large cobbles or coarse gravels) are present. In these cases, other field density testing methods may be required.

C. Dewatering plan for the excavation locations.

1.5 QUALITY ASSURANCE

A. The following test procedures will be performed by the Owner’s inspection agency. Results will be submitted to the Engineer for review.

1. Modified Proctor Test (ASTM D1557) results and soil classification (ASTM D2487) for all proposed backfill materials at the frequency specified below:
   a. For suitable soil materials removed during excavation, perform one test for every 1,000 cubic yards of similar soil type. Similarity of soil types will be as determined by the Engineer.
   b. For borrow materials; perform tests at frequency specified in Section 02320 - Borrow Materials.

2. Compaction test results (i.e. ASTM D6938 or ASTM D1556) at a frequency of one test for every 100 cubic yards of material backfilled. The Engineer will determine the locations and lifts to be tested.
   a. The Engineer may specify additional compaction testing when there is evidence of a change in the quality of moisture control or the effectiveness of compaction.
   b. If all compaction test results within the initial 25% of the total anticipated number of tests indicate compacted field densities equal to or greater than 95% of maximum dry density at optimum moisture content, the Engineer may reduce frequency of compaction testing. In no case will the frequency be reduced to less than one test for every 500 cubic yards of material backfilled.
   c. The Contractor is cautioned that compaction testing by nuclear methods may not be effective where excavation sidewalls impact the attenuation of the gamma radiation or where oversize particles (i.e. large cobbles or coarse gravels) are present.
coarse gravels) are present. In these cases, other field density testing methods may be required.

1.6 PROJECT CONDITIONS

A. Notify Dig Safe and obtain Dig Safe identification numbers.

B. Notify utility owners in reasonable advance of the work and request the utility owner to stake out on the ground surface the underground facilities and structures. Notify the Engineer in writing of any refusal or failure to stake out such underground utilities after reasonable notice.

C. Make explorations and Excavations to determine the location of existing underground structures, pipes, house connection services, and other underground facilities in accordance with Paragraph 3.2.D of this Section.

D. In accordance with 520 CMR 14.00, no person shall, except in an emergency, make an excavation in any public way, public property, or privately owned land until a permit is obtained from the appropriate designated permitting authority.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

A. Fill material is subject to the approval of the Engineer and may be either material removed from excavations or borrow from off site. Fill material, whether from the excavations or from borrow, shall be of such nature that after it has been placed and properly compacted, it will make a dense, stable fill.

B. Satisfactory fill materials shall include materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, SW, and SP. Additional requirements are included in Section 02320.

C. Satisfactory fill materials shall not contain trash, refuse, vegetation, masses of roots, individual roots more than 18 inches long or more than 1/2 inch in diameter, or stones over 6 inches in diameter. Unless otherwise stated in the Contract Documents, organic matter shall not exceed minor quantities and shall be well distributed.

D. Satisfactory fill materials shall not contain frozen materials nor shall backfill be placed on frozen material.

E. Excavated surface and/or pavement materials such as gravel or trap rock that are salvaged may be used as a sub-grade material, if processed to the required gradation and compacted to the required degree of compaction. In no case shall salvaged materials be substituted for the required gravel base.

2.2 GEOTEXTILE

A. Geotextile shall be a black non-woven geotextile having a minimum weight of 16 oz per sq. yard (ASTM D5261), such as PROPEX GEOTEX 1601 or equal meeting the following GAI-LAP MARV at a 97% confidence level:

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<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>UNITS</th>
<th>ACCEPTABLE VALUES</th>
<th>TEST METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q0019-010/07/15/19</td>
<td>02315-4</td>
<td>Excavation, Backfill, Compaction, and Dewatering</td>
<td></td>
</tr>
</tbody>
</table>
GRAB STRENGTH LBS 380 ASTM D 4632
ELONGATION % 50% ASTM D 4632
SEAM STRENGTH LBS 380 ASTM D 4632
CBR PUNCTURE LBS 1000 ASTM D 6241
TRAPEZOIDAL TEAR LBS 150 ASTM D 4533
APPARENT OPENING SIZE U.S. SIEVE 100 ASTM D 4751
PERMITTIVITY GAL/MIN/SF 50 ASTM D 4491
UV RESISTANCE % 70% ASTM D 4355

B. Geotextile shall be a black non-woven geotextile having a minimum weight of 8 oz per sq. yard (ASTM D5261), such as PROPEX GEOTEX 801 or equal meeting the following GAI-LAP MARV at a 97% confidence level:

MINIMUM PHYSICAL REQUIREMENTS FOR BACKFILL GEOTEXTILE

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>UNITS</th>
<th>ACCEPTABLE VALUES</th>
<th>TEST METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAB STRENGTH</td>
<td>LBS</td>
<td>200</td>
<td>ASTM D 4632</td>
</tr>
<tr>
<td>ELONGATION</td>
<td>%</td>
<td>50%</td>
<td>ASTM D 4632</td>
</tr>
<tr>
<td>SEAM STRENGTH</td>
<td>LBS</td>
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</tr>
<tr>
<td>CBR PUNCTURE</td>
<td>LBS</td>
<td>528</td>
<td>ASTM D 6241</td>
</tr>
<tr>
<td>TRAPEZOIDAL TEAR</td>
<td>LBS</td>
<td>80</td>
<td>ASTM D 4533</td>
</tr>
<tr>
<td>APPARENT OPENING SIZE</td>
<td>U.S. SIEVE</td>
<td>80</td>
<td>ASTM D 4751</td>
</tr>
<tr>
<td>PERMITTIVITY</td>
<td>GAL/MIN/SF</td>
<td>110</td>
<td>ASTM D 4491</td>
</tr>
<tr>
<td>UV RESISTANCE</td>
<td>%</td>
<td>70%</td>
<td>ASTM D 4355</td>
</tr>
</tbody>
</table>

2.3 DEWATERING MATERIALS

A. Provide haybales and silt fence in accordance with Section 01570.

PART 3 EXECUTION

3.1 PREPARATION

A. Public Safety and Convenience

1. Adhere to the requirements of 520 CMR 14.00 for all excavation work.
2. Take precautions for preventing injuries to persons or damage to property in or about the Work.

3. Provide safe access for the Owner and Engineer at site during construction.

4. Do not obstruct site drainage, natural watercourses or other provisions made for drainage.

3.2 CONSTRUCTION

A. Earth Retention Systems

1. Provide Earth Retention Systems necessary for safety of personnel and protection of the Work, adjacent work, utilities and structures.


3. Sheetling
   a. Systems shall be constructed using interlocking corner pieces at the four corners. Running sheet piles by at the corners, in lieu of fabricated corner pieces, will not be allowed.
   b. Drive sheeting ahead of and below the advancing excavation to avoid loss of materials from below and from in front of the sheeting.
   c. Sheetling is to be driven to at least the depth specified by the designer of the earth retention system, but no less than 2 feet below the bottom of the Excavation.

4. Remove earth retention system, unless designated to be left in place, in a manner that will not endanger the construction or other structures. Backfill and properly compact all voids left or caused by the withdrawal of sheeting.
   a. Remove earth retention systems, which have been designated by the Engineer to be left in place, to a depth of 3 feet below the established grade.

B. Excavation

1. Perform excavation to the lines and grades indicated on the Drawings. Backfill unauthorized over-excavation in accordance with the provisions of this Section.

2. Excavate with equipment selected to minimize damage to existing utilities or other facilities. Hand excavate as necessary to locate utilities or avoid damage.

3. Sawcut the existing pavement in the vicinity of the excavation prior to the start of excavation in paved areas, so as to prevent damage to the paving outside the requirements of construction.

4. Perform excavation in such a manner as to prevent disturbance of the final subgrade. The Engineer or Owner may require the final six inches of excavation be performed by hand, with the use of a smooth-faced bucket, or other means acceptable to the Engineer or Owner, at no additional cost if subgrade disturbance is considered excessive as judged by the Engineer or Owner.
5. During excavation, material satisfactory for backfill shall be stockpiled in an orderly manner at a distance from the sides of the excavation equal to at least one half the depth of the excavation, but in no case closer than 2 feet.
   a. Excavated material not required or not suitable for backfill shall be removed from the site.
   b. Perform grading to prevent surface water from flowing into the excavation.
   c. Pile excavated material in a manner that will endanger neither the safety of personnel in the excavation nor the Work itself. Avoid obstructing sidewalks and driveways.
   d. Hydrants under pressure, valve pit covers, valve boxes, manholes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the Work is completed.

6. Grade or create berms or swales to direct surface water from excavations to appropriate structures designed to accommodate storm water. If no structures exist, direct water to areas that minimize impacts to adjacent structures and properties.

7. Make pipe trenches as narrow as practicable and keep the sides of the trenches undisturbed until backfilling has been completed. Provide a clear distance of 12 inches on each side of the pipe.

8. Perform the excavation in such a manner as to prevent disturbance of the final subgrade. If excessive subgrade disturbance is occurring, as judged by the Owner or Engineer, then the final 6 inches of the excavation shall be performed by hand, with the use of a smooth-faced bucket, or other means acceptable to the Engineer or Owner.
   a. Grade the excavation bottom to provide uniform bearing and support for the bottom quadrant of each section of pipe.
   b. Excavate bell holes at each joint to prevent point bearing.
   c. Remove stones greater than 6 inches in any dimension from the bottom of the trench to prevent point bearing.

9. If satisfactory materials are not encountered at the design subgrade level, excavate unsatisfactory materials to the depth directed by the Engineer and properly dispose of the material. Backfill the resulting extra depth of excavation with satisfactory fill materials and compact in accordance with the provisions of this Section.

C. Placing Geotextile

1. Place geotextile as indicated and over soil subgrades, extending 12 inch minimum beyond joints/openings/edges. Spread and compact the material promptly after it has been deposited. When, in the Engineer’s judgement, equipment is inadequate to spread and compact the material properly, reduce the rate of placing of the fill or employ additional equipment.

2. Geotextile seams shall consist of 24 inch overlaps or full strength continuous sewn seams. Provide adequate ballast on generally horizontal geotextile and...
proper fastening on vertical geotextile to secure it in the intended locations until the stone work is complete. Provide crushed stone bedding over geotextile (minimum as necessary) if sharp pointed or sharp edge armor or underlayer stone is being placed with a sharp edge/point toward the geotextile.

3. Once geotextile has been placed, backfill the seawall excavation as shown on the Drawings. Trim away and remove surplus visible geotextile at revetment and backfill limits where not needed.

D. Backfill and Compaction

1. Unless otherwise specified or indicated on the Drawings, use satisfactory material removed during excavation for backfilling trenches. The Engineer may require stockpiling, drying, blending and reuse of materials from sources on the Project.

2. Spread and compact the material promptly after it has been deposited. When, in the Engineer’s judgment, equipment is inadequate to spread and compact the material properly, reduce the rate of placing of the fill or employ additional equipment.

3. Prior to backfilling or placement of structures, excavated subgrades shall be proof compacted with either 10 passes of a 10-ton vibratory drum roller for open excavations or 6 passes of a large, reversible, walk behind vibratory compactor capable of exerting a minimum force of 2,000 pounds in trench or pit excavations. Soft or weak spots shall be over-excavated and replaced with compacted Granular Fill or compacted Crushed Stone wrapped in a non-woven geotextile, as directed by the Owner or their representative. If proof compaction will prove detrimental to the subgrade due to the presence of groundwater, static rolling may be allowed at the discretion of the Engineer or Owner.

4. Soil bearing surfaces shall be protected against freezing and the elements before and after concrete placement. If construction is performed during freezing weather, structures shall be backfilled as soon as possible after they are constructed. Insulating blankets or other means shall be used for protection against freezing at the discretion of the Engineer or Owner.

5. When excavated material is specified for backfill and there is an insufficient amount of this material at a particular location on the Project due to rejection of a portion thereof, consideration will be given to the use of excess material from one portion of the Project to make up the deficiency existing on other portions of the Project.

   a. Use borrow material if there is no excess of excavated material available at other portions of the Project.

6. Backfilling and compaction methods shall attain 95% of maximum dry density at optimum moisture content as determined in accordance with ASTM D1557.

7. Do not place stone or rock fragment larger than six inches in greatest dimension in the backfill.

8. Maximum loose lift height for backfilling existing or borrow material shall be 12 inches, unless satisfactory compaction is demonstrated otherwise to the Engineer through field-testing. In no case shall loose lift height for backfilling exceed 3 feet.
9. Do not drop large masses of backfill material into the trench endangering the pipe or adjacent utilities.

10. Install pipe in rock excavated trenches on a dense graded stone bedding with a minimum depth of 6 inches. Shape the stone bedding at the pipe bells to provide uniform support. Encase the pipe in the dense graded crushed stone bedding to a grade 6 inches over the top of the pipe and 12 inches on each side of the pipe.

11. Backfill from the bottom of the trench to the centerline of the pipe with the specified material. This initial backfill is to be placed in layers of no more than 6 inches and thoroughly tamped under and around the pipe. This initial backfilling shall be deposited in the trench for its full width on both sides of the pipe, fittings and appurtenances simultaneously.

12. Electrical conduit not encased in concrete, shall be backfilled with sand borrow conforming to the requirements of Section 02320. The backfill shall be placed in the trench for its full width and shall extend to 12 inches over the conduit.

13. Where excavation is made through permanent pavements, curbs, paved driveways, or paved sidewalks, or where such structures are undercut by the excavation, place the entire backfill to sub-grade with granular materials and compact in 6 inch layers. Use approved mechanical tampers for the full depth of the trench. If required, sprinkle the backfill material with water before tamping so as to improve compaction. Any trenches improperly backfilled, or where settlement occurs, shall be reopened to the depth required to correct the problem, and shall then be refilled and properly compacted with the surface restored to required grade at no additional expense.

14. The Contractor shall not place backfill against or on structures until they have attained sufficient strengths to support the loads to which they will be subjected, without distortion, cracking, or other damage. As soon as possible after the structures are adequate, they shall be backfilled with suitable backfill material.

15. Place and compact backfill around manholes, vaults, pumping stations, gate boxes or other structures in six inch layers, from a point one foot over the pipe. Exercise care to protect and prevent damage to the structures.

E. Test Pit Excavation

1. General requirements of test pits are specified in Section 02210.

F. Dewatering

1. Obtain the following construction dewatering permits, as required:
   a. US EPA Dewatering General Permit

2. Provide, operate and maintain adequate pumping, diversion and drainage facilities in accordance with the approved dewatering plan to maintain the excavated area sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction procedures nor cause excessive disturbance of underlying natural ground. Locate dewatering system components so that they do not interfere with construction under this or other contracts.
3. Conduct operations so as to prevent at all times the accumulation of water, ice and snow in excavations or in the vicinity of excavated areas so as to prevent water from interfering with the progress or quality of the work.

4. Take actions necessary to ensure that dewatering discharges comply with permits applicable to the Project. Dispose of water from the trenches and excavations in such a manner as to avoid public nuisance, injury to public health or the environment, damage to public or private property, or damage to the work completed or in progress.

5. Repair any damage resulting from the failure of the dewatering operations and any damage resulting from the failure to maintain all the areas of work in a suitable dry condition.

6. Exercise care to ensure that water does not collect in the bell or collar holes to sufficient depth to wet the bell or collar of pipes waiting to be jointed.

7. Take precautions to protect new work from flooding during storms or from other causes. Control the grading in the areas surrounding all excavations so that the surface of the ground will be properly sloped to prevent water from running into the excavated area. Where required, provide temporary ditches for drainage. Upon completion of the work, all areas shall be restored to original condition.

8. Brace or otherwise protect pipelines and structures not stable against uplift during construction.

9. Do not excavate until the dewatering system is operational and the excavation may proceed without disturbance to the final subgrade.

10. Unless otherwise specified, continue dewatering uninterrupted until the structures, pipes, and appurtenances to be installed have been completed such that they will not float or be otherwise damaged by an increase in groundwater elevation.

11. When subgrades are soft, weak, or unstable due to improper dewatering techniques, remove and replace the materials in accordance with Section 02320 at no cost to the Owner.

12. Notify the Engineer immediately if any settlement or movement is detected of survey points adjacent to excavations being dewatered. If settlement is deemed by the Engineer to be related to the dewatering, submit a modified dewatering plan to the Engineer within 24 hours. Implement the approved modified plan and repair any damage incurred to the adjacent structure at no cost to the Owner.

13. Dewatering discharge:
   a. Install sand and gravel, or crushed stone, filters in conjunction with sumps, well points, and/or deep wells to prevent the migration of fines from the existing soil during the dewatering operation.
   b. Do not discharge water into any sanitary sewer system.
   c. Provide separately controllable pumping lines.
   d. The Engineer reserves the right to sample discharge water at any time.
14. Removal
   a. Do not remove dewatering system without written approval from the Engineer.
   b. Backfill and compact sumps or ditches with screened gravel or crushed stone in accordance with Section 02320.
   c. Remove well points and deep wells. Backfill abandoned well holes with cement grout having a water cement ratio of 1 to 1 by volume.

3.3 PROTECTION

A. Protection of Existing Structures
   1. All existing foundations, conduits, wall, pipes, wires, poles, fences, property line markers and other items which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from damage by the Contractor. Should such items be damaged, they shall be restored by the Contractor to at least as good condition as that in which they were found immediately before the Work began.

B. Accommodation of Traffic
   1. Streets and drives shall not be unnecessarily obstructed. The Contractor shall take such measures at his own expense to keep the street or road open and safe for two-way traffic unless otherwise indicated.
   2. Construct and maintain such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians and vehicles. Provide substantial barricades at crossings of trenches, or along the trench to protect the traveling public.
   3. Where deemed necessary, such additional passageways as may be directed shall be maintained free of such obstructions. All material piles, open excavations, equipment, and pipe which may serve as obstructions to traffic shall be protected by proper lights, signage, or guards as necessary.
   4. All traffic controls shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition.

C. Erosion and Sedimentation Control
   1. Take all necessary steps to prevent soil erosion.
   2. Plan the sequence of construction so that only the smallest practical area of land is exposed at any one time during construction.
   3. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during construction as judged by the Engineer.

END OF SECTION
SECTION 02320
BORROW MATERIALS

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes
1.  Gravel Borrow
2.  Processed Gravel Borrow for Pavement Sub-base
3.  Granular Fill
4.  Sand Borrow
5.  Stone Borrow
6.  Ordinary Borrow
7.  Low Permeability Borrow

B.  Related Sections
1.  Section 02315 – Excavation, Backfill, Compaction and Dewatering
2.  Section 04400 – Stone Rip Rap

1.2  REFERENCES

B.  ASTM C117 - Standard Test Method for Materials Finer than 75 µm (No. 200) Sieve in Mineral Aggregates by Washing
C.  ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
D.  ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb./ft³)
E.  ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head)
F.  ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
G.  ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.3  SUBMITTALS
A. Representative Samples of borrow materials taken from the source. Tag, label, and package the Samples as requested by Engineer. Provide access to the borrow site for field evaluation and inspection.

B. Provide sieve analysis (ASTM C136) and permeability analysis (ASTM D2434) from certified soils testing laboratory for all borrow materials. Take and test a sample, at no additional cost to the Owner for each 1,500 c.y. of borrow material placed.

C. Provide modified proctor analysis (ASTM D1557) from certified soils testing laboratory for all borrow materials.
   1. Take and test a sample of low permeability soil for each 5,000 cy of material placed, or as directed by the Engineer.
   2. All other borrow materials shall be tested once unless more frequent testing is deemed necessary by the Engineer or Owner due to material variation.

D. The Engineer reserves the right to require more frequent testing than that which is specified above should the borrow characteristics change.

1.4 QUALITY ASSURANCE
A. No borrow shall be placed prior to the approval of Samples by the Engineer.

1.5 PROJECT/SITE CONDITIONS
A. Existing Conditions
   1. Comply with any environmental requirements and restrictions.
   2. Keep all public and private roadway surfaces clean during hauling operations and promptly and thoroughly remove any borrow or other debris that may be brought upon the surface before it becomes compacted by traffic. Frequently clean and keep clean the wheels of all vehicles used for hauling to avoid bringing any dirt upon the paved surfaces.

PART 2 PRODUCTS
2.1 GRAVEL BORROW
A. Gravel Borrow shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings, and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

Gradation requirements for Gravel Borrow shall be determined by AASHTO-T11 and T27 and shall conform to the following:

<table>
<thead>
<tr>
<th>Sieve</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>½ inch</td>
<td>50 – 85</td>
</tr>
<tr>
<td>No. 4</td>
<td>40 – 75</td>
</tr>
<tr>
<td>No. 50</td>
<td>8 – 28</td>
</tr>
<tr>
<td>No. 200</td>
<td>0 - 10</td>
</tr>
</tbody>
</table>

Maximum size of stone in Gravel Borrow shall be 2 inches.
2.2 PROCESSED GRAVEL BORROW FOR PAVEMENT SUBBASE

A. The compacted Processed Gravel Borrow to be used for gravel access roads and pavement subbase, or other area where a firm, free-draining subgrade is needed shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

B. Gradation requirements shall conform to the following:

<table>
<thead>
<tr>
<th>Sieve</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3”</td>
<td>100</td>
</tr>
<tr>
<td>1½”</td>
<td>70 – 100</td>
</tr>
<tr>
<td>¼”</td>
<td>50 – 85</td>
</tr>
<tr>
<td>No. 4</td>
<td>30 – 60</td>
</tr>
<tr>
<td>No. 200</td>
<td>0 - 10</td>
</tr>
</tbody>
</table>

C. Stockpile the processed materials in such a manner to minimize segregation of particle sizes. All processed gravel shall come from approved stockpiles.

2.3 GRANULAR FILL

A. Granular Fill to be used as fill material to achieve gravel base grade beneath structures, pavement, or other area requiring structural fill shall consist of inert material that is hard, durable stone and sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

B. Gradation requirements for Granular Fill shall conform to the following:

<table>
<thead>
<tr>
<th>Percent by Weight Passing Through</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve Size</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>2/3rds loose lift thickness</td>
</tr>
<tr>
<td>No. 10</td>
</tr>
<tr>
<td>No. 40</td>
</tr>
<tr>
<td>No. 200</td>
</tr>
</tbody>
</table>

2.4 SAND BORROW

A. Sand Borrow material shall be supplied from an off-site borrow area approved by the Engineer. Testing of the off-site Sand Borrow shall be at the Contractor’s expense.

B. Sand Borrow shall consist of clean, inert, hard, durable grains of quartz or other hard, durable, rock, free from loam or clay, surface coatings and deleterious materials. The allowable amount of material passing a No. 200 sieve as determined by ASTM-C117 shall not exceed 10% by weight.

C. Material shall consist of a clean, non-plastic, granular material conforming to the requirements of a SW, SP or SM under the Unified Soil Classification System (USCS) (ASTM D2487).
D. The material shall have the characteristics that when placed and compacted, the soil particles will bind together so as to form a solid, stable surface capable of supporting rubber-tired vehicular traffic during wet weather periods as well as extended dry weather periods. The borrow material shall not contain fines to the extent that the surface layer becomes “greasy” when wet.

E. The material shall not contain stones larger than 3/8 inch in diameter.

F. Material consisting of frozen clogs, ice and snow will be rejected.

G. All sand borrow material to be used shall be subject to approval by Engineer, and Engineer reserves the right to reject any borrow material from the job that does not meet the above requirements.

2.5 STONE BORROW

A. Crushed Stone Borrow

1. Crushed stone borrow shall consist of one of the following materials:

   a. Durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated or other objectionable pieces. A detrimental quantity will be considered as any amount in excess of 15% of the total weight. Thin stones shall be considered to be such stones whose average width exceeds 4 times their average thickness. Elongated stones shall be considered to be stones whose average length exceeds 4 times their average width.

   b. Durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone with a minimum diameter before crushing of 8 inches.

2. The crushed stone shall be free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a No. 200 sieve will be allowed to adhere to the crushed stone.

3. The crushed stone shall have a maximum percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO-T-96) as follows:

   a. For Class 1 Bit. Conc. 30%**

   b. For Cement Concrete Aggregate 45%***

   c. Crushed Stone for Subbase 45%

   **Crushed stone for this use shall consist of crushed or shattered natural rock only. Crushed gravel stone will not be permitted.

   ***Except for 5000 psi or greater cement concrete and prestressed concrete which shall be 30%.

4. The crushed stone shall conform to the grading requirements shown in the following grading Table.

<table>
<thead>
<tr>
<th>Percent by Weight Passing Through</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve Size</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>Q0019-010/07/15/19</td>
</tr>
</tbody>
</table>
B. Dense Graded Stone Borrow

1. The crushed stone used for backfill shall be a dense graded mixture and conform to the following gradation requirements.

<table>
<thead>
<tr>
<th>Sieve Size (Square Openings)</th>
<th>Percent by Weight Passing Through</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
</tr>
<tr>
<td>5/8”</td>
<td>100</td>
</tr>
<tr>
<td>½”</td>
<td>85</td>
</tr>
<tr>
<td>3/8”</td>
<td>15</td>
</tr>
<tr>
<td>#4</td>
<td>0</td>
</tr>
<tr>
<td>#8</td>
<td>0</td>
</tr>
</tbody>
</table>

2. Modified Rockfill

1. Stone used for modified rockfill shall meet the requirements of Article M2.02.4 “Modified Rockfill” as detailed in the “Massachusetts Specifications for Highways and Bridges”, 1988 edition and any revisions thereto. Modified rockfill shall consist of hard, durable, angular shaped stones which are the product of the primary crushing of a stone crusher. Rounded stone, boulders, sandstone and similar soft stone or relatively thin slabs will not be acceptable. Stone shall be free from overburden, spoil, shale, and organic material and shall conform to the following gradation requirements:

<table>
<thead>
<tr>
<th>Percent Passing Through</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stone Size</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>8”</td>
</tr>
</tbody>
</table>
D. Washed Rounded Stone (Peastone)

1. All stone shall be clean material substantially free from any foreign and deleterious material such that not more than 1% passes the #200 sieve. The maximum particle size shall be 5/8".

2. Washed rounded stone shall conform to the following gradation requirements:

<table>
<thead>
<tr>
<th>Percent Passing Through by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve Size</td>
</tr>
<tr>
<td>5/8&quot;</td>
</tr>
<tr>
<td>1/2&quot;</td>
</tr>
<tr>
<td>3/8&quot;</td>
</tr>
<tr>
<td>No.4</td>
</tr>
<tr>
<td>No.8</td>
</tr>
</tbody>
</table>

2.6 ORDINARY BORROW

A. Ordinary borrow shall have the physical characteristics of soils designated as type GW, GP, GM, SW, SP or SM, under USCS and shall not be specified as gravel borrow, sand borrow, special borrow material or other particular kind of borrow. It shall have properties such that it may be readily spread and compacted for the formation of embankments. The borrow shall not include rocks with a major dimension greater than 8 inches.

PART 3 EXECUTION

3.1 INSTALLATION

A. Prior to the placement of borrow material, site preparation shall be completed as required by the Contract Documents, and approved by the Engineer.

B. Ensure that all materials are properly stockpiled on site to prevent contamination by other materials.

C. Place borrow material over the entire area in uniform lifts and compact in accordance with Section 02315.

D. Utilize on-site soils prior to using off-site borrow provided on-site soils meet the requirements of the specifications.

E. Utilize gravel borrow in all locations where a surface treatment has not been specified but requires a firm finish surface.

F. Processed gravel for pavement subbase is intended to provide a stable foundation for driveways, sidewalk and roadway repair where a gravel base has been specified.

G. Borrow shall be used as a replacement for unsuitable materials where poor soil conditions are encountered during the progress of the work, where approved by the
Engineer. Borrow type will be determined by the Engineer. Borrow material used as a replacement for unsuitable soil is not intended to be an aid to dewatering.

H. Shape borrow used for pipe foundation material so that it supports the pipe properly and will not damage the pipe, bells, collars, or the pipe fittings.

I. Place all borrow to keep it free of other materials and to prevent segregation.

END OF SECTION
SECTION 02398
TIMBERWORK

PART 1   GENERAL

1.1   SUMMARY
    A.   Section Includes
        1.   Timber stair construction
        2.   Incidental timberwork

1.2   SUBMITTALS
    A.   Certificates: Certificates of conformance of timber (material & treatment) shall be submitted to the Engineer for approval.

1.3   QUALITY ASSURANCE
    A.   Treated timber shall be grade stamped and tagged with treatment information. The supplier’s certificate of specification conformance shall be submitted and additional producer data and material testing may be requested if the material delivered does not appear to meet the specifications.

1.4   REFERENCE STANDARDS
    A.   ASTM A 36 Carbon Structural Steel
    B.   ASTM A 123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
    C.   ASTM A 153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
    D.   ASTM A 307 Carbon Steel Bolts and Studs. 60,000 psi Tensile Strength
    E.   AWPA C1 All Timber Products-Preservative Treatment by Pressure Processes
    F.   AWPA C4 Lumber. Timbers. Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes
    G.   AWPA C 18 Standard for Pressure Treated Material in Marine Construction
    H.   AWPA M4 Care of Preservative-Treated Wood Products
    I.   AWPA P5 Standard for Waterborne Preservatives

PART 2   PRODUCTS

2.1   MATERIAL
    A.   Timber
        1.   All timber shall be preservative treated Southern Yellow Pine, S4S, straight and true, free of damage, defects, shakes, splintering, or similar defects unsuitable for public stair use.
        2.   Stair timbers shall be No. 1 Southern Yellow Pine or better, treated to 0.6 pcf retention Alkaline Copper Quat (ACQ).
3. Railing timber shall be No. 1 Southern Yellow Pine or better, treated with a minimum 0.4 pcf retention Alkaline Copper Quat (ACQ), or 0.21 pcf retention Copper Azole (CA).

4. Railing timber shall be straight, free of bark, protruding slivers and free of substantial knots or other defects.

B. Galvanized Hardware

All timber hardware, including bolts, nuts, washers, straps, plates, spikes, spike grids and drift pins shall be hot-dip galvanized steel, or stainless steel, conforming to the respective ASTM standards and other requirements specified below:

1. Bolts, Threaded Rod and Nuts: matching, to A307 or A193 B7 or F1554.

2. Washers, straps, plates, and miscellaneous items shall be A36, A572 or A992 steel. Round washers shall be used where countersunk.

3. Galvanizing shall be in accordance with ASTM A123 and A153, as applicable.

C. Screws

All wood screws shall be stainless steel.

D. Non-skid Surfaces

Each timber stair tread below elevation 5.0 ft NAVD88 datum shall be covered with a pre-formed fiberglass non-skid stair tread cover suitable for exterior use and wet areas, with a grit profile of 0.25 inches, such as #A785 by Koffler Sales, or equal, color black. Install in accordance with manufacturers recommendations for a marine environment with stainless steel fasteners.

PART 3 EXECUTION

3.1 GENERAL

A. Treated timber shall be carefully handled without sudden dropping, breaking of outer fibers, bruising or penetrating the surface with tools. It shall be handled with rope slings. Cant hooks, peaveys, pikes, or hooks shall not be used.

B. Timber shall be closely fitted, accurately set to required lines, pitch and levels, and rigidly secured in place, as shown on the Drawings. If bearing surfaces are not fully bearing, these bearing surfaces shall be shimmed with plastic flat and tapered shims to create full bearing – secure all shims.

C. The following requirements shall be met:

1. Holes for bolts/threaded rod shall be no more than 1/16” larger than bolt diameter.

2. Timber washers shall be placed under both bolt heads (except timber bolt heads) and nuts.

3. Where damaged or cut for fitting, or during handling, treated timber shall be given two brush coats (at least 15 minutes apart) of copper naphthenate solution (min. 1% metallic copper) at the time of cutoff or drilling; before the cut surface is submerged by the tide or wetted.
4. Exposed timber rail ends (excluding splices) shall be finished with a 1/2” chamfer or radius all around unless otherwise noted.

END OF SECTION
SECTION 02457
HELICAL PILES

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes
   1.  This work shall consist of helical piles designed, furnished, installed, and tested in accordance with these specifications and as shown on the Contract Drawings.
   2.  Pile Caps
   3.  Pipe Pile Support Assembly
   4.  Seawall anchors
   5.  Stair landings (option)

B.  Related Sections
   1.  Section 03300 – Concrete
   2.  Section 05120 – Structural Steel

1.2  REFERENCES

A.  Massachusetts State Building Code, Current Edition
C.  ASTM A36 Standard Specification for Carbon Structural Steel
D.  ASTM A53 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
E.  ASTM A153 Zinc Coating (Hot Dip) on Iron and Steel Hardware
F.  ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
I.  AWS D1.1 Structural Welding Code – Steel

1.3  SUBMITTALS

A.  Qualifications
   1.  Submit a list containing at least five projects on which the pile contractor has installed helical piles similar to this project within the past 5 years. A brief description of each project and a reference shall be included for each project listed. As a minimum, the reference shall include an individual's name and current phone number.
2. The helical pile work shall be performed under the direction of the Contractor’s Design Engineer. The Design Engineer shall have a minimum of five years of experience designing and directing the installation of helical piles, and shall be a licensed Massachusetts Professional Engineer. Equipment operators and on-site supervisors shall have a minimum of one year of experience installing helical piles with the pile contractor's organization, and a minimum of five years of experience installing helical piles. Prior to the start of work, the Contractor shall submit a list identifying the engineer, rig operators, and on-site supervisors who will be assigned to the project. The list shall contain a summary of each individual's experience.

3. The Engineer will approve or reject the pile contractor's qualifications and staff within 10 working days after receipt of the complete submittal. Work shall not be started on any piling nor any materials ordered until approval of the pile contractor's qualifications is given. The Engineer may suspend the pile work if the pile contractor substitutes unqualified personnel for approved personnel; the Contractor shall be fully liable for additional costs resulting from the suspension of work and no adjustment in contract time resulting from the suspension of work will be allowed.

B. Submit a detailed narrative describing the pile installation method proposed and encompassing all aspects of the pile installation operation, including progressing through riprap.

C. Submit working drawings and a design submission describing the helical piles proposed for use. The working drawings and design submission, stamped/sealed the Design Engineer, shall be submitted 30 calendar days prior to the desired commencement of the pile installation. The working drawings and design submission shall include the following:

1. Pile design calculations shall be stamped/sealed by a Massachusetts Professional Engineer, and shall be properly coordinated with shop drawings. Calculations shall include:
   a. A written summary report which describes the overall helical pile design.
   b. Applicable code requirements and design references.
   c. Design criteria including soil shear strengths, unit weights, and steel-soil skin friction values for each stratum.
   d. References for and/or calculations of the skin friction values, soil unit weights and friction angles, and soil lateral resistance.

2. A drawing showing the location and orientation of each helical pile. Pile locations shall not interfere with any existing site features, including but not limited to structures, roadways, utilities, and equipment. A pile schedule providing:
   a. Pile number;
   b. Pile design load; and
   c. Type and size of pile.

3. Installation means and methods to ensure that loads are transferred to the native sand bearing stratum. The submittal shall include general notes for constructing
the helical piles, including construction sequencing and other special construction requirements.

4. Pile to utility and pile to cap connection details.

5. Helical pile design.
   a. The piles shall be designed to accommodate the loads provided in the attached table. Piles shall be designed in accordance with the Massachusetts State Building Code.
   b. The pile design shall assume zero frictional and lateral resistance in the peat and organic silt strata. Piles shall develop their full capacity entirely in the native sands. The design shall not rely upon lateral resistance in the top two feet of soil.
   c. Soil parameters used in the pile design shall not exceed the following values:

<table>
<thead>
<tr>
<th>Soil Parameter</th>
<th>Fill</th>
<th>Peat</th>
<th>Organic Silt</th>
<th>Sand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Unit Weight (pcf)</td>
<td>115</td>
<td>80</td>
<td>80</td>
<td>115</td>
</tr>
<tr>
<td>Maximum Cohesion (psf)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum Angle of Internal Friction (°)</td>
<td>30°</td>
<td>0</td>
<td>0</td>
<td>30°</td>
</tr>
<tr>
<td>Rankine Passive Earth Pressure Coefficient (Kp)</td>
<td>3.00</td>
<td>0</td>
<td>0</td>
<td>3.00</td>
</tr>
</tbody>
</table>

   d. N-values used for pile design shall not exceed the average value of a given stratum.
   e. The helical pile design shall consider the potential for buckling in the peat and organic silt strata.
   f. The design submittal shall provide the minimum effective installation torque for each size and capacity pile.

6. Submit the following:
   a. Welder/welding operator performance qualifications (WPQ).
   b. Certified welding inspection (CWI) credentials.
   c. Testing agency personnel credentials.
   d. Welding inspector’s reports.
   e. Shop inspection and quality control records when requested.

The Engineer will acknowledge and respond to the Contractor's working drawings and design submission within 15 working days after receipt of the submission.

D. Submit mill test reports for the helical piles, including pipe thicknesses, dimensions, and steel type.

E. Submit within 30 calendar days after completion of the helical pile work a report containing:
   1. As-built drawings showing the surveyed locations of the piles, the pile lengths, and surveyed pile tip elevations.
2. Detailed pile installation records for each pile including embedment depth of pile in the bearing stratum, helical pile type and configuration, installation equipment, type of torque indicator used, installation torque at one-foot intervals for the final 10 feet of installation, obstructions, plumbness, and variance from designed pile location and elevation.

3. Pile test results and graphs.

F. Manufacturer’s literature including technical and performance specifications of the pile installation equipment. Submit copies of calibration reports for each torque indicator or torque motor. The calibration tests shall have been performed within forty five (45) days of the date submitted. The calibration reports shall include the name of the testing agency, the serial number of the device calibrated, a description of the calibration testing equipment, the calibration date, and calibration results.

1.4 QUALITY ASSURANCE


B. Welding


2. Welding Inspector: Certified in accordance with AWS QC 1, and having prior experience with the welding codes specified.

3. Testing Agency: Personnel performing tests shall be NDT Level II Certified in accordance with ASNT SNT-TC-1A.

4. Welding shall be done only by welders certified as to their ability to perform welding in accordance with the requirements of the AWS Code.

C. Field Monitoring and Testing

1. Install all piles in the presence of an authorized representative of the Owner.

2. Certification of quality of pile materials to be used in the Work shall be furnished at the time of delivery of materials to the site. Pile materials shall also be subject to on-site observation for conformance with Contract Documents.

3. Approvals given by the Engineer shall not relieve the Contractor of his responsibility for performing the Work in accordance with the Contract Documents.

1.5 PROJECT/SITE CONDITIONS

A. Loading Conditions – The Contractor’s designer shall design piles based on final approved pile layout and utility, appurtenance, and pile material(s)/size(s). Ultimate pile capacities shall be based on a factor of safety of 2.0 on the service loads.

1.6 SEQUENCING AND SCHEDULING

A. Provide fully equipped pile installation equipment in full-time operation at the site during the Work and mobilize additional equipment, if necessary, to complete the Work on schedule.
B. Piles located in areas to be excavated or demolished shall not be installed until the excavation and/or demolition has been completed.

C. Coordinate pile installation operations with work by others on the project.

PART 2 PRODUCTS

2.1 MATERIALS

A. Pile Shafts
   1. Hot dip galvanized steel sections of the mass and shape required by the pile contractor’s pile design conforming with ASTM A53.
   2. Helical piles shall be newly manufactured, and shall be free of defects and corrosion.
   3. If splices are anticipated, place splices in the lower third of the pile. Splice lengths shall not be less than 10 feet, and only one splice per pile is allowed.

B. Helix Bearing Plates
   1. Hot dip galvanized steel sections formed on matching dies to true helical shape and uniform pitch as required by the pile contractor’s pile design, conforming to ASTM A1018 Grade 55.

C. Pile Caps
   1. Pile caps shall be constructed in accordance with these specifications and as shown on the Contract Drawings.

D. Structural Steel Support Beams
   1. All structural steel components shall conform to ASTM A36, A572 Grade 50 or better.
   2. All steel components shall be hot dip galvanized.
   3. All steel bolts and accessories shall be hot dip galvanized or stainless steel.

PART 3 EXECUTION

3.1 PREPARATION

A. Load, transport, unload, store, and handle piles so that the metal is kept clean and free from damage and distortion. Piles damaged during installation will not be accepted unless the capacity is proven to be 100 percent of the required ultimate capacity by load tests. Perform load tests to prove capacity of damaged piles at no cost to the Owner.

B. Protect existing structures and utilities at all times.

C. Determine pile locations in the field and establish all elevations required.

D. The Contractor shall employ a licensed Massachusetts Professional Land Surveyor, familiar with pile installation, who shall establish lines and levels. The Contractor shall be responsible for correctly locating piles prior to installation, keeping up-to-date records of the amount of heave of individual piles, and surveying final pile locations.

3.2 EQUIPMENT
A. Helical pile shall be installed using a rotary torque motor with clockwise and counterclockwise rotation capabilities. The torque motor shall be capable of continuous adjustment of the rotation rate during installation. The torque motor shall have a torque capacity that is 15% greater than the torsional strength rating of the central steel shaft to be installed.

B. A torque indicator shall be used during helical pile installation that provides continuous measurement of the applied torque. The torque indicator shall be capacity of torque measurements in increments of 500 foot-pounds or less.

C. Equipment shall be capable of applying adequate down pressure and torque simultaneously with continuous position adjustment to maintain pile alignment.

D. Preboring and jetting shall not be used unless approved in writing by the Engineer.

3.3 INSTALLATION

A. Install all piles at the proper locations shown on the pile design submittal. Pile locations shall be checked during installation and appropriate measures taken, as necessary to maintain the correct pile location. Upon completion, all piles shall be within 3 inches horizontally of the designed pile locations and within 2 degrees of vertical along the longitudinal axis. Piles supporting gravity sewers, drains, and connected structures shall be within one-half inch vertically of the designed top of pile elevation. Piles supporting other utilities and structures shall be within one inch vertically of the designed top of pile elevation. Check alignment of piles continually during installation.

B. Immediately after installation of each pile, establish a reference point and its elevation on the pile for the purpose of checking movement of the pile as additional piles are installed.

C. Install piles to the designed minimum installation torque and to the depth necessary to obtain the required ultimate pile capacity. The torque as measured during installation shall not exceed the torsional strength rating of the central steel shaft.

D. If the designed minimum installation torque is not achieved at the designed minimum embedment depth, the Contractor shall do one of the following at no cost to the Owner:

1. Install the helical pile deeper using additional extension sections.

2. Remove the helical pile and install a new pile with additional and/or larger diameter helix plates. The pile designer shall submit the proposed new helix configuration prior to installation of the new pile. If the new pile is installed at the same location as the original pile, the top-most helix of the new helical pile shall be terminated at least 3 feet below the tip elevation of the original helical pile.

3. Install additional helical piles to provide the required capacity.

E. The average torque of the final three feet of penetration shall be used as the basis of comparison with the minimum installation torque provided in the design submittal. The average torque shall be defined as the average of the last three readings recorded at one foot intervals.

F. Check for pile heave during installation operations. Take level readings immediately after each pile is installed and again after piles within a radius of 15 feet are installed. Reinstall all piles to the designed torque or penetration that heave more than ¼ inch.
G. Protect piles from damage at all times during and after installation.

END OF SECTION
SECTION 02503
TESTING OF STORM DRAINAGE SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes
1. Testing of Storm Drainage Systems

B. Related Sections
1. Section 02958 – Television Inspection of Pipelines

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 TESTING OF STORM DRAINAGE SYSTEMS

A. Visually inspect all storm drainage structures included in the Work to ensure that all structures are clean of debris and sediment, and have frames, covers, grates, inverts, sumps, and other required appurtenances.

B. All flexible pipe types including polyvinyl chloride (PVC), high-density polyethylene (HDPE), or polypropylene (PP) shall be tested for deflection in accordance with Paragraph 3.2.D of this Section at least forty five (45) days after it has been backfilled.

END OF SECTION
SECTION 02514

DUCTILE IRON PIPE AND FITTINGS

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes
   1. Ductile iron pipe and fittings, direct buried or in below grade vaults
B. Related Sections
   1. Section 02280 – Pipeline and Underground Structure Abandonment
   2. Section 02315 – Excavation, Backfill, Compaction and Dewatering

1.2 REFERENCES
A. Pipe and fittings shall conform to the latest edition of the following standards unless otherwise specified:
   8. ANSI/AWWA C800, Underground Service Line Valves and Fittings.
   10. ASTM A536, Standard Specification for Ductile Iron Castings

1.3 SUBMITTALS
A. Administrative Submittals
   1. Detailed description of proposed pipe handling and installation methods along with the manufacturer’s approval of those methods.
2. Construction details and schedule of Work for each connection to existing piping at least 7 days prior to beginning the Work. Approval must be received before commencement of Work on-site.

B. Shop Drawings
1. Manufacturer’s drawings and catalog cuts, including descriptive literature indicating product characteristics and conformance with specifications and code requirements. Submit shop drawings for ductile iron pipe; linings and coatings; and all accessories.

2. Location for each type of restrained joint or device to prevent joint separation along with installation, assembly and disassembly instructions.

C. Quality Control Submittals
1. Certificates of compliance on pipe materials.

2. Prior to first shipment of pipe, submit certified test reports that the pipe for this Contract was manufactured and tested in accordance with the ASTM and ANSI/AWWA Standards specified herein.

3. Manufacturer of pipe and Manufacturer of fittings on the project shall have an established, annually audited and certified, quality control procedure for manufacturing of pipe and manufacturing of fittings respectively. Manufacturer shall be certified by an independent, third party auditor for compliance with all requirements of the AWWA standards. The manufacturer shall submit a current certificate of compliance for the plant facility where the pipe or fittings are to be made. Certificate of compliance shall be submitted for each additional year of manufacturing during the duration of the Project. The manufacturer shall not change the plant manufacturing the pipe or fittings during the duration of the Work.

D. As specified in Section 01330, submit certifications for all iron or steel products indicating that all manufacturing processes occurred in the United States.

1.4 QUALITY ASSURANCE

A. Pipe and fittings shall be inspected at the foundry as required by the standard specifications to which the material is manufactured. In addition, the Owner reserves the right to have any or all pipe, fittings, and special castings inspected and/or tested by an independent service, or by the Engineer, at either the manufacturer’s plant or other testing laboratory at their own expense.

B. Ductile iron pipe shall be from a single manufacturer. Fittings shall be from a single manufacturer, not necessarily the pipe manufacturer.

C. The Engineer may inspect the pipe and fittings after delivery. The pipe, including cement lining, shall be subject to rejection at any time on account of failure to meet any of the Specification requirements. Pipe rejected after delivery, or at any point during the progress of the Work, shall be marked for identification and shall immediately be removed from the job site and replaced at no additional cost to the Owner.
1.5 PROJECT CONDITIONS
A. Comply with laws, ordinances, codes, rules, and regulations of the local and state authorities having jurisdiction over the Work. Where provisions of the Contract Documents are in conflict with the codes, the more stringent shall govern.

PART 2 PRODUCTS
2.1 AMERICAN IRON AND STEEL
A. All iron and steel products included in this section shall be manufactured in the United States. Refer to Section 00800 for further description of the American Iron and Steel requirements.

2.2 MANUFACTURERS
A. American Cast Iron Pipe Company
B. U.S. Pipe
C. or equal

2.3 PIPE AND FITTINGS - GENERAL
A. Ductile iron pipe shall be designed in accordance with AWWA C150 and shall be manufactured in accordance with AWWA C151. Fittings and other materials referenced in this section shall conform to the latest edition of the references listed in Paragraph 1.2 of this section.
B. Unless otherwise indicated or specified in the Contract Documents, buried ductile iron pipe and fittings shall be Class 52 with push on joints.
C. Unless otherwise indicated or specified, buried pipe shall have an asphaltic exterior coating in accordance with AWWA C110, C151 or C153, as applicable.
D. Unless otherwise indicated or specified in the Contract Documents, buried fittings shall be ductile iron with mechanical joints.
E. Unless otherwise indicated or specified in the Contract Documents, ductile iron pipe and fittings installed above ground and/or in buried vaults, shall be Class 53 with flanged joints.
F. Pipe and fittings shall be cement mortar lined and seal coated on the interior in accordance with AWWA C104. Cement mortar lining shall be twice the standard thickness; tolerance shall be minus 0 inches, plus 1/8 inch

2.4 PIPE AND FITTING JOINTS
A. Push-on-joints and mechanical joints shall conform to ANSI/AWWA C111/A21.11.
B. Flanged joints shall be assembled with bolts and nuts, bolt studs with nut on each end, or studs with nuts in tapped flanges. Bolts and nuts shall be manufactured in accordance with ASTM A325, Type 1, Grade 5, hot-dipped galvanized finish, heavy hex head, 120,000 psi minimum tensile strength with X-Heavy nuts. Nuts and bolts shall be provided with an anti-seize, thread lubricating compound.
C. Gaskets for flanged joints shall be full face, 1/8 inch red rubber. Ring gaskets shall be provided for piping 14 inches in diameter and larger.
2.5 FITTINGS
A. Fittings shall be ductile iron or gray iron.
B. Fittings less than or equal to 12 inches in size shall conform to ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53 and shall have a 350 psi pressure rating.
C. Fittings greater than 12 inches in size shall conform to ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53 and shall have the following pressure ratings:
   1. Fittings greater than 12 inches and less than or equal to 24 inches - 350 psi
   2. Fittings greater than 24 inches - 250 psi

2.6 GASKETS, GLANDS, NUTS, AND BOLTS
A. Gaskets, glands, nuts, bolts and accessories shall conform to ANSI/AWWA C111/A21.11 or C153/A21.53, as appropriate.
B. Gaskets shall be of plain tipped rubber, suitable for exposure to the liquid within the pipe.
C. Lubricants must be suitable for the type of fluid to be carried by the pipeline, and shall be NSF approved for water service.
D. Glands shall be ductile or cast iron.
E. Bolts shall be high strength, low alloy.
F. Requirements for flanged joints:
   1. Gaskets for flanged joints shall be full faced red rubber, 1/8 inches thick. Gaskets shall conform to the dimensions of Table A.1 of ANSI/AWWA C115/A21.15. Ring gaskets shall be utilized for joints 14 inches in diameter and larger.
   2. Assemble flanged joints with bolts and nuts, bolt studs with nut on each end, or studs with nuts in tapped flanges. Bolts and nuts shall be of low carbon steel conforming to the chemical and mechanical requirements of ASTM A307, 60,000 psi tensile strength, Grade B. Bolts, nuts and studs shall be cadmium plated.

2.7 THRUST BLOCKS AND ANCHOR BLOCKS
A. Concrete shall have a 28-day compressive strength of 3,000 psi.

PART 3  EXECUTION

3.1 GENERAL
A. Deliver, handle, store and install ductile iron pipe in accordance with ANSI/AWWA C600.

3.2 DELIVERY, STORAGE AND HANDLING
A. Delivery of Pipe and Fittings
   1. Coordinate delivery of pipe and fittings with installation and unload along the line of work outside the trench near as practicable to the point of final
placement, and properly wedged secure. Give minimum 24 hour notice to the Engineer prior to pipe deliveries. Notice shall include the method of unloading.

2. Unload and handle pipe and fittings with a crane or backhoe of proper capacity outfitted with a steel cable sling, belt sling or other specially designed attachment to protect the pipe coating.

3. At the end of each work week, no more than the amount of pipe to be installed the following work week shall remain along the construction route. All pipes remaining along the construction route are to be properly wedged to prevent movement and not interfere with traffic or pedestrian movement. All excess pipes are to be stockpiled at an approved staging yard in accordance with AWWA C600.

B. Storage of Materials

1. Store pipe in a manner to keep pipe interior free from dirt and foreign matter. Store pipe on wood blocking, rails or other suitable materials. Pipe shall not be stored on stones.

2. Pipe may be stored on top of each other to the maximum stacking height specified by AWWA C600.

3. Protect materials subject to corrosion in accordance with manufacturer's recommendations.

4. If pipe or project materials are stored at the Contractor’s approved staging yard, the Engineer shall be permitted reasonable access to the staging yard for inspection of the pipe and materials.

C. Handling Materials

1. Handle materials in such a manner so as to prevent damage to the concrete or mortar coating or lining.

2. Materials are to be handled using methods approved by the pipe manufacturer.

3. Materials damaged during handling will be rejected and shall be replaced at the Contractor’s expense.

4. Ensure that no foreign materials enter the pipe and fittings during handling.

3.3 DEFECTIVE PIPE

A. Defective pipe or fittings will be rejected for use on this project. Defective pipe is classified as follows:

1. Damage to interior lining
2. Insufficient lining thickness
3. Pipe out of round
4. Damaged pipe barrel area
5. Damaged pipe bells or spigots
6. Missing, misplaced or illegible marking and identification
7. Outside pipe diameter exceeding allowable tolerance
B. If defective pipe is discovered after it has been installed, it shall be removed and replace with sound pipe, at no additional cost to the Owner.

3.4 JOB CONDITIONS

A. Environmental Requirements
   1. Do not lay pipe when weather conditions are unsuitable, as determined by the Engineer, for pipe laying work.
   2. Equipment for pipe laying shall be maintained in good operating order.
   3. Job site shall be kept clean of debris and organized.

B. Protection
   1. At all times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug. This provision shall apply at all times when pipe laying operations are suspended.

C. Work Affecting Existing Pipelines
   1. Work on Existing Pipelines:
      a. Prior to any work on existing pipelines, remove soils, rust and other debris from the exterior wall of the pipe a minimum of 12 inches beyond the work area.
      b. Cut pipes as shown or required with machines specifically designed for this work.
      c. Install temporary plugs to keep out all mud, dirt, water and debris.
      d. Provide necessary adapters, fittings, pipe and appurtenances required.
      e. Cut or tap existing mains at the mid span of a pipe barrel. In no case shall a pipe be cut or tapped within 24 inches of a pipe joint.

3.5 CLEANING PIPE AND FITTINGS

A. Clean and remove foreign matter from the interior of each pipe and fitting before placing in the trench. Remove pipe and fittings whose interior has been contaminated with oil, gasoline or kerosene and replace at no additional cost to the Owner. Remove pipe and fittings whose interior has been contaminated with any material which is a regulated drinking water contaminate or which damages the cement and replace at no additional cost to the Owner. Should foreign material or contaminants be observed in previously installed pipe, cease work until foreign material or contaminated pipe is decontaminated or removed.

B. Remove all lumps, blisters, and excess asphaltic coating from the bell and spigot ends of each pipe or fitting. The outside of the spigot and the inside of the bell shall be wire-brushed and wiped clean and be dry and free from oil and grease before the pipe or fitting is laid.

C. On all ductile iron pipe or fittings, the bell of the pipe and the spigot of the adjacent pipe or fitting shall be wire-brushed and cleaned of rust and dirt. The bell of the pipe or fitting and the spigot of the adjacent pipe shall then be lubricated with the joint.
lubricant furnished with the pipe, and used in accordance with the manufacturer's directions.

3.6 ALIGNMENT AND GRADE

A. Lay and maintain the pipe at the required lines and grades as shown on the Drawings. Fittings shall be at the locations indicated on the Drawings with joints centered, and spigots properly fitted. No deviation shall be made from the line and grade indicated on the Drawings, except with the approval of the Engineer.

B. Joint Openings and Deflection:
   1. The maximum allowable joint openings and deflection for push-on joint pipe and restrained joint pipe shall be one-half the manufacturer's maximum allowable opening and deflection.
   2. Radius curves indicated on the Drawings or approved during Shop Drawing review shall be made using full lengths of pipe. The use of short lengths of pipe and extra joints in order to make a smaller radius turn will not be allowed without the written approval of the Engineer.

C. Line or Grade Conflicts with Other Structures
   1. Wherever obstructions not shown on the Drawings are encountered during the progress of the Work and interfere to such an extent that an alteration in the pipe layout is required, the Engineer will order a deviation from the line and grade at locations where obstructions such as culverts, ducts, wire and/or pipes are encountered. The pipe shall be laid over or under such obstacles with a minimum clearance of 6 inches. The Engineer reserves the right to make the decision to go over or under obstructions during construction.

D. Where underground conditions indicate a change of alignment or grade, such change shall be made only with the written consent of the Engineer.

E. Except at locations indicated on the Drawings by the profile, do not establish high points where air can accumulate.

3.7 PIPE INSTALLATION

A. General Requirements
   1. Prepare the pipe trench in accordance with Section 02315.
   2. Keep trenches dewatered while installing pipe until all required pipe joints have been made and the trench has been backfilled above the water table to a point where pipe uplift will not occur when the pipe is empty.
   3. Carefully lower pipe and fittings into the trench piece by piece by means of a crane, ropes or other tools or equipment, in such a manner as to prevent damage to pipeline materials and protective coatings and linings. Under no circumstances shall pipeline materials be dropped or dumped into the trench.
   4. Carefully inspect pipe and fittings for cleanliness and defects prior to placing them in the trench.
B. Laying Pipe

1. Prevent foreign material from entering the pipe while it is being placed in the line. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe.

2. When laying pipe, the spigot end shall be centered in the bell, the pipe forced home and the joint completely assembled. The pipe shall be adjusted to correct line and grade and secured in place with approved backfill material, properly tamped under and around the pipeline.

3. When laying the pipe, remove and replace fittings that do not allow a sufficient and uniform space for joints at no additional cost to the owner.

4. Contractor shall adjust means and methods to protect pipe and coating from incidental damage resulting from the placement of armor stone. The cost of materials associated with the protection of the pipe shall be included in the base bid.

C. Cutting Pipe

1. Furnish pipe in full lengths. Cut ductile iron pipe without damage to the pipe or cement lining. The cutting shall be done to leave a smooth end at right angles to the axis of the pipe.

2. Cut ductile iron pipe either by the use of compression-type chain cutters which exert an even continuous force on the wall of the pipe or by power driven abrasive wheels.

3. On ductile iron pipe using rubber joints, the outside edge of the cut end must be tapered back approximately ¼ inch at an angle of about 30 degrees so as to provide for the proper assembly of this joint.

3.8 PUSH-ON JOINTS

A. Push-on joints shall be made in accordance with the manufacturer's instructions. Install gaskets in the pipe bell after lowering the pipe into the trench for installation. Thoroughly clean the bell and spigot of dirt and tar blisters in the trench utilizing a wire brush or bristle brush. Insert rubber gasket in the groove of the bell end of the pipe beginning at the bottom of the bell and working to the top of the bell. Apply lubricant per the manufacturer's recommendations utilizing a paint brush to the pipe gasket and the pipe spigot to be joined. Place a clean rag under the joint to protect the joint from dirt caused by unintentional grounding of the pipe during jointing. Upon completion, remove the rag. Align the plain end of the pipe to be laid and insert in the bell of the pipe to which it is to be joined and push home with a jack or by other means. After joining the pipe use a metal feeler to make certain that the rubber gasket is correctly located.

3.9 MECHANICAL JOINTS

A. Mechanical joints shall be made in accordance with Appendix A of ANSI A21.11/AWWA C111 and the manufacturer's instructions. Thoroughly clean and lubricate the joint surfaces and rubber gasket before assembly. Tighten bolts to the specified torques. Under no conditions shall extension wrenches or an extended handle ratchet wrench be used to secure greater leverage.
END OF SECTION

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SECTION 02530
MANHOLES AND CATCH BASINS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes
   1. Precast concrete manholes
   2. Precast concrete catch basins
   3. Cast iron manhole frames and covers
   4. Cast iron catch basin frames and grates

B. Related Sections
   1. Section 02503 - Testing of Sanitary Sewer and Storm Drainage Systems
   2. Section 03300 - Concrete

1.2 REFERENCES

A. AASHTO – American Association of State Highway and Transportation Officials, Standard Specifications for Highways and Bridges, most recent edition
B. ASTM C32 - Standard Specification for Sewer and Manhole Brick (made from clay or shale)
F. ASTM C478 – Standard Specification for Precast Reinforced Concrete Manhole Sections
H. ASTM C923 - Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures, Pipes and Laterals

1.3 SUBMITTALS

A. Submit Shop Drawings, showing all details of construction, including, but not limited to, structure dimensions, reinforcing, joints, and pipe connections to structures.
B. Submit on all materials and products included in this specification, including, but not limited to, manhole rungs, manhole frames and covers, brick masonry, mortar, non-shrink water-proof grout, catch basin frames and grates.
C. Submit weights of manhole frames and covers and catch basin frames and grates.
D. Submit design calculations including verification of adequate anti-flotation features and lateral earth pressures. Calculations shall verify that the manhole structure has been designed to withstand the burial depth, submergence due to flooding, flotation, and dead and live loads.

E. As specified in Section 01330, submit certifications regarding all iron or steel products that all manufacturing processes occurred in the US.

1.4 QUALITY ASSURANCE

A. The quality of materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Engineer, or other representative of the Owner. Such inspection may be made at the place of manufacture, or at the Site after delivery, or at both places, and the materials shall be subject to rejection at any time on account of failure to meet any of the Specification requirements, even though samples may have been accepted as satisfactory at the place of manufacture. Material rejected after delivery to the job shall be marked for identification and shall be removed from the job at once. Materials which have been damaged after delivery will be rejected, and if already installed, shall be acceptably repaired, if permitted, or removed and replaced, at no additional cost to the Owner.

B. At the time of inspection, the materials will be carefully examined for compliance with the latest ASTM designation specified and these Specifications, and with the approved manufacturer's drawings. Manhole sections will be inspected for general appearance, dimension, "scratch-strength," blisters, cracks, roughness, and soundness. The surface shall be dense and close-textured.

C. Imperfections in manhole sections may be repaired, subject to the approval of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs will be carefully inspected before final approval. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi at 7 days and 5,000 psi at 28 days, when tested in 3 inch by 6 inch cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs subject to the approval of the Engineer.

D. Personnel shall have confined space entry training as appropriate for the work to be performed.

E. Manholes and catch basins shall be designed for lateral earth pressures and to resist flotation.

PART 2 PRODUCTS

2.1 AMERICAN IRON AND STEEL

A. All iron and steel products included in this section shall be manufactured in the US. Refer to Section 00800 for further description of the American Iron and Steel requirement.

2.2 PRECAST CONCRETE MANHOLE AND CATCH BASIN SECTIONS

A. Precast concrete barrel sections and transition top sections, shall conform to ASTM C478 and the following requirements:

1. The wall thickness shall not be less than 5 inches for 48 inch diameter reinforced barrel sections, 6 inches for 60 inch diameter reinforced barrel sections and 7 inches for 72 inch diameter reinforced barrel sections.
2. Top sections shall be eccentric except that flat top sections shall be used where shallow cover requires a top section less than 4 feet as shown on the Drawings.

3. Barrel sections shall have tongue and groove joints.

4. All sections shall be cured by an approved method and shall not be shipped nor subjected to loading until the concrete compressive strength has attained 3,000 psi and not before 5 days after fabrication and/or repair, whichever is longer.

5. Precast concrete barrel sections with precast top slabs and precast concrete transition sections shall be designed for a minimum of AASHTO HS20-44 loading plus the weight of the soil above at 120 pcf.

6. The date of manufacture and the name and trademark of the manufacturer shall be clearly marked on each precast section.

7. Precast concrete bases shall be monolithically constructed. The thickness of the bottom slab of the precast bases shall not be less than the barrel sections or top slab whichever is greater. Precast concrete bases shall be constructed with a 6 inch extended base, unless otherwise shown on the Drawings.

8. Knock out panels for piping shall be provided in precast sections at the locations shown on the Drawings. They shall be integrally cast with the section, 2½ inches thick and shall be sized as shown on the Drawings. There shall be no steel reinforcing in knock out panels.

9. The side wall height of the base section shall be a minimum of 12 inches above the top of the pipe coming into the manholes and catch basins.

2.3 BRICK MASONRY

A. Bricks shall be good, sound, hard and uniformly burned, regular and uniform in shape and size, of compact texture. Underburned or salmon brick will not be acceptable and only whole brick shall be used unless otherwise permitted. In case bricks are rejected by the Engineer, they shall be immediately removed from the site of the work and satisfactory bricks substituted, at no additional cost to the Owner.

1. Bricks for building up and leveling manhole frames shall conform to ASTM C32 Grade MS.

2. Poured concrete inverts will not be allowed.

B. Mortar used in the brickwork shall be composed of one part Type II portland cement conforming to ASTM C150 to two parts sand to which a small amount of hydrated lime not to exceed 10 lbs. to each bag of cement shall be added.

C. Sand used shall be washed, cleaned, screened, sharp and well graded as to different sizes and with no grain larger than will pass a No. 4 sieve. Sand shall be free from vegetable matter, loam, organic or other materials of such nature or of such quantity as to render it unsatisfactory.

D. Hydrated lime shall conform to ASTM C207, Type S.

2.4 MANHOLE FRAMES AND COVERS

A. Manhole frames and covers shall be of good quality, strong, tough, even grained cast iron, smooth, free from scale, lumps, blisters, sand holes and defects of any kind. Manhole covers and frame seats shall be machined to a true surface. Castings shall be
thoroughly cleaned and subject to hammer inspection. Cast iron shall conform to ASTM A48, Class 30B or ASTM A48, Class 35B.

B. Manhole covers shall have a diamond pattern, pickholes and the word “DRAIN”, cast in 3 inch letters. Manhole frame and covers shall be manufactured by East Jordan Iron Works; Mechanics Iron Foundry; Neenah Foundry or equal.

C. Manhole frames and covers shall comply with the detail shown on the Drawings.

D. Manhole frames and covers shall be designed for a minimum of AASHTO HS20-44 loading.

2.5 CATCH BASIN FRAMES AND GRATES

A. Catch basin frames and grates shall be of good quality, strong, tough, even grained cast iron, smooth, free from scale, lumps, blisters, sand holes and defects of any kind which render them unfit for the service for which they are intended. Grate and frame seats shall be machined to a true surface. Castings shall be thoroughly cleaned and subject to hammer inspection. Cast iron shall conform to ASTM A48, Class 30B or ASTM A48, Class 35B.

B. The catch basin frames and grates shall comply with the details shown on the Drawings.

C. Catch basin frames and grates shall be designed for a minimum of AASHTO HS20-44 loading.

2.6 JOINTING PRECAST MANHOLE SECTIONS

A. Tongue and groove joints of precast manhole sections shall be sealed with a preformed flexible joint sealant. The preformed flexible joint sealant shall conform to ASTM C990.

2.7 MANHOLE RUNGS

A. Manhole rungs shall be drop front design, 14 inches wide with an abrasive step surface, steel reinforced, copolymer, polypropylene, plastic. Manhole rungs shall conform to OSHA requirements.

2.8 FLEXIBLE PIPE TO-STRUCTURE CONNECTORS

A. The flexible pipe-to-structure connectors shall be designed to provide a positive seal between the connector and the structure wall and between the connector and the pipe.

B. The flexible boot shall be manufactured of EPDM synthetic rubber in accordance with ASTM C443 and C923 and shall be 3/8 inch thick or greater.

C. The external bands shall be made entirely of 304 series non-magnetic stainless steel.

D. The flexible connectors shall be provided with a wedge-type or toggle-type expander to secure the pipe in the structure opening.

E. The flexible connectors shall meet the following criteria, in accordance with ASTM C923:

1. Shall not leak when subjected to a head pressure of 10 psi for 10 minutes.

2. Shall have the ability to deflect 7 degrees in any direction without leakage under the head pressure conditions described above.
3. Shall not leak when subject to a load of 150 lbs./in. pipe diameter and the head pressure conditions described above.

2.9 NON-SHRINK, WATER-PROOF GROUT

A. Non-shrink, water-proof grout shall be Hallemite; Waterplug; Embeco; or equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Installation

1. Construct manholes and catch basins to the dimensions shown on the Drawings and as specified. Protect all work against flooding and flotation.

2. Set precast concrete barrel sections so as to be plumb and with sections in true alignment with a ¼ inch maximum tolerance to be allowed.

3. Install the precast sections in a manner that will result in a watertight joint. Seal the joints of precast concrete barrel sections with the preformed flexible joint sealant used in sufficient quantity to fill 75% of the joint cavity. Fill the outside and inside precast section joints with non-shrink grout and finish flush with the adjoining surfaces. Plug holes in the concrete barrel sections required for handling or other purposes with a non-shrink, water-proof grout or concrete and rubber plugs, and finish flush on the inside.

4. Backfilling shall be done in a careful manner, bringing the fill up evenly on all sides.

B. Pipe Connections

1. For ductile iron pipes use flexible pipe-to-structure connectors.

2. Where flexible pipe-to-structure connectors cannot be used, such as pipes with rough, irregular or corrugated exterior surfaces (concrete, corrugated metal, HDPE drainage pipe, etc):
   a. After the new pipe has been set in place, completely fill the hole around the new pipe and structure with non-shrink, water-proof grout.
   b. Place a 6 inch thick concrete encasement a total of 12 inches in length around the pipe stub adjacent to the exterior wall of the structure. Concrete shall have a 28 day compressive strength of 3,000 psi.

C. Manhole Rung Installation

1. Steel reinforced copolymer polypropylene plastic steps shall be press fitted by hand driven hammer into preformed holes in cured precast sections, on 12 inch centers, by the precast concrete manufacturer.

D. Brickwork

1. Mix mortar only in such quantity as may be required for immediate use and use before the initial set has taken place. Do not retain mortar for more than one and one-half hours and constantly work over with a hoe or shovel until used. Anti-freeze mixtures will not be allowed in the mortar. No masonry shall be laid when the outside temperature is below 40°F unless provisions are made to protect the mortar, bricks, and finished work from frost by heating and...
enclosing the work with tarpaulins or other suitable material. The Engineer’s decision as to the adequacy of protection against freezing shall be final.

2. Set manhole covers and frames and catch basin frames and grates in a full mortar bed and bricks, a maximum of 12 inches thick for conical tops and 6 inches thick for flat top sections, utilized to assure frame and cover are set to the existing grade. Reset the manhole frames and covers and catch basin frames and grates to final grade prior to placement of final paving.

3.2 CLEANING

A. Clean new manholes and catch basins of silt, debris and foreign matter of any kind, prior to final inspection.

END OF SECTION
SECTION 02535
BREAKING INTO EXISTING MANHOLES AND CATCHBASINS

PART 1  GENERAL
1.1  SUMMARY
   A.  Section Includes
       1.  Breaking through the walls and inverts of existing manholes and catchbasins.
       2.  Connecting new pipes to existing structures.
       3.  Ancillary work associated with making the new connections to the existing structures.

1.2  REFERENCES

1.3  SUBMITTALS
   A.  Submit shop drawings showing pipe connection details.

1.4  QUALITY ASSURANCE
   A.  Personnel shall have confined space entry training as appropriate for the work to be performed.

PART 2  PRODUCTS
2.1  MATERIALS
   A.  Flexible Pipe-to-Structure Connectors
       1.  The flexible connectors shall be designed to provide a positive seal between the connector and the structure wall and between the connector and the pipe.
       2.  The flexible boot shall be manufactured of EPDM synthetic rubber in accordance with ASTM C443 and C923 and shall be 3/8 inch thick or greater.
       3.  The external bands shall be made entirely of 304 series non-magnetic stainless steel.
       4.  The flexible connectors shall be provided with a wedge-type or toggle-type expander to secure the pipe in the structure opening.
       5.  The flexible connectors shall meet the following criteria, in accordance with ASTM C923:
           a.  Shall not leak when subjected to a head pressure of 10 psi for 10 minutes.
           b.  Shall have the ability to deflect 7 degrees in any direction without leakage under the head pressure conditions described above.
c. Shall not leak when subject to a load of 150 lbs./in. pipe diameter and the head pressure conditions described above.

B. Non-shrink, water-proof grout
   1. Non-shrink, water-proof grout shall be Hallemite; Waterplug; Embeco; or equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. General
   1. Core drill into existing structures in such a fashion as to make an opening of suitable size to accommodate the connecting pipe without excessive damage to the existing structure.

B. Manholes
   1. For manholes, break out and rebuild existing inverts as required to provide an adequate base under the new channels being installed, and shaped to provide smooth continuous hydraulic flow through the manhole.
   2. Control existing flows as required during the period of construction. No sewage or drainage will be permitted to flow directly against concrete or other masonry work until it is at least 48 hours old.
      a. Temporary handling of sewage or drainage flows may be accomplished by inserting pipes from the inlet to the outlet of the manhole and by using temporary plugs, where appropriate, provided that such pipes do not interfere with satisfactory completion of the work and shaping of the inverts, nor cause excessive backing-up in the existing system upstream of the diversion. In cases where this type of temporary handling of flows is not possible, provide the necessary dams, plugs, etc., as required in upstream manholes, and pump the flow around the structure under construction.
      b. When sewage is pumped or otherwise diverted around a particular structure, it shall be discharged back into the sewage system through existing downstream manholes. Under no circumstances shall sewage be permitted to run onto the surface of the ground.

C. Catchbasins
   1. All catchbasin openings, created as a result of the removal and replacement of the existing drains connected to the catchbasins with new drain pipes, shall be sealed. This work shall be performed using masonry to match existing construction, where applicable, and non-shrink grout to provide a neat patch.

D. Pipe Connections
   1. Rebuild and tightly close existing manhole walls and inverts and catchbasin walls to provide an integral, water-tight structure around the new pipes.
   2. For pipes with smooth exterior surfaces (PVC, ductile iron, HDPE, steel, etc), use flexible pipe-to-structure connectors.
3. Where flexible pipe-to-structure connectors cannot be used, such as pipes with rough, irregular or corrugated exterior surfaces (concrete, corrugated metal or HDPE, etc):
    a. After the new pipe has been set in place, completely fill the hole around the new pipe and structure with non-shrink, water-proof grout.
    b. Place a 6 inch thick concrete encasement a total of 12 inches in length around the pipe stub adjacent to the exterior wall of the structure. Concrete shall comply with Section 03300.

END OF SECTION
SECTION 02760

PAVEMENT MARKINGS

PART 1   GENERAL

1.1 SUMMARY

A. Section Includes

1. All labor, materials, accessories, service and equipment necessary to furnish and apply all pavement striping, parking stalls, and traffic markings as indicated on the Drawings and as specified herein.

   a. New painted pavement markings
   b. New thermoplastic pavement markings
   c. Replacement of pavement markings disturbed as part of construction activities
   d. Replacement of pavement markings in permanent pavement repair areas

1.2 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment

1. There is no individual payment item for pavement markings. This item is incidental to the pavement repair items and payment shall be included within those Bid items. Refer to Sections 00410 (Bid Form) and 01270 (Measurement and Payment).

B. Related Sections

1. Section 00800 – Supplementary Conditions
   a. Massachusetts Department of Transportation – Highway Division Permit

2. Section 02740 - Bituminous Concrete Pavement

1.3 REFERENCES


1.4 SUBMITTALS

A. Submit manufacturers literature and material specifications for all materials furnished under this Section including, but not limited to, the following:

1. Pavement marking paint
2. Thermoplastic marking material
3. Reflectorized glass beads
4. Paint application system and equipment
B. Submit affidavit stating submitted materials comply with the above-noted Standards.

1.5 WARRANTY
A. Provide a written one-year unconditional guarantee against fading, chipping, peeling, wearing, etc.

PART 2 PRODUCTS

2.1 MATERIALS
A. Waterborne Pavement Marking Paint
   1. In accordance with the Commonwealth of Massachusetts Department of Public Works "Standard Specifications for Highways and Bridges", 1988 Edition, as amended, pavement marking paint shall conform to the requirements of Articles M.7.01.10 and M.7.01.11 for waterborne pavement marking paint.
   2. All paint for parking stall and traffic markings shall be fast drying white or yellow traffic paint complying with the applicable paragraphs of the Standard Specifications. The paint shall be capable of being applied to bituminous and portland cement concrete pavements with striping equipment that does not require heating above ambient temperatures.
   3. The following additional pavement marking paint requirements shall be met:
      a. The total nonvolatile content shall not be less than 70% by weight.
      b. Pigment shall be 45-55% by weight.
      c. Weight per gallon shall not be less than 12.5 pounds.
      d. Drying time to no pickup shall be 15 minutes.
   4. No reflective glass beads will be required.
-OR-
   5. Reflectorized Glass Beads
      a. Glass beads shall also meet the requirements of AASHTO M247, Type 1.
      b. In accordance with the Commonwealth of Massachusetts Department of Public Works "Standard Specifications for Highways and Bridges", 1988 Edition, as amended, pavement marking paint shall conform to the requirements of Articles M.7.01.10 and M.7.01.11 for waterborne pavement marking paint.
      c. In accordance with Connecticut Department of Transportation – Standards for Roads, Bridges and Incidental Construction, Form 816, 2004, as amended, glass beads shall conform to the requirements of Article M.07.30.
   6. The material shall not lift from the pavement in the freezing weather, and shall not smear or spread under normal traffic conditions or at temperature below 120 degrees F.
   7. The paint shall not deteriorate by contact with sand, sodium, chloride, calcium chloride or other chemicals used against the formation of ice on the pavement,
because of the oil content of pavement materials, or from gasoline, grease and oil drippings from vehicles.

B. Thermoplastic Reflectorized Pavement Markings shall be as specified in Sections 860 and M7.01.03 and M7.01.04 of the above referenced Massachusetts Department of Public Works "Standard Specifications for Highways and Bridges", 1988 edition, as amended.

PART 3 EXECUTION

3.1 PREPARATION

A. Protect the building, walks, pavement, curbing, trees, shrubs, mulch, etc. from overspray of paint and damage.

B. Clean and sweep all areas to be striped or re-striped of all sand, dirt, grease, oil, etc. Large areas of tar, grease or foreign materials may require sand blasting, steam cleaning or power brooming to accomplish complete removal.

C. Application of markings shall not proceed until authorization is received from Engineer.

D. Bituminous concrete pavements shall have been in place for at least 7 days prior to the application of pavement markings.

3.2 INSTALLATION

A. Installation shall be by skilled workers who are experienced and normally employed in the Work of installing pavement markings.

B. All permanent pavement repair areas shall be repainted to match the original pavement markings.

C. Painting shall be in accordance with Section 860 of the Massachusetts DPW “Standard Specifications for Highway and Bridges”, 1988 Edition, as amended.

D. All stripes shall be applied one coat with brush, spray or marking machine over dry clean pavement only.

E. All paint shall be installed at a rate of not more than 300 linear feet of 4-inch wide lines per gallon of paint (approximately 0.016 inch dry film thickness).

F. If material is applied to the pavement by an extrusion method, one side of the shaping die shall be the pavement and the other three sides are contained by, or are part of, suitable equipment for controlling the flow of paint.

G. Where entire areas are to be cross-hatched as directed by the Drawings, the 4-inch-wide straight white parallel stripes 36 inches on center shall be laid out and painted in solid lines.

H. After application and proper drying time, the material shall show no appreciable deformation or discoloration under traffic conditions and in air and/or road temperature ranging from 0 - 120 degrees F.

I. The stripe shall maintain its original dimensions and placement. The exposed surface shall be free from tack. Cold ductility of the material shall permit normal movement with the pavement surface without chipping or cracking.

J. No paint or pavement marking material shall be heated above the temperature allowed per manufacturer’s instructions.
K. All painting shall be performed in a neat and workmanlike manner.
L. Lines shall sharp and clear with no feathered edging or fogging.
M. If, for any reason, material is spilled or tracked on the pavement or any markings applied by Contractor, in Engineer’s judgment, are not acceptable, then the Contractor shall remove such material by a method that shall not damage the roadway surface and is acceptable to Engineer, clean and prepare the surface for a reapplication of markings, and reapply the markings as directed.

N. Application Requirements
   1. Marking paint shall be applied at a rate of 100 to 115 square feet per gallon.
   2. Material application temperature shall be from 40°F to 120°F.
   3. No thinners shall be used for the above listed pavement marking applications except in accordance with the manufacturer's specifications and at the direction of the Engineer.
   4. Glass beads shall be applied at a rate of 6 pounds per gallon.
   5. Minimum finished paint thickness shall be 15 mils.

3.3 PROTECTION

A. Markings shall remain protected until sufficiently dry to bear traffic on roadways that are open to traffic.
B. Precautions shall be taken to prevent tracking by tires of the striping equipment.
C. Traffic cones used for protection of markings shall be not less than 28 inches in height.

END OF SECTION
SECTION 02770

GRANITE CURBING

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes

  1.  Installation, repair and replacement of granite curbing.

B.  Related Sections

  1.  Section 00800, Supplementary Conditions
      a.  Massachusetts Department of Transportation Permit
  2.  Section 02320, Borrow Material
  3.  Section 03300, Concrete

1.2  REFERENCES


1.4  SUBMITTALS

A.  Submit to the Engineer, shop drawing showing dimensions, layouts and details of construction and accessories required.

PART 2  PRODUCTS

2.1  MATERIALS

A.  Granite Curbing


  2.  Granite curbing shall be hard and durable, fundamentally of light color, of general uniform texture, of smooth splitting appearance, and free from seams or imperfections.

  3.  No top projections of greater than 1/8 inch shall exist, and no more than 1" projections shall exist on the back and bottom of each section.

  4.  Vertical Granite Curbing
      b.  Vertical granite curbing shall conform to the requirements of Article M.12.06 of the State of Connecticut Department of Transportation –

c. Standard laying length shall be no less than 6-feet.

5. Granite Slope Curbing
   c. Standard laying length shall be no less than 2-feet.

B. Mortar
   2. In general, mortar shall be one part Portland cement and two parts (by volume) dry fine aggregate.
   3. Hydrated lime in an amount of less than 4 pounds of lime to each bag of Portland cement may be added if approved by the Engineer.

C. Gravel Base
   1. Processed gravel base shall be as specified in Section 02320 (Borrow Materials).
   2. The processed gravel base shall conform to the requirements of Article M.02.03 of the State of Connecticut Department of Transportation – Standard Specifications for Roads, Bridges and Incidental Construction, Form 816, 2004.

D. Concrete Base
   1. Fill concrete shall be Massachusetts Department of Transportation (formerly MHD) Standard 3000 psi mix.
   2. Concrete fill shall meet the requirements of Section 03300 (Cast-In-Place Concrete).

PART 3 EXECUTION

3.1 INSTALLATION
   A. All granite curbing, inlets, and corners shall be installed in accordance with the "Commonwealth of Massachusetts Department of Public Works Standard Specifications for Highway and Bridges 1988, as amended.
   B. Excavation shall be made of sufficient depth and width to accommodate the granular base.
   C. The line of the curbing shall be set straight and true for the full depth.
D. Granite edging shall be set on an 8 inch minimum depth compacted processed gravel base. The gravel base shall be fine graded and thoroughly compacted with approved mechanical compactors. Concrete fill shall be placed on the front and back of the granite curbing in lieu of gravel backfill in locations where a sidewalk does not directly abut the back of the curb. In locations where a sidewalk directly abuts the back of the curb, concrete fill is only required on the front side.

E. All granite edging shall have a 4 inch reveal from the finished pavement surface, except in the case of transition curbing, and shall be flush with adjacent sidewalks.

F. Where edging is to be set on a radius between 10 feet and 160 feet, the maximum laying length shall be 3 foot. Where edging is to be set on a radius of 10 feet or less, the maximum laying length shall be 1 foot.

G. The joints of all granite curbing shall be filled with cement mortar and neatly pointed on exposed surfaces. The joints of the stone curbing shall be pointed with mortar for the full depth of the curbing. Excess mortar shall be satisfactorily cleaned from the curb.

H. At approximately 50-foot intervals, a ½ inch joint shall not be filled with mortar to be left free for expansion.

I. The joints of all granite curbing shall be filled with cement mortar and neatly pointed on exposed surfaces. Excess mortar shall be satisfactorily cleaned from the curb.

3.2 REMOVING AND RESETTING GRANITE CURBING

A. Remove curbs without causing damage.

B. Store curbs removed in a manner that protects them from damage or discoloration. Replace curbs that are lost or damaged.

C. Reset curbs in accordance with Section 500 of the "Commonwealth of Massachusetts Department of Public Works Standard Specifications for Highway and Bridges 1988, as amended.

END OF SECTION
SECTION 02900
LANDSCAPING

PART 1  GENERAL

1.1 SUMMARY
A. Section Includes
   1. Loam Borrow
   2. Planting of Trees, Shrubs and Bushes

1.2 REFERENCES
A. Massachusetts Department of Public Works Standard Specifications for Highways and Bridges (MDPW) 1988, as amended.
B. American Nursery & Landscape Association (ANLA) standards

1.3 SUBMITTALS
A. Samples
   1. Submit representative Samples to Engineer for selection and approval. Delivered materials shall match the approved Samples.
      a. Loam Borrow: Provide representative Samples for testing and approval as directed by the Engineer. Deliver Samples to testing laboratory, having testing report sent directly to the Engineer, and pay all costs.
         1) Mechanical and chemical (pH soluble salts) analysis shall be by a public extension service agency or a certified private testing laboratory in accordance with the current standards of the "Association of Official Agricultural Chemists."
         2) Report shall be submitted before any loam is to be placed. Soil shall be tested for organic content, Nitrate-Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts and acidity.
      b. Mulch: Submit one sample and provide the name and address of the Supplier.
B. Anti-desiccant: Submit manufacturer information.
C. Tree Paint: Submit manufacturer information.
D. Planting Soil Analysis: A standard soil test shall be performed by a licensed commercial testing laboratory or government agency approved by the Engineer. Soil test shall provide recommendation for the addition of fertilizer, lime, and other amendments.
E. Furnish complete written instructions for maintenance of the plant materials to the Owner at least ten days prior to the end of the maintenance period in order to familiarize the Owner with the proper care and development of the plantings.
F. Furnish certifications from plant Suppliers indicating the botanical name, quantity, and size of plants to be delivered to the Project.

G. Inspection and Acceptance: Submit inspection notice and planting plan.

1.4 QUALITY ASSURANCE

A. Perform Work with experienced personnel under the direction of a skilled foreman with a minimum three years of experience with similar type and size projects.

B. Plants are subject to inspection and approval by the Engineer before delivery for conformity to Specification requirements as to quality, size and variety.

1.5 DELIVERY, STORAGE AND HANDLING

A. Only deliver plant materials immediately prior to installation.

B. Deliver plant materials to the Site in accordance with the best horticultural practices to prevent damage.

C. Move and handle plant materials so as to prevent damage to roots and crowns.

D. "Heal-in" plants that cannot immediately be installed with bark mulch or wood chips in a location that protects the plants from sun and wind. Root balls and containers shall be completely covered and kept consistently moist until installation.

E. Replace damaged and unhealthy plant materials prior to installation.

1.6 SITE CONDITIONS

A. Examination of Conditions

1. All areas to be planted shall be inspected by the Contractor before starting Work and any defects such as incorrect grading, etc., shall be reported to the Engineer prior to beginning this Work. The commencement of Work by the Contractor shall indicate his acceptance of the areas to be planted, and he shall assume full responsibility for the Work of this Section.

PART 2 PRODUCTS

2.1 LOAM

A. Loam shall consist of loose friable topsoil with no admixture of refuse or material toxic to plant growth. Loam shall be generally free from stones, lumps, stumps, or similar objects larger than 1 inch in greatest diameter, subsoil, roots, and weeds. The term as used herein shall mean that portion of the soil profile defined technically as the "A" horizon by the Soil Science Society of America. The pH shall be from 5.5 to 7.6. Loam shall contain a minimum of three percent and a maximum of ten percent of organic matter as determined by loss by ignition. Not more than 65 percent shall pass a No. 200 sieve as determined by the wash test in accordance with ASTM D 1140. In no instance shall more than 20 percent of that material passing the No. 4 sieve consist of clay size particles.

B. The topsoil stripped and stockpiled on the Site may be used provided that, after testing and addition of necessary additives, it meets the above specifications. The Provide additional loam as required. All excess loam shall become the property of the Contractor and be legally disposed of off-site.
2.2  SOIL ADDITIVES

A.  Commercial fertilizer, peat, humus or other additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as directed by the Engineer.

1.  Commercial fertilizer shall be a product complying with State and Federal requirements. Deliver to the Site in the original unopened containers, which shall bear the manufacturer's Certificate of Compliance covering analysis, which shall be furnished to the Engineer. At least 50 percent by weight of the nitrogen content shall be derived from organic materials. Fertilizer shall contain not less than the percentages of weight of ingredients as follows or as recommended by the soil analysis:

<table>
<thead>
<tr>
<th></th>
<th>Nitrogen</th>
<th>Phosphorous</th>
<th>Potash</th>
</tr>
</thead>
<tbody>
<tr>
<td>For deciduous trees &amp; shrubs</td>
<td>10%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>For evergreen trees &amp; shrubs</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
</tr>
</tbody>
</table>

B.  Planting soil shall be prepared based on the following proportions.

1.  Three parts loam with a pH of 6.0 to 6.5.

2.  One part dehydrated sterilized manure
   a.  Manure shall be well-rotted, unleached stable manure not less than eight months and not more than two years old. It shall be free from sawdust, shavings, or refuse of any kind and shall not contain over 25 percent straw. Furnish information as to kind of disinfectant or chemicals, if any, that may have been used in storage of the manure.

3.  One part peat moss
   a.  Peat moss shall be composed of the partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue, mineral matter such as sulfuric and iron harmful to plant life. It shall have a water absorbing capacity of 1100 percent to 2000 percent, and a moisture content of 30 percent. It shall have an acidity range of 3.5 pH to 5.5 pH as determined in accordance with the test methods of A.O.A.C.

C.  Humus shall be natural humus, reed peat or sedge peat. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. According to the methods of testing of A.O.A.C. latest edition, the acidity range shall be approximately 5.5 pH to 7.6 pH and the organic matter shall be not less than 85 percent as determined by weight on an over-dry basis.

D.  Leaf mold shall be highly organic dark brown to black spongy residue resulting from the well aerated composting of deciduous tree leaves. It shall be at least three years old, without recognizable leaf parts, free of plants and their roots, debris and other extraneous matter and shall be uncontaminated by foreign matter and substances harmful to plant growth. The organic matter shall not be less than 85 percent by weight as determined by the loss on ignition of oven-dried Samples. Test Samples shall be oven-dried to a constant weight at a temperature of 110° C. The inorganic residue after ignition shall not be finer textured than 4 percent by weight passing the number 200 sieve with washing.
E. The following amendments shall be incorporated into the prepared planting soil prior to backfilling of planting pits in accordance with the recommendations of the planting soil analysis.

1. Fertilizer: Complete with 70 percent of the nitrogen derived from organic sources.
2. Lime: Ground dolomite limestone; 95 percent passing through a 100-mesh sieve.
3. Super Phosphate: Finely ground phosphate rock as commonly used for agricultural purposes containing not less than 18 percent available phosphoric acid.
4. Bone Meal: Bone meal shall be fine ground, steam-cooked, packing house bone with a minimum analysis of 18 percent phosphoric acid and 1.0 percent nitrogen.
5. Peat Moss

2.3 PLANT MATERIALS

A. In-kind replacement of plant materials damaged or moved related to the seawall replacement project. All replacement plants shall be nursery grown unless specifically authorized to be collected.

B. Plant Material Requirements:

1. Plants shall be in accordance with the U.S.A. Standard for Nursery Stock of the ANLA, latest edition.
2. Hardy under climatic conditions similar to those in the locality of the Project. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. Only plant stock grown within the hardiness of Zones 4 through 6, as established by the Plant Hardiness Zone Map Miscellaneous Publications No. 814, Agricultural Research Service, US Department of Agriculture latest revision, will be accepted. Suppliers must certify in writing that the stock has actually been grown under required zones. Plants not so certified will not be accepted.
3. Plants shall be typical of their species or variety, with a normal habit of growth. The root system of each shall be well provided with fibrous roots. All parts shall be moist and show active green cambium when cut. They shall be sound, healthy and vigorous, well-branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae.
4. Dimensions shall conform to Specifications in the current edition of Horticultural Standards of the ANLA.

C. Trees

1. The height of the trees (measured from the crown of the roots to the tip of the top branch) shall be not less than the minimum size designated. Take caliper measurement six inches above ground level up to and including four inch caliper size and twelve inches above ground for larger sizes. The trunk of each tree shall be a single trunk growing from a single un-mutilated crown of roots. No part of the trunk shall be conspicuously crooked as compared with normal
trees of the same variety. The trunk shall be free from sunscald, frost cracks, or abrasions resulting from fire or other causes. No pruning wounds shall be present having a diameter exceeding two inches and such wounds must show vigorous bark on all edges. Plants shall not be pruned prior to delivery.

D. Shrubs

1. Shrubs shall meet the requirements for spread or height stated in the Plant List. The measurements for height are to be taken from the ground level to the average height of the shrub and not to the longest branch. The thickness of each shrub shall correspond to the trade classification "No. 1." Single stemmed or thin plants will not be accepted. The side branches must be generous, well-twigged, and the plant as a whole well-branched to the ground. The plants must be in a moist vigorous condition, free from dead wood, bruises or other root or branch injuries. Plants shall not be pruned prior to delivery.

E. Ground Cover

1. Ground cover plants shall be of size, age and/or condition listed in the Plant List. Plants shall be healthy, free of insects and diseases. Ground cover plants shall be potted or in sod.

F. Plant Transport and Delivery

1. All plants must be moved with the root system as solid units with balls of earth firmly wrapped with untreated eight ounce burlap, firmly held in place by a stout cord or wire. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous and root feeding system necessary for the healthy development of the plant. No plant shall be cracked or broken preparatory to or during the process of planting or after the burlap, staves, ropes or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. All plants that cannot be planted at once must be heeled in by setting in the ground and covering the balls with soil and then watering them.

2. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container.

3. Plants delivered by truck and plants requiring storage on Site shall be properly wrapped and covered to prevent wind-drying and desiccation of branches, leaves or buds. Plant balls should be firmly bound, unbroken, and reasonably moist to indicate watering prior to delivery and during storage, and tree trunks should be free from fresh scars and damage in handling. No trees with double-leaders or twin-heads shall be acceptable without the written approval of the Engineer. The Contractor shall reject such plants at time of delivery by the nursery/Supplier unless such plants were selected by the Engineer as indicated by tags and seals. No plant material from cold storage will be accepted.

2.4 STAKES, WIRE AND HOSE

A. Stakes for supporting trees shall be of sound hardwood of uniform size, reasonably free of knots, with a maximum allowable deflection of one-half inch for every one foot of length, free from insects and fungi and capable of standing in the ground at least two years. Stakes eight to ten feet long shall have a minimum diameter of
between two to two and one-half inches. Stakes twelve feet long shall have a minimum diameter of three inches. Stakes shall be pointed at one end and shall be stained dark brown.

B. Hose to encase wires shall be new two ply reinforced rubber garden hose not less than one-half inch inside diameter. Wire for guying plants shall be new pliable annealed galvanized steel wire, A.S.&W. twelve-gauge or gauge as shown on the Drawings.

C. The size and quality of cables, turnbuckles, thimbles, leg hooks, eye bolts, rods, washers and nuts shall be as shown on the Drawings or as approved by the Engineer.

D. Drive anchors and guy wire assembly shall be as manufactured by Laconia Malleable Iron Works, Laconia, New Hampshire, or equal. Sizes used shall be in accordance with the manufacturer's recommendations.

2.5 MULCH

A. Mulch shall be aged pine bark mulch aged sufficiently so that it will not float in water or aged for a period of six months, whichever is greater. The mulch shall be dark brown in color, free of chunks and pieces of wood thicker than one-quarter inch. Mulch must be free of stringy material and shall not contain, in the judgment of the Engineer, an excess of fine particles.

2.6 WRAPPING MATERIAL

A. Wrapping material shall be first quality, eight to ten inches wide heavy waterproof crepe paper or six-inch wide burlap manufactured for this purpose. Twine for tying shall be a lightly tarred medium or coarse sisal yarn, two ply for trees three inches or less in diameter and three ply for trees over three inches in diameter.

2.7 ANTI-DESICCANTS

A. Anti-desiccants shall be emulsions or other materials which will provide a protective film over plant surfaces permeable enough to permit transpiration and specifically manufactured for that purpose. Anti-Desiccant shall be "Wilt-Pruf" or equal.

PART 3 EXECUTION

3.1 EXAMINATION

A. Existing Conditions

1. Refer to Drawings showing finish grades. No installation of plants shall take place until all subgrade elevations have been completed.

2. Prior to planting, verify locations and depth of underground utilities. Exercise care when digging in these areas. Assume responsibility for any damage and replace or repair any damage at the Contractor's expense to the satisfaction of the Engineer.

3.2 PREPARATION

A. Field Measurements

1. Make all necessary measurements to properly locate the plants as shown on prior existing condition photos or notes.

3.3 INSTALLATION
A. Time of Planting

1. The time of planting shall be guided by the schedule below unless otherwise approved by the Engineer based on plant types, weather conditions or other factors that may be detrimental to plant growth.

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Spring</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deciduous</td>
<td>March 15th to June 1st</td>
<td>October 15th to November 1st</td>
</tr>
<tr>
<td>Evergreen</td>
<td>March 15th to June 1st</td>
<td>August 15th to October 1st</td>
</tr>
<tr>
<td>Wetland Plants</td>
<td>March 15th to June 1st</td>
<td>August 15th to October 1st</td>
</tr>
</tbody>
</table>

B. Plantings General

1. All plantings shall be in accordance with ANLA standards.

2. Location for all plants and outlines for planting areas shall be staked on the ground by the Contractor for approval by the Engineer before any plant pits or plant beds are excavated.

3. At least ten days prior to the expected planting date, the Contractor shall request, in writing, that the Engineer provide a representative to select and tag stock to be planted under this section.

4. Plants shall be selected by the Engineer at the place of growth for conformity to specification requirements as to quality, size, and variety. Such approval shall not impair the right of inspection and rejection upon delivery at the Site or during the progress of the Work. Cost of replacement shall be borne by the Contractor.

5. Maintain at all times during the planting operations one or more stockpiles of approved planting soil.

6. If planting is done after lawn preparation or installation, proper protection of lawn areas shall be provided and any damage resulting from planting operations shall be repaired immediately at no cost to the Owner.

7. In the event that rock or obstructions are encountered in any plant pit or bed excavation, alternate locations may be selected by the Engineer.

8. Absolutely no debris may be left on the Site. Excavated material shall be removed as directed by the Engineer. Repair any damage to Site or structures to restore them to their original condition as directed by the Engineer.

3.4 INSTALLATION—GENERAL

A. Planting Pits

1. Excavate to the depths and widths necessary to achieve the dimensions indicated on the Drawings.

2. Excavated soil and material may be used as a portion of the backfill and planting soil provided it meets the requirements of paragraph 2.1.

3. Plant pits shall be excavated with sloped sides. Plant trees and shrubs in pits 12 inches greater in width than the diameter of the root ball. Pit depth shall be
sufficient to ensure a minimum of 6 inches of planting soil mixture under plant root system.

4. All plant roots and earth balls must be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation and on the ground until the final planting. Set plants in center of pits, plumb and straight and at level that top of root ball is 1 inch lower than surrounding finished grade after settlement.

B. Cover, Watering, and Fill

1. Compact planting soil thoroughly around base of root ball to fill all voids, when plant material is set. Cut all burlap and lacing and remove from top of root ball. Do not pull burlap from under any root ball. Backfill pits halfway with planting soil mixture and thoroughly puddle before backfilling pit. Water planting, again, when each backfill operation is complete.

2. Immediately after plant pit is backfilled, form a shallow saucer slightly larger than pit with ridge of soil to facilitate and contain watering. Grub out sod or other growth and remove from bed area. Rake bed area smooth and neat. All plants shall be flooded with water twice within the first 24 hours of planting and all plants shall be watered at least twice each week during the maintenance period. At each watering the soil around each tree or shrub shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Engineer, the required watering may be reduced. Trees will require a minimum of ten gallons of water each; shrubs a minimum of five gallons each.

3. Pine bark mulch is to be placed in a 3 inch thickness around the planting, not later than one week after planting. The area to be mulched shall be circular with a diameter of 12 inches greater than the plantings root ball. No mulch shall be applied prior to the first watering of plant materials. Mulch is to be contained around the circumference of the planting by means of installing a metal edge strip. Metal edge strips shall be fastened securely in place with tapered metal stakes at 30 inch intervals along the strip. Set edge strips to finished grade.

4. Planting soil shall be to a minimum depth of 24 inches or as shown on the Drawings.

5. Ground cover beds shall be dug to a depth of one foot below final grade. Supply sufficient planting mix where required to provide one-foot-deep beds.

C. Staking and Anchoring

1. All trees and plantings 10 feet or higher shall be firmly staked, guyed or anchored at the time of planting as shown on the Drawings, unless otherwise approved or directed by the Engineer. A minimum of two stakes shall be installed plumb and neat in appearance and shall not injure plant balls.

D. Anti-Desiccant Application

1. Apply anti-desiccant to all evergreen trees and shrubs and to all deciduous plant materials which are leafed out at time of planting. Rate and method of application shall be in accordance with manufacturer's recommendations. Anti-desiccant shall be applied to all plants before digging at the nursery and/or as directed by the Engineer once the plants have been delivered to the Site.
E. Pruning

1. Prune each tree and shrub in accordance with ANLA standards to preserve natural form and character of plant. All pruning is to be done with clean, sharp tools and carried out only by workmen thoroughly familiar with this type of Work.

2. All dead wood or suckers and all broken or badly bruised branches shall be removed. In addition, one-fourth of the wood shall be removed by thinning out and shortening branches to balance root loss due to retransplanting.

3. Cuts over one inch in diameter shall be painted with an approved tree paint. Paint shall cover all exposed living tissues.

3.5 MULCHING DECIDUOUS AND EVERGREEN PLANTS

A. Cover all tree pits and shrub beds with bark mulch. Neatly outline the edges of the saucer at a uniform radius from the tree trunk.

3.6 REPLACEMENT OF DECIDUOUS AND EVERGREEN PLANTS

A. Dead or declining plant material shall be removed immediately and replaced as soon as possible with a new, healthy plant of the same type and size as specified, at no additional cost to the Owner. Replacement plants shall be maintained and guaranteed for 1 year from time of replacement.

B. All plant material required under this contract, deemed by the Engineer to be unsightly, unhealthy, or excessively pruned, during and at the end of the guarantee period, shall be replaced as soon as conditions permit.

C. At the end of the maintenance period all plant material shall be in a healthy growing condition.

3.7 PLANT MAINTENANCE

A. Begin maintenance immediately after planting and continue for 1 year from date all plantings have been installed or until the final acceptance of the Project. Plantings done in late fall after November 1st shall be maintained until the second spring leafing.

B. Continue the maintenance period at no additional cost to the Owner until all previously noted deficiencies have been corrected, at which time the final inspection will be made. Plants that die during the maintenance period shall be replaced as directed by the Engineer.

C. Maintenance shall consist of keeping the plants in a healthy growing condition and shall include watering, weeding, cultivating, remulching, removal of dead material, resetting plants to proper grades or upright position and maintaining the planting saucer. Spraying for both insect pests and diseases shall be included during the maintenance period as required and as directed by the Engineer.

D. Provide all equipment and means for proper application of water to plants. All plants shall be watered at least twice each week. At each watering, the soil around each tree or shrub shall be thoroughly saturated during the maintenance period. If sufficient moisture is retained in the soil, as determined by the Engineer, the required water may be reduced. Trees will require a minimum of ten gallons of water each; shrubs a minimum of five gallons each.
E. Stakes shall be kept plumb and neat in appearance. Guys shall be tightened and repaired weekly.

F. Planting beds and individual plant pits shall be kept free of weeds and mulch shall be replaced as required to maintain a 4" layer of mulch. Beds and individual pits shall be neat in appearance and maintained to the lines originally laid out.

G. Fertilize plants in spring and fall.

H. Protect all planted areas against damage, including erosion and trespassing by providing and maintaining proper safeguards.

3.8 INSPECTION AND ACCEPTANCE

A. The Engineer shall be the sole judge of acceptance.

B. All materials and workmanship will be subject to inspection and examination by the Engineer, and he/she shall have the right to reject defective materials and workmanship or require corrections.

C. Submit planting plans indicating the dates plants were installed for purposes of establishing warranty and replacement dates.

D. Certification of Acceptance and Guarantee

1. Submit written notice requesting inspection by the Engineer at least 10 days prior to the end of the maintenance period. If the plant material and workmanship are acceptable, written notice will be given by the Engineer to the Contractor stating that the guarantee period begins from the date of the Certificate of Acceptance.

2. If a substantial number of plants are sickly or dead at the time of inspection, acceptance will not be granted, and the Contractor's responsibility for maintenance of all the plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly removed from the Project. Replacements shall conform in all respects to the Specifications for new plants and shall be planted in the same manner.

3. Plants shall be true to botanical name and size, and in vigorous healthy growing condition.

4. Plants shall be guaranteed for a period of one year after inspection and acceptance and shall be alive and in satisfactory growth at the end of the guarantee period.

5. At the end of the guarantee period, inspection will be made again. Any plant required under this Contract that is dead or unsatisfactory shall be removed from the Site. Each plant shall show at least 80 percent healthy growth and shall have the natural character of a plant of its species in accordance with the American Nurserymen's Association standards. These plants shall be replaced during the normal planting season, until the plants live through one year. A final inspection for acceptance will be made after the replacement plantings have lived through one year.

6. All replacements shall be plants of the same kind and size. The cost shall be borne by the Contractor, except for possible replacements due to vandalism or neglect on the part of others.
7. Provide a physical handbook of maintenance instructions for all plant material installed. This handbook shall contain all necessary maintenance information, which will enable the Owner to maintain new plantings in a vigorous condition. Before planting Work is completed, submit two handbook copies to the Engineer for approval. Upon the acceptance of the planting Work, one handbook copy shall be furnished to the Owner for his future reference. The Engineer may require resubmittal of the Owner maintenance instructions if it is determined that the information provided is not sufficient to allow for proper maintenance.

END OF SECTION
SECTION 02920

LAWNS AND GRASSES

PART 1 GENERAL

1.1 SUMMARY
   A. Section Includes
      1. Restoration of all vegetated areas disturbed during construction including:
         a. Lawn areas
         b. Grass surfaces
      2. Loam, starter fertilizer, lime, lawn seed, and hydric seed

1.2 SUBMITTALS
   A. Lawn seed mixture including percent by weight of each seed type, and manufacturer/Supplier name.
   B. Suitable laboratory analysis of the topsoil to determine the quantity of fertilizer and lime to be applied.
   C. Lime and starter fertilizer application rates based on laboratory soil tests.
   D. A sworn certificate indicating each variety of seed, weed content, germination of seed, net weight, date of shipment and manufacturer’s name shall accompany each seed shipment.

1.3 QUALITY ASSURANCE
   A. Place seed only between the periods from April 15th to June 1st, and from August 15th to October 1st, unless otherwise approved by the Engineer.

PART 2 PRODUCTS

2.1 MATERIALS
   A. Loam
      1. Loam from offsite, as required for Work, shall be taken from a well-drained, arable site, and shall be free of subsoil, large stones, earth clods, sticks, stumps, clay lumps, roots or other objectionable, extraneous matter or debris. Loam shall also be free of quack-grass rhizomes, Agropyron Repens, and the nut-like tubers of nutgrass, Cyperus Escentus, and all other primary noxious weeds. Loam shall not be delivered or used for planting while in a frozen or muddy condition. Topsoil as delivered to the Site or stockpiled shall have pH between 6.0 and 7.0 and shall contain not less than 5 percent or more than 8 percent organic matter as determined by loss of ignition of moisture-free Samples dried at 100 degrees Celsius.
      2. Onsite loam may be available from stripping of onsite topsoil. Onsite topsoil shall be tested as specified below and shall be amended as necessary to meet Specification requirements for loam.
3. Soil Analysis: The Contractor shall submit representative Samples of loam, which he intends to bring onto the Site, and Samples of loam from onsite sources, to a Soil and Plant Testing Laboratory acceptable to the Engineer. All reports shall be sent to the Engineer for approval. Samples of loam to be brought to the Site must be approved prior to delivery of soil. Deficiencies in the loam shall be corrected by the Contractor, as directed by the Engineer after review of the testing agency report by a soils consultant. Testing reports shall include the following tests and recommendations.

   a. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System.
   b. The silt clay content shall be determined by a Hydrometer Test.
   c. Percent of organics shall be determined by an Ash Burn Test or Walkley/Black Test.
   d. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts, and acidity (pH).
   e. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish particular lawn and planting objectives noted.
   f. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.

4. Loam for General Lawn and Site Restoration Areas: Loam shall conform to the following grain size distribution for material passing the #10 sieve:

<table>
<thead>
<tr>
<th>U.S. Sieve Size Number</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>100</td>
<td>----</td>
</tr>
<tr>
<td>18</td>
<td>84</td>
<td>100</td>
</tr>
<tr>
<td>35</td>
<td>63</td>
<td>72</td>
</tr>
<tr>
<td>140</td>
<td>26</td>
<td>40</td>
</tr>
<tr>
<td>270</td>
<td>22</td>
<td>34</td>
</tr>
<tr>
<td>0.002 mm</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

1. The ratio of the particle size for 80% passing (D80) to the particle size for 30% passing (D30) shall be 6 or less (D80/D30 < 6).
2. Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 20% by weight of the total sample.
3. Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.
4. The organic content shall be between 4.0 and 6.0 percent.

5. Place a minimum of 6 inches of loam.

B. Typical Sand Amendment
1. Sand to be mixed with topsoil shall meet the following requirements. The material shall be uniformly graded coarse sand consisting of clean, inert, rounded grains of quartz or other durable rock and free from loam or clay, surface coatings, mica, other deleterious materials with the following gradation.

<table>
<thead>
<tr>
<th>U.S. Sieve Size Number</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>100</td>
<td>-----</td>
</tr>
<tr>
<td>18</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>35</td>
<td>35</td>
<td>55</td>
</tr>
<tr>
<td>60</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>140</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>270</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>0.002 mm</td>
<td>0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

1. Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 10% by weight of the total sample.

2. The ratio of the particle size for 70% passing (D70) to the particle size for 20% passing (D30) shall be 3.0 or less (D70/D30 < 3.0).

3. Tests shall be combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.

C. Starter Fertilizer

1. Starter fertilizer shall bear the manufacturer’s name and guaranteed statement of analysis, and shall be applied in accordance with the manufacturer’s directions.

2. Starter fertilizer shall be Scott’s Starter Fertilizer, or equal, with timed nitrogen release to prevent burning.

D. Lime

1. Lime shall be an agricultural type ground limestone.

2. Lime shall be pelletized type for prolonged time release to soil.

3. Lime shall be applied at the rates recommended in the soil analysis.

E. Seed

1. Seed shall be of the previous year's crop.

2. Required properties:
   a. Purity > 90%
   b. Germination > 80%
   c. Crop < 0.5%
   d. Weed < 0.3%
   e. Noxious Weed – 0%
   f. Inert < 8%
3. Grass seed shall conform to the following mixtures in proportion by weight and weed content and shall pass the minimum percentages of purity and germination as indicated for same.

<table>
<thead>
<tr>
<th>Lawn Area Seed Mix</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Rebel II” Tall Fescue</td>
<td>70%</td>
</tr>
<tr>
<td>“Baron” Kentucky Bluegrass</td>
<td>10%</td>
</tr>
<tr>
<td>“Palmer” Perennial Ryegrass</td>
<td>20%</td>
</tr>
</tbody>
</table>

4. All seed shall comply with State and Federal seed Laws and Regulations.

PART 3 EXECUTION

3.1 RESTORATION

A. In locations where the Work passes through existing grass, weed brush or tree-surfaced areas that are not covered by a specific lawn repair item, surface restoration shall be as follows:

1. After completion of backfilling, the existing loam and organic ground cover materials that were salvaged during excavation shall be returned to the top of the trench.

2. After natural settlement and compaction has taken place, the trench surface shall be harrowed, dragged and raked as necessary to produce a smooth and level surface.

3. The area is then to be sowed with “orchard grass” or “rye grass” or other such materials to hold the soil and produce a growth similar to that existing prior to construction.

3.2 PREPARATION

A. After rough grading of the subgrade has been completed and approved, the subgrade surface shall be scarified to a depth of four (4) inches. Then furnish and install a layer of loam providing a rolled four (4) inch thickness. Any depressions which may occur during rolling shall be filled with additional loam, regraded and rerolled until the surface is true to the finished lines and grades. All loam necessary to complete the Work under this section shall be supplied by the Contractor.

B. The ground surface shall be fine graded and raked to prepare the surface of the loam for lime, fertilizer and seed.

C. The loam shall be prepared to receive seed by removing stones and grading to eliminate water pockets and irregularities prior to placing seed. Finish grading shall result in straight uniform grades and smooth, even surfaces without irregularities to low points.

D. All stones over one-half (½) inch in diameter remaining on the surface after raking shall be removed.

E. Shape the areas to the lines and grades required. The Contractor's attention is directed to the scheduling of Loaming and Seeding of graded areas to permit sufficient time for the stabilization of these areas.

F. All areas disturbed by construction within the property lines and not covered by structures, pavement, or bark mulch shall be loamed and seeded.
G. Limestone shall be thoroughly incorporated into the loam layer at a minimum rate of 3 tons per acre or more as recommended by the loam analysis in order to provide a pH value of 5.5 to 6.5.

H. Fertilizer shall be spread on the top layer of loam at the minimum rate of 500 pounds per acre or more as recommended by the loam analysis and worked into the surface.

3.3 LOAM AND SEED AREAS

A. For temporary protection of disturbed areas, seed shall be applied at the following rates:

- Winter Rye (fall seeding) 2.5 pounds per 1,000 square feet
- Oats (spring seeding) 2.5 pounds per 1,000 square feet
- Mulch 1.5 tons per acre

B. The seed mixtures shall be applied at a minimum rate of 200 pounds per acre, or 4.5 pounds per 1,000 square feet.

C. Athletic field seed application rates:

1. Kentucky Bluegrass – 130 pounds per acre
2. Perennial Ryegrass – 70 pounds per acre

D. Seed shall be sown at the rates indicated above by rotary or drop spreader. Sowing shall be done on a calm, dry day. Immediately before seeding, the soil shall be lightly raked. One half the seed shall be sown in one direction and the other half at right angles to the original direction. It shall be lightly raked into the soil to a depth not over 1/4 inch and rolled with a hand roller weighing not over 100 pounds per linear foot of width.

1. Straw mulch shall be applied immediately after seeding at a rate of 1.5 to 2 tons per acre. Mulch that blows or washes away shall be replaced immediately and anchored using appropriate techniques.

2. The surface shall be watered and kept moist with a fine spray as required, without eroding the soil, until the grass is well established. Any areas, which are not satisfactorily covered with grass, shall be reseeded, and all noxious weeds shall be removed.

E. Unless otherwise approved, seeding shall be done between the periods from April 15th to June 1st, and August 15th to October 1st, when soil conditions and weather are suitable for such Work.

3.4 MAINTENANCE

A. Maintenance shall include watering, weeding, removal of stones and other foreign objects over one half (½) inch in diameter, cutting the grass until final acceptance. Mow at least weekly, removing no more than 30-40 percent of the leaf tissue using well sharpened blades. Mow grass between one (1) and two (2) inches high in the spring and fall. Mowing heights shall be an additional one-half to an inch in the summer to reduce temperature stress. Leave the clippings in place to help recycle essential plant nutrients needed for growth. All bare or dead spots which become apparent shall be properly prepared, re-loamed, limed, aerated, fertilized, and reseeded as many times as necessary to secure a good growth. The entire area shall be maintained, watered, and cut until final acceptance of the lawn installation.
B. The dressed and seeded areas shall be sprinkled with water as necessary from time to
time. Signs and barricades should be placed to protect the seeded areas.

C. To be acceptable, seeded areas shall consist of a uniform stand without bare or dead spots of at least 90 percent established permanent grass species, with uniform count of at least 200 plants per square foot.

D. The Engineer shall determine whether maintenance shall continue in any part.

E. After all necessary corrective Work and clean-up has been completed, and maintenance instructions have been received by the Owner, the Engineer will certify in writing the acceptance of the lawns.

END OF SECTION
SECTION 03300
CONCRETE

PART 1   GENERAL

1.1 SUMMARY
A. Section Includes
   1. Concrete Materials
   2. Admixtures
   3. Concrete Mix
   4. Miscellaneous Concrete Materials
   5. Concrete Forms
   6. Fiberglass Reinforcement

1.2 REFERENCES
A. ACI 301 Structural Concrete
B. ACI 304R Measuring, Mixing, Transporting, and Placing Concrete
C. ACI 304.2R Placing Concrete by Pumping Methods
D. ACI 305R Hot Weather Concreting
E. ACI 306.1 Cold Weather Concreting
F. ACI 308 Curing Concrete
G. ACI 309R Consolidation of Concrete
H. ACI 315 Details and Detailing of Concrete Reinforcement
I. ACI SP-2 ACI Manual of Concrete Inspection
J. ASTM A 615 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
K. ASTM A 706 Low-Alloy Steel Deformed Bars for Concrete Reinforcement
L. ASTM A 767 Zinc-Coating (Galvanized) Steel Bars for Concrete Reinforcement
M. ASTM C 31 Making and Curing Concrete Test Specimens in the Field
N. ASTM C 33 Concrete Aggregates
O. ASTM C 39 Compressive Strength of Cylindrical Concrete Specimens
P. ASTM C 94 Ready-Mixed Concrete
Q. ASTM C 150 Portland Cement
R. ASTM C 260 Air-Entraining Admixtures for Concrete
S. ASTM C 920    Elastomeric Joint Sealants
T. ASTM C 989    Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
U. ASTM C 1107   Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
V. ASTM C 1240    Silica Fume for Use in Hydraulic-Cement Concrete and Mortar
W. Mass DOT Standard Specifications: Current standards including updates & supplements

1.3 DEFINITIONS

A. "Blending size" is an aggregate that complies with the quality requirements in ASTM C 33 and paragraph entitled "Aggregates" and as modified herein and can be blended with coarse and fine aggregate to produce a well graded combined grading.
B. "Cementitious material" as used herein shall include portland cement, pozzolan, fly ash, ground granulated blast-furnace slag, and silica fume.
C. "Design strength" (f'c) is the specified compressive strength of concrete to meet structural design criteria.
D. "Mixture proportioning" is a description of the proportions of a concrete mixture that were selected to enable it to meet the performance durability requirements, constructability requirements, and the initial and life-cycle cost goals.
E. "Mixture proportions" is the concrete supplier's by-mass proportions to replicate the mixture design.
F. "Pozzolan" is a silicious or silicious and aluminous material, which in itself possesses little or no cementitious value but will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties.
G. "Field test strength" (fcr) is the required compressive strength of concrete to meet structural and durability criteria. Determine (fcr) during mixture proportioning process.

1.4 SUBMITTALS

A. Design Data:
   Mixture design – structural concrete, including current Mass DOT approvals from Research & Materials Division, include all backup and materials certificates
   Reinforcement- Calculation package shall be submitted to prove glass fiber reinforced polymer (GFRP) matches or exceeds steel reinforcing requirements.

B. QA/QC:
   Quality assurance/quality control plan to ensure the approved mix design meets the specifications and is delivered to site per those requirements.

1.5 MODIFICATION OF REFERENCES
A. Accomplish work in accordance with ACI publications except as modified herein. Consider the advisory or recommended provisions to be mandatory, as though the word "shall" had been substituted for the words "should" or "could" or "may," wherever they appear. Interpret reference to the "Building Official," the "Structural Engineer," and the "Architect/Engineer" to mean the Engineer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver concrete until, forms, reinforcement, embedded items, and reinforcement connections are in place and ready for concrete placement. ACI 301 and ASTM A 934 for job site storage of materials. Store reinforcement of different sizes and shapes in separate piles or racks raised above the ground. Protect materials from contaminants such as grease, oil, and dirt. Ensure materials can be accurately identified after bundles are broken and tags removed.

B. Placing Concrete

1. Concrete shall be deposited by chute, bucket, or concrete pump so not to cause segregation. The methods and equipment used shall be subject to approval.

1.7 QUALITY ASSURANCE

A. Concrete Mix Design

1. At least 4 days prior to concrete placement, submit proportions for a concrete mixture for each strength and type of concrete, including current Mass DOT approvals. Submit a complete list of materials proposed including type; brand; source and amount of cement, aggregate, fly ash, (or slag pozzolans), silica fume, ground slag; and applicable reference specifications. Submit additional data regarding concrete aggregates if the source of aggregate changes. Submittal shall clearly indicate where each mixture will be used when more than one mix design is submitted.

PART 2 PRODUCTS

2.1 CONCRETE

A. Structural Concrete: Durability and Strength

1. Provide a Mass DOT standard HP concrete mix item M4.06.1 with a maximum water/cement ratio of 0.40 and 5 to 8% air content, and 28-day design strength to produce concrete of minimum design strength (f'c) of 5000 psi. This concrete shall be used for all project concrete, including cast in place and precast.

2.2 MATERIALS

A. Cement

1. ASTM C 150 ASTM C 595

Portland Blended

Type II Type IP(MS) or For general use in construction

Type IS(MS) where concrete is exposed to

TYPE II (LA) moderate sulfate or alkali action or
TYPE II (LH) where moderate heat of hydration is

Required. ASTM C 595 (blended hydraulic cements): add the suffix MS or MH where either moderate sulfate resistance or moderate heat of hydration, respectively, is required.

2. ASTM C 150, Type II and/or ASTM C 595, Type IP(MS) or IS(MS) and ASTM C 1157, Type MS blended cement except as modified herein. The tricalcium aluminate (C3A) content shall not be less than 4 percent to provide protection for the reinforcement and shall not be more than 10 percent to obtain concrete that is resistant to sulfate attack. Blended cements shall consist of a mixture of ASTM C 150 cement and one of the following materials: ASTM C 618 pozzolan or fly ash, or ASTM C 989 ground granulated blast-furnace slag. Use one manufacturer for each type of cement, ground slag, fly ash, and pozzolan.

B. Fly Ash and Pozzolan

1. ASTM C 618, Type F, except that the maximum allowable loss on ignition shall be 6 percent for Types F. Add with cement.

C. Ground Iron Blast–Furnace Slag

1. ASTM C 989, Grade 120

D. Silica Fume

1. ASTM C 1240

E. Water

1. Water shall comply with the requirements and Table 2 optional requirements of ASTM C 94 and the chloride and sulfate limits in accordance with ASTM D 512 and ASTM D 516. Mixing water shall not contain more than 500 parts per million of chlorides as Cl and not more than 100 parts per million of sulfates as SO4. Water shall be free from injurious amounts of oils, acids, alkalies, salts, and organic materials.

F. Aggregates

ASTM C 33, Mass DOT approved.

1. The combined aggregates in the mixture (coarse, fine, and blending sizes) shall be well graded from the coarsest to the finest with not more than 18 percent nor less than 8 percent, unless otherwise permitted, of the combined aggregate retained on any individual sieve with the exceptions that the No. 50 may have less than 8 percent retained, sieves finer than No. 50 shall have less than 8 percent retained, and the coarsest sieve may have less than 8 percent retained. Use blending sizes where necessary, to provide a well graded combined aggregate. Reports of individual aggregates shall include standard concrete aggregate sieve sizes including 1 1/2 inches, one inch, 3/4 inch, 1/2 inch, 3/8 inch, No. 4, No. 8, No. 16, No. 30, No. 50, and No. 100.

2. Provide aggregates for exposed concrete from a consistent source, ASTM C 227. Do not provide aggregates that react deleteriously with alkalies in cement. Refer to appendix, paragraph entitled "Test Method C227" of ASTM C 33 for
expansion limits. Provide aggregate containing no deleterious material properties as identified by ASTM C 295.

3. Where a size designation is indicated, that designation indicates the nominal maximum size of the coarse aggregate. The largest feasible nominal maximum size aggregate specified in ASTM C 33, Class 4S shall be used. However, nominal maximum size of aggregate shall not exceed any of the following: three-fourths of the minimum cover for reinforcing bars, three-fourths of the minimum clear spacing between reinforcing bars, one-fifth of the narrowest dimension between sides of forms, or one-third of the thickness of slabs or toppings.

4. Aggregate may contain materials deleteriously reactive with alkalis in the cement, if cement contains less than 0.60 percent alkalies (percent Na₂O plus .658 percent K₂O). Provide a material such as fly ash, slag, or silica fume as specified to be effective in preventing harmful expansion due to alkali-aggregate reaction by ASTM C 441. If the concrete aggregates do not have current passing test data for alkali silica reaction potential (both fine and coarse aggregates), the mix design shall utilize at least 50% ground granulated blast furnace slag.

5. Where historical data is used, provide aggregates from the same sources having the same size ranges as those used in the concrete represented by historical data.

6. Marine aggregate may be used when conforming to ASTM C 33 and if it originates from the up-current side of the land mass and it has been washed by the fresh water so that the total chloride and sulfate content of the concrete mixture does not exceed the limits defined herein.

G. Non-shrink Grout

A non-metallic non-shrink (no volume decrease) grout obtaining a minimum 7 day compression strength of 5,000 psi, conforming to ASTM C 1107. The grout shall be intended for exterior use in freeze-thaw conditions, formulated consistent with the surface orientation and application.

H. Admixtures

1. Provide chemical admixtures that comply with the requirements shown below and in accordance with manufacturer's recommendations, and appropriate for the climatic conditions and the construction needs. Do not use calcium chloride or admixtures containing chlorides from other than impurities from admixture ingredients.

2. Provide minimal concentrations of corrosion-inducing chemicals as shown in Table 2 below. For concrete that may be in contact with prestressing steel tendons, the concentration shall not exceed 60 percent of the limits given in Table 2. For the concentration in grout for prestressing ducts, do not exceed 25 percent of the limits in Table 2.

Table 2 - Limits on Corrosion-Inducing Chemicals

<table>
<thead>
<tr>
<th>Chemical*</th>
<th>Limits, Max. Percent**</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorides</td>
<td>0.10</td>
<td>ASTM D 512</td>
</tr>
</tbody>
</table>

Q0019-010/07/16/19 03300-5 Cast-in-Place Concrete
**Fluorides** 0.10  **ASTM D 1179**

**Sulphites** 0.13  **ASTM D 1339**

**Nitrates** 0.17  **ASTM D 3867**

* Limits refer to water-soluble chemicals

** Limits are expressed as a percentage of the mass of the total cementitious materials.

3. The total alkali content shall not increase the total sodium-oxide equivalent alkali content of the concrete by more than 0.5 lb/yd3.

I. Air Entraining Admixture

1. Provide air entraining admixtures conforming to ASTM C 260.

J. Accelerating

1. ASTM C 494, Type C, if selected

K. Retarding

1. ASTM C 494, Type B, D, or G, if selected.

L. Water Reducing

1. ASTM C 494, Type A, E, or F.

M. High Range Water Reducer (HRWR)

1. ASTM C 494, Type F and ASTM C 1017.

N. Materials for Forms

1. Provide wood, plywood, plastic lumber, or steel. Use plywood or steel forms where a smooth form finish is required. Form material shall be sufficiently flat and rigid to meet specified construction tolerances.

O. Reinforcement

1. Reinforcing Bars
   a. VROD60 Glass fiber reinforced polymer (GFRP) Rebar shall be used in all precast, wall cap concrete and for dowels under levelling slab into revetment armor stones. Levelling slab concrete shall use hot dip galvanized ASTM A 615 Grade 60 rebar.
   b. ACI 301 unless otherwise specified. ASTM A 706 for bars to be welded. Galvanized rebar shall be hot dip galvanized to ASTM A767 after bending.
   c. Anchor threaded rod: All thread rebar shall also conform to ASTM A615, grade 60 and shall have a maximum yield strength less than 120 ksi, hot dip galvanized to ASTM A767. Length and end terminations as required, to provide minimum depth of embedment for a 30 kip lock-off load per rod. If anchored with epoxy resin system, provide depth and epoxy suitable for a permanent tension load of at least 30 kips.
2. Welded & Mechanical Reinforcing Bar Connections
   a. ACI 301. Provide 125 percent minimum yield strength of the reinforcement bar.

P. Materials for Curing Concrete
1. Impervious Sheeting
   a. ASTM C 171; waterproof paper, clear or white polyethylene sheeting, or polyethylene-coated burlap non-woven geotextile.

2. Pervious Sheeting
   a. AASHTO M182.

Q. Adhesive:
   a. Disposable, self-contained cartridge system capable of dispensing both components in the proper mixing ratio and fitting into a manually or pneumatically operated caulking gun.
   b. Two-component, salt-water-resistant, designed to be used in adverse freeze/thaw environments and to cure in wet concrete, with gray color after mixing.
   c. Cure Temperature, Pot Life, and Workability: Compatible for intended use and environmental conditions.
   d. Nonsag, with selected viscosity based on installation temperature and overhead application where applicable.

2. Manufacturers and Products:
   a. Five Star Marine, Inc., Fairfield, CT; HP Anchor Gel.
   b. Or approved equal.

PART 3 EXECUTION

3.1 PREPARATION FOR PLACING
A. Surfaces to receive concrete or grout shall be clean and free from frost, ice, mud, aquatic growth, and water.

B. Existing concrete surfaces to receive repair grout shall be prepared in accordance with grout manufacturer’s recommendations and at a minimum include pressure washing (min. 5000 psi), mechanical preparation, and fresh water wash-down with a fully saturated surface.

C. Remove all deteriorated concrete, dirt, oil, grease, and all bond-inhibiting materials from surface.

D. Preparation work should be done by high pressure water blast, scabbler, or other appropriate mechanical means to obtain an exposed aggregate surface with a minimum surface profile of ±1/16 in. (CSP-5)

E. Saturate surface with clean fresh water.
F. Substrate should be saturated surface dry (SSD) with no standing water during application.

G. Preparation for stair landings shall be the same with existing concrete surfaces, after preparation, receiving a brush scrub prime coat of Type II Portland cement slurry no more than 30 minutes prior to grout placement.

H. Transporting and conveying equipment shall be in-place, ready for use, clean, and free of hardened concrete and foreign material.

I. Equipment for consolidating concrete shall be at the placing site and in proper working order.

J. Equipment and material for curing and for protecting concrete from weather or mechanical damage shall be at the placing site, in proper working condition and in sufficient amount for the entire placement.

K. When hot, windy conditions during concreting appear probably, equipment and material shall be at the placing site to provide windbreaks, shading fogging, or other action to prevent plastic shrinkage cracking or other damaging drying of the concrete.

L. Foundations
   1. Concrete on Earth Foundations
      a. Earth (subgrade, base, or subbase courses) surfaces upon which concrete is to be placed shall be clean, damp, and free from debris, frost, ice, mud, aquatic growth and standing or running water.
      b. Prior to placement of concrete, the foundation shall be well drained and shall be satisfactorily graded and uniformly compacted.
      c. Dewater as necessary.

3.2 FORMS
   A. ACI 301.
   B. Set forms mortar-tight and true to line and grade.
   C. Below grade plywood forms or shoring/sheeting used as forms may be left in place.
   D. After placing concrete, forms shall remain in place for at least 4 days.
   E. Prevent concrete damage during form removal.
   F. The vertical concrete along the inshore side of the existing bulkhead shall be plywood formed vertical and as straight as possible as if it is an exposed surface.
   G. Bidders shall assume that forms are needed to span the voids behind the existing bulkhead.
   H. Forms may be removed earlier than specified if high early strength concrete is used and that the concrete has reached sufficient strength to allow form removal without concrete damage.

3.3 PLACING REINFORCEMENT AND MISCELLANEOUS MATERIALS
   A. ACI 301
B. Remove rust, scale, oil, grease, clay, or foreign substances from reinforcing that would reduce the bond.

C. Reinforcement Supports
   1. Place reinforcement and secure with chairs, spacers, or plastic hangers (no uncoated steel within 3 inches of any exposed surface). Support reinforcement on the ground with plastic lumber, concrete block material below the bottom of concrete elevation.

D. Splicing
   1. As indicated. For splices not indicated, ACI 301. Do not splice at points of maximum stress; stagger lap splices.

E. Cover
   1. Concrete cover for reinforcement shall be 3.5 inches minimum to main steel reinforcing bars; 3 inches to stirrups, unless otherwise noted. Placement tolerance shall be per ACI 347R and ACI 117.

F. Construction & Control Joints
   1. Locate joints as approved by the Engineer to least impair strength. Continue reinforcement across joints unless otherwise indicated. Concrete surfaces at construction joints shall be rough (1/2” roughness) to enhance bond and shear friction.

3.4 BATCHING, MEASURING, MIXING, AND TRANSPORTING CONCRETE

A. ASTM C 94, ACI 301, and ACI 304R, except as modified herein.

B. Furnish mandatory batch tickets imprinted with mix identification, batch size, batch design and measured weights, moisture in the aggregates, and time batched for each load of ready mix concrete.

C. Mixing
   1. ASTM C 94 and ACI 301.
   3. Begin mixing within 30 minutes after the cement has been added to the aggregates.
   4. Place concrete within 90 minutes of either addition of mixing water to cement and aggregates or addition of cement to aggregates if the air temperature is less than 85 degrees F.
   5. Reduce mixing time and place concrete within 60 minutes if the air temperature is greater than 85 degrees F except as follows: if set retarding admixture is used and slump requirements can be met, limit for placing concrete may remain at 90 minutes.
   6. Additional water may be added, if both the specified maximum slump and water-cementitious material ratio are not exceeded.
   7. Field addition of water must be allowed for in the mix design. Do not field add water unless withheld at the plant.
8. When water is added, an additional 30 revolutions of the mixer at mixing speed is required. If time of discharge exceeds time required by ASTM C 94 concrete shall be rejected.

9. If the entrained air content falls below the specified limit, the concrete shall be rejected or be brought into specification with addition of air entraining admixture.

10. Dissolve admixtures in the mixing water and mix in the drum to uniformly distribute the admixture throughout the batch.

D. Transporting

1. Transport concrete from the mixer to the forms as rapidly as practicable.

2. Prevent segregation or loss of ingredients.

3. Clean transporting equipment thoroughly before each batch.

4. Do not use aluminum pipe or chutes.

5. Remove concrete which has segregated in transporting and dispose of as directed.

3.5 PLACING CONCRETE

A. Preparation

1. Place concrete as soon as practicable after the forms and the reinforcement have been inspected and approved.

2. Do not place concrete when weather conditions prevent proper placement and consolidation; in uncovered areas during periods of precipitation; or in standing water unless otherwise approved.

3. Prior to placing concrete, remove dirt, construction debris, water, snow, and ice from within the forms.

4. Deposit concrete as close as practicable to the final position in the forms.

5. Do not exceed a free vertical drop of 3 feet from the point of discharge.

6. Place concrete in one continuous operation from one end of the structure towards the other or lifts for vertical construction.

B. Vibration

1. Comply with the requirements of ACI 309R and ASTM A 934 using vibrators with a minimum frequency of 9000 vibrations per minute (VPM).

2. Use only high cycle or high frequency vibrators.

3. Motor-in-head 60 cycle vibrators may not be used.

4. Provide a spare vibrator at the casting site whenever concrete is placed.

5. Insert and withdraw vibrators approximately 18 inches apart.

6. Penetrate at least 8 inches into the previously placed lift with the vibrator when more than one lift is required.
7. Extract the vibrator using a series of up and down motions to drive the trapped air out of the concrete and from between the concrete and the forms.

C. Pumping

1. ACI 304R and ACI 304.2R.
2. Pumping shall not result in separation or loss of materials nor cause interruptions sufficient to permit loss of plasticity between successive increments.
3. Loss of slump in pumping equipment shall not exceed 2 inches.
4. Do not use pipe made of aluminum or aluminum alloy.
5. Avoid rapid changes in pipe sizes.
6. Limit maximum size of coarse aggregate to 33 percent of the diameter of the pipe.
7. Maximum size of well-rounded aggregate shall be limited to 40 percent of the pipe diameter.
8. Discharge horizontally from pump hoses to avoid segregations and loss of air content.
9. Take samples for testing at the discharge end.
10. Air content tested at the pump hose discharge shall be within the specified limits, test for air content prior to discharge into forms.

D. Cold Weather

1. ACI 306.1.
2. Do not allow concrete temperature to decrease below 50 degrees F.
3. Obtain approval prior to placing concrete when ambient temperature is below 40 degrees F or when concrete is likely to be subjected to freezing temperatures within 24 hours.
4. Cover and insulate concrete and provide sufficient heat to maintain 50 degrees F minimum adjacent to both the formwork and the structure while curing.
5. Limit the rate of cooling to 5 degrees F in any one hour and 50 degrees F per 24 hours after heat application.
6. Silica fume may be included in the mix design to allow faster strength gain in cold conditions.

3.6 SURFACE FINISHES

A. Defects

1. Repair formed surfaces by removing minor honeycombs, pits greater than three square inch surface area or 0.75 inch maximum depth, or otherwise defective areas. Repair any shrinkage crack in concrete, grout or repair mortar and investigate if excess water was used in batching.
2. Provide edges perpendicular to the surface and patch with nonshrink grout. Patch tie holes and defects when the forms are removed.

3. Concrete with extensive honeycomb including exposed steel reinforcement, cold joints, entrapped debris, separated aggregate, or other defects which affect the serviceability or structural strength will be rejected, unless correction of defects is approved.

4. Obtain approval of corrective action prior to repair. Report apparent causes of defects and describe how methods will be adjusted to avoid further defects.

B. Not Against Forms (Top Surfaces)
   1. Finish surfaces not otherwise specified with a screed finish.

C. As-Cast Form
   1. Provide form facing material producing a smooth, hard, uniform texture on the concrete. Support forms as necessary to meet required tolerances.

D. Stair Treads
   1. Tread surfaces shall be trowel finished flat, straight and true, then receive a coarse broom finish across the treads.

E. Stair Landings
   1. Stair landing overlays shall receive a coarse broom finish across the landing.

3.7 CURING AND PROTECTION

A. ACI 301 and ACI 308 unless otherwise specified.

B. Prevent concrete from drying by misting surface of concrete and/or sheeting. Ensure existing concrete has been fully saturated with fresh water prior to repair application.

C. Begin curing immediately following final set (typically within 1 hour).

D. Avoid damage to concrete from vibration created by pile driving, movement of equipment in the vicinity, disturbance of formwork or protruding reinforcement, by rain or running water, adverse weather conditions, and any other activity resulting in ground vibrations.

E. Protect concrete, grout and repair mortar from injurious action by sun, rain, flowing water, frost, mechanical injury, tire marks, and oil stains.

F. Do not allow concrete, grout and repair mortar to dry out from time of placement until the expiration of the specified curing period.

G. If forms are removed prior to the expiration of the curing period, provide another curing procedure specified herein for the remaining portion of the curing period.

H. Moist cure concrete using potable water for a minimum of 2 days.

I. Begin curing within one hour of finishing.

J. Protect concrete from premature drying, freezing, excessively hot temperatures, and mechanical injury; and maintain minimal moisture loss at a relatively constant
temperature for the period necessary for hydration of the cement and hardening of the concrete.

K. The materials and methods of curing shall be subject to approval by the Engineer.

L. Concrete shall be cured for at least 2 days, or until it has reached 80% of the design strength, before transporting or applying loads.

3.8 FIELD QUALITY CONTROL

A. Evaluation of Mixture Designs (structural concrete)

1. Test the fresh concrete as follows:

   a. For strength, cast 4 by 8 inch or 6 by 12 inch cylinders in accordance with ASTM C 31.

B. Sampling

1. ASTM C 172. Collect samples of fresh concrete to perform tests specified. ASTM C 31 for making test specimens.

2. Identify samples so taken in a manner that they can be segmented from other tests. Obtain at least one sample from each truck and perform one set of test samples. Pile fill concrete does not need to be sampled or tested.

C. Testing

1. Compressive Strength Tests

   a. ACI 214 tests for strength - conduct strength tests of concrete during construction in accordance with the following procedures:

      1) Mold and cure six cylinders from each sample taken in accordance with ASTM C 31. Prevent evaporation and loss of water from the specimen.

      2) Test cylinders in accordance with ASTM C 39. Test one cylinder at 3 days, one cylinder at 7 days, one cylinder at 14 days, two cylinders at 28 days, and hold one cylinder in reserve. These time periods may be adjusted depending on the rate of strength gain of the concrete, as needed to confirm adequate strength for additional concrete loading. The compressive strength test results for acceptance shall be the average of the compressive strengths from the two specimens tested at 28 days. If one specimen in a test shows evidence of improper sampling, molding or testing, discard the specimen and consider the strength of the remaining cylinder to be the test result. Loads shall not be applied concrete beam until it has reached 4000 psi compressive strength.

      3) If the average of any three consecutive strength test results is less than the specified strength (f’c) or the minimum test strength (fcr) for durability, whichever is higher, by more than 500 psi, take a minimum of three core samples in accordance with ASTM C 42, from the in-place work represented by the low test results. Locations represented by erratic core strengths shall be retested.
Remove concrete not meeting strength criteria and provide new acceptable concrete. Repair core holes with nonshrink grout.

4) Strength test reports shall include location in the work where the batch represented by a test was deposited, batch ticket number, time batched and sampled and water added on the job. Reports of strength tests shall include detailed information of storage and curing of specimens prior to testing.

5) Final reports shall be provided within 7 days of test completion.

D. Standard Molded and Cured Strength Specimens

1. When the averages of all sets of three consecutive compressive strength test results equal or exceed the design compressive strength (f'c) or the required field test strength (fcr) whichever is higher, and no individual strength test falls below the specified compressive strength (f'c) or the required field durability strength (fcr) by more than 500 psi, whichever is higher.

E. Non-Destructive Tests

1. Non-destructive tests may be used when permitted to evaluate concrete where standard molded and cured cylinders have yielded results not meeting the criteria.

F. Core Tests

1. When the average compressive strengths of the representative cores are equal to at least 85 percent of the design strength (f'c) or the required average test strength (fcr), whichever is higher, and if no single core is less than 75 percent of the specified strength (f'c) or the required average field test strength (fcr), whichever is higher, strength of concrete is satisfactory.

G. Anchor rod lock-off

1. After concrete has reached sufficient strength gain, the precast unit anchor rods shall be pre-loaded by hydraulic jack to a lock-off load of 30 kips each. The rod ends shall be recessed at least 1 inch below top of concrete, coated with petrolatum mastic corrosion inhibitor and the countersink pockets filled with light gray color self-levelling urethane sealant flush to top of concrete.
SECTION 04400
STONE RIP RAP

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes
   1. Rip rap for stone revetment.

1.2 REFERENCES
A. Contract drawings
B. Section 02315

1.3 SUBMITTALS
A. Quarry stone source information.
B. Indicate type of stone and include current photographs and/or samples representative of the intended stone for this project with adequate scale to show the stone sizes.
C. Stone supply shall be subject to inspection and approval by the Engineer as meeting specification prior to utilization.

1.4 DELIVERY, STORAGE, AND HANDLING
A. Handle delivered stone materials carefully to avoid damage to the property, including seawall, railings and pavements.
B. Utilize an aggregate/sand bed to protect pavement during stone dumping and unloading, delivery, storage, and handling

1.5 QUALITY ASSURANCE
A. The Contractor is responsible to oversee all stone deliveries and placements to ensure all stone installed meets project specifications.

PART 2 PRODUCTS

2.1 STONE
A. The material used for the revetment shall be rough quarry stone free of cracks, joints, weak seams or other defects.
B. Stone shall be hard, durable, and of such quality that it will not disintegrate on exposure to ice, seawater, wave action or weathering.
C. It shall also be chemically stable, capable of withstanding freezing and thawing, and suitable in all other respects for the intended use.
D. A potential stone supply shall have stone with less than 30% loss in an LA Abrasion Test (ASTM C 535); however the stone source will also be subjected to inspection by the Contractor and the Engineer to confirm the large stone is also free of weakness and defects.
E. Disputed quality stones will be subjected to a 10 foot stone on stone drop test with the disputed stone being dropped onto a similar size or larger stone, at no additional cost to the Owner.

F. See Contract Drawings for sizes and additional requirements.

G. Armor stone shall be roughly rectangular/block-like in shape. Outfall anti-scour stone may be large flat slab shaped.

H. Rounded stones are not acceptable and thin wedge like stones are only acceptable as chinking stones.

I. Potentially acceptable stone types include granite, diorite, basalt, quartzite, gneiss, syenite.

J. The following rock is unlikely to be approved; schist, gabbro, pegmatite, shale, slate, sandstone, limestone.

K. Armor Stone shall conform to the following gradation requirements (unless otherwise noted, some smaller stones may be required to meet existing seawalls or to meet dimensional constraints):

   - Maximum Weight = 6 Tons
   - Toe Stone Weight = 4.1 Tons
   - Average Weight = 3.0 Tons
   - Minimum Weight = 1.0 Tons
   - Near Surface Chinking Stone Average = 0.7 Tons

L. Underlayer Stone shall conform to the following gradation requirements:

   - Average Weight = 600 Pounds
   - Minimum Weight = 200 Pounds
   - Near Surface Chinking Stone Average = 70 Pounds

M. Bedding stone shall have a typical size of 6 inches (approx. 15 pounds). The smallest stone shall be 2.5 inches (1 pound) and the largest stone shall be 12 inches (100 pounds).

PART 3 EXECUTION

A. Before commencing stone placement, remove debris, including timbers, concrete and other materials which might damage the geotextile.

B. Provide adequate ballast on generally horizontal geotextile and proper fastening on vertical geotextile to secure it in the intended locations until the stone work is complete. Lap un-sewn geotextile joints 24” minimum.

C. Provide crushed stone bedding over geotextile (minimum necessary) if sharp pointed or sharp edge armor or underlayer stone is being placed with a sharp edge/point toward the geotextile.
D. The rock riprap shall be placed by equipment on the surfaces and to the depths and dimensions specified.

E. The rock shall be delivered and placed in such a manner that will insure that the stone work in-place will be dense and compact mass with the largest armor stones uniformly distributed and firmly in contact with the smaller stones and chinking (quarry spalls) filling the voids between the larger rocks.

F. Hand placement of chinking stone shall be completed to insure a final surface which is tight and solid and with no voids greater than six inches (6") across present between rocks.

G. Rock will be placed starting at the lowest elevation of a toe as shown on the drawings.

H. Each stone shall be carefully set on the stones below, following the slope lines and tolerances shown on the contract drawings.

I. The revetment surfaces shall be rough and irregular to best break wave run-up.

J. Armor stones shall not be set with flat surfaces parallel to the slope lines.

K. Adjacent stones shall be selected for size and shape and laid in contact and fit as close as possible so as to produce a reasonable minimum of voids.

L. Individual stones shall be placed in a manner to provide maximum interlocking.

M. Stones shall not rock or tip and shall have at least three points of bearing on stones below.

N. Stones shall be tested for rocking or tipping prior to placement of the next row of stones.

O. Placing small stones in joints from the top to prevent rocking or tipping (chinking) shall not be done.

P. See Contract Drawings for additional requirements.

END OF SECTION
SECTION 05050

WELDING

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes
   1.  Welding for fabrication and installation of metals

B.  Related Sections
   1.  Section 03200 – Concrete Reinforcement
   2.  Section 03410 – Precast Structural Concrete
   3.  Section 05500 – Miscellaneous Metals

1.2  REFERENCES

A.  American Society of Mechanical Engineers (ASME):
   1.  BPVC SEC V, Nondestructive Examination.
   2.  BPVC SEC IX, Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators.


C.  American Welding Society (AWS):
   2.  D1.1, Structural Welding Code - Steel.
   3.  QC 1, Standard for AWS Certification of Welding Inspectors.

1.3  DEFINITIONS

A.  CWI-Certified Welding Inspector.

B.  NDT-Nondestructive Testing.

1.4  SUBMITTALS

A.  Shop Drawings:
   1.  Shop and field welding procedure specifications (WPS).
   2.  Procedure qualification records (PQR).
   3.  Welding Documentation: Submit on appropriate forms in referenced welding codes.
   4.  Nondestructive testing procedure specifications prepared in accordance with ASME BPVC SEC V.

B.  Quality Control Submittals:
2. Certified welding inspector (CWI) credentials.
3. Testing agency personnel credentials.
4. Welding inspector’s reports.
5. Shop inspection and quality control records when requested.

C. As specified in Section 01330, submit certifications regarding all iron or steel products that all manufacturing processes occurred in the US.

1.5 QUALITY ASSURANCE

A. Qualifications:

1.6 SEQUENCING AND SCHEDULING

A. Unless otherwise specified, Submittals required in this Section shall be submitted and approved prior to commencement of welding operations.

PART 2 PRODUCTS

2.1 AMERICAN IRON AND STEEL

A. All iron and steel products included in this section shall be manufactured in the US. Refer to Section 00800 for further description of the American Iron and Steel requirement.

PART 3 EXECUTION

3.1 GENERAL

A. Welding and Fabrication by Welding:
   1. Conform to governing welding codes referenced in the attached Welding and Nondestructive Testing Requirements Data Sheet.
   2. Each welder working on the project, whether in the shop or in the field, shall be assigned an identification symbol or mark. Each welder shall mark or stamp his identification symbol at each weldment completed, whether in the shop or in the field.

B. 3.2 FIELD QUALITY CONTROL

A. Welding fabrication, materials, and workmanship shall be subjected to inspection and testing during the erection and installation process.

B. Nondestructive testing of erection, installation and fabrication welds will be conducted by an independent Testing Agency, retained by the Owner, in accordance with the weld inspection criteria specified below.
C. The Contractor shall facilitate inspection and testing by the Testing Agency. Furnish the Testing Agency, upon request, with the following:

1. Complete sets of approved shop drawings and corrective work procedures at shop(s) and in the field.
2. Cutting lists, order lists, material bills and shipping lists.
3. Information as to time and place of all rollings and shipment of materials to the shop(s) and the field.
4. Full and ample means and assistance for testing, including access to all field and shop welds required to be tested.

3.3 NONDESTRUCTIVE WELD TESTING REQUIREMENTS

A. Weld Inspection Criteria:

1. Selection of Welds to be Tested: As agreed upon between Engineer and Contractor.
2. Unless otherwise specified, perform NDT of welds at a spot testing frequency as determined in the attached table in Data Sheet 05050 – A, in accordance with the referenced welding codes, as follows:
   a. Butt Joint Welds: All butt welds to be provided shall be radiographically tested and repaired.
   b. Groove Welds: All groove welds to be provided shall be ultrasonically tested and repaired.
   c. Fillet Welds: A randomly sampled percentage of all fillet welds to be provided shall be examined and repaired, using either dye penetrant or magnetic particle inspection methods.
   d. All Welds: 100 percent visually inspected.

3. Weld Acceptance:
   a. Visual Inspection (VT):
      1) Structural Tubing: AWS D1.1, paragraph 6.9, Visual Inspection, Tubular Connections;
      2) All Other Structural Steel: AWS D1.1, paragraph 6.9, Visual Inspection, Statically Loaded Nontubular Connections.
   d. Magnetic Particle (MT):
      1) Perform on fillet and partial penetration groove welds in accordance with AWS D1.1, paragraph 6.10.
2) Acceptance shall be in accordance with VT standards specified above.

e. Liquid Penetrant (PT):

1) Perform on fillet and partial penetration groove welds per AWS D1.1, paragraph 6.10.

2) Acceptance shall be in accordance with VT standards specified above.

END OF SECTION
## DATA SHEET 05050-A
Welding and Nondestructive Testing Requirements

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<tr>
<td>03200 Concrete Reinforcement</td>
<td>AWS D1.4, Structural Welding Code-Reinforcing Steel</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100% MT(^3) or PT(^4) of all rebar splices; see Section 03200</td>
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<tr>
<td>03410 Structural Precast Concrete</td>
<td>AWS D1.1, Structural Welding Code–Steel and AWS D1.4, Structural Welding Code–Reinforcing Steel</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100% VT(^5); see Section 03410</td>
</tr>
<tr>
<td>03450 Architectural Precast Concrete</td>
<td>AWS D1.1, Structural Welding Code–Steel and AWS D1.4, Structural Welding Code–Reinforcing Steel</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100% VT(^5); see Section 03450</td>
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<tr>
<td>05120 Structural Steel</td>
<td>AWS D1.1, Structural Welding Code–Steel</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100% VT(^5); 100% UT(^1) or RT(^2) of all groove-and-butt joint welds; 10% MT(^3) or PT(^4) of all fillet welds; see Section 05120</td>
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<tr>
<td>05300 Metal Decking</td>
<td>AWS D1.1, Structural Welding Code–Steel or AWS D1.3, Structural Welding Code–Sheet Steel</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>100% VT(^5); see Section 05300</td>
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<td>05500 Metal Fabrications and Castings</td>
<td>AWS D1.1, Structural Welding Code–Steel or AWS D1.2, Structural Welding Code–Aluminum</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100% VT(^5); 100% UT(^1) or RT(^2) of all groove-and-butt joint welds; 10% MT(^3) or PT(^4) of all fillet welds; see Section 05500</td>
</tr>
</tbody>
</table>

\(^1\)UT–Ultrasonic Testing. 
\(^2\)RT–Radiographic Testing. 
\(^3\)MT–Magnetic Particle Testing. 
\(^4\)PT–Liquid Dye Penetrant Testing. 
\(^5\)VT–Visual Testing.

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PART 1  GENERAL

1.1 SUMMARY

A. Section Includes
   1. Galvanized steel for stairway railings, fasteners, bolts, plates, etc.
   2. Galvanized steel base plates, fasteners and anchor bolts.
   3. Galvanized steel for helical and thread rod anchors.

B. Related Sections
   1. Section 05050 – Welding.

1.2 REFERENCES

A. American Institute of Steel Construction (AISC):
   3. Code of Standard Practice for Steel Buildings and Bridges, excluding Sections 3, 4, 7.11.3.3, 7.11.4, 7.11.5, and 7.13.
   4. AISC Quality Certification Program.
   5. AISC Erector Certification Program.

B. American Society for Testing and Materials (ASTM):
8. A307, Standard Specifications for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.


10. A384, Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies.


12. A384, Standard Specifications for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

13. A500, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.


17. A992, Standard Specification for Structural Steel Shapes


19. F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

C. American Welding Society (AWS):

1. A2.0, Standard Welding Symbols.

2. D1.1, Structural Welding Code - Steel.

D. SSPC - Steel Structures Painting Council.

E. Research Council on Structural Connections of the Engineering Foundation (RCSCEF) 1986 - "Specifications for Structural Joints using ASTM 325 or A490 Bolts".

1.3 SUBMITTALS

A. Shop Drawings

1. Detailed shop drawings, including erection drawings, schedules, and index sheets, showing:
   a. Certificates
   b. Steel
   c. Bolts, threaded rod, nuts, and misc. structural materials
   d. Corrosion protection certificates
   e. Stair and railing shop drawings for each location, including connections, elevations, and dimensions.

B. As specified in Section 01330, submit certifications regarding all iron or steel products that all manufacturing processes occurred in the US.
PART 2 PRODUCTS

2.1 AMERICAN IRON AND STEEL

A. All iron and steel products included in this section shall be manufactured in the US. Refer to Section 00800 for further description of the American Iron and Steel requirement.

2.2 MATERIALS

A. Structural Steel Members - ASTM A36 and A572, as specified below and as shown on the Drawings:
   1. W-shapes – ASTM A992
   2. M; S; HP; C; MC Shapes, Angles, and Plates – A-36

B. Steel Tubing - ASTM A500, Grade B (Fy equals 46 ksi).

C. Welded and Seamless Steel Pipe - ASTM A53, Type E or S, Grade B.

2.3 FASTENERS

A. Bolts, Nuts and Washers - ASTM A325, galvanized to ASTM A153 for galvanized members.

B. Anchor Bolts: ASTM F1554

C. Nuts: ASTM A563, type and finish to match bolt type and finish.

D. Hardened Steel Flat and Beveled Washers: ASTM F436, type and finish to match bolt type and finish.

2.4 ANCILLARY MATERIALS

2.5 FABRICATION

A. Finishes:
   1. Galvanizing:
      a. Fabricate steel to be galvanized in accordance with ASTM A143, A384, and A385. Avoid fabrication techniques that could cause distortion or embrittlement of steel.
      b. Remove welding slag, splatter, burrs, grease, oil, paint, lacquer, and other deleterious material prior to delivery for galvanizing.
      c. Remove by blast cleaning or other methods surface contaminants and coatings not removable by normal chemical cleaning process in the galvanizing operation.
      d. Hot-dip galvanize steel members, fabrications, and assemblies after fabrication in accordance with ASTM A123.
      e. Hot-dip galvanize A325 bolts, nuts, washers, and hardware components in accordance with ASTM A153. Oversize holes to allow for zinc alloy growth. Shop assemble bolts, nuts, and washers with special lubricant and test in accordance with ASTM A325 and A563.
f. Galvanize components of bolted assemblies separately before assembly.

g. Roughen galvanized faying surfaces of slip critical (SC) bolted connections with hand wire brushing.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine all work prepared by others to receive work of this Section and report any defects affecting installation to Contractor for correction. Commencement of work will be construed as complete acceptance of preparatory work by others.

3.2 PREPARATION

A. Provide temporary flooring, planking, and scaffolding necessary in connection with the erection of structural steel or support of erection machinery. Temporary floors shall be as required by State laws and regulations governing safety regulations, and OSHA requirements.

3.3 ANCHOR BOLTS

A. Coordinate installation of anchor bolts and other connectors required for securing structural steel to in-place work.

B. Furnish templates, anchor bolts, and other items to be embedded in cast-in-place concrete or concrete masonry, in ample time so that this work will not be delayed.

3.4 SETTING BASES AND BEARING PLATES

A. Set base plates level to correct elevations and support temporarily on steel wedges, shims, leveling devices, or as shown on Drawings, until corresponding supported member has been positioned, plumbed and anchor-bolted.

B. Entire area under plates shall be packed solidly with non-shrink grout. Finished exposed grout surfaces shall be smooth and splayed to a 45° angle from the bottom of the base plates.

C. Leave protruding leveling devices in place until after grout has attained required strength, and then cut off flush with top or edges of base plates, or both, except as otherwise noted.

3.5 FIELD QUALITY CONTROL

A. High-Strength Bolted Connections:

1. An independent testing agency shall be retained by the Contractor and approved by the Engineer to perform the following inspection and testing in accordance with the AISC Specification for Structural Joints Using ASTM A325 Bolts:

   a. Marking identification and conformance to ASTM standards.

   b. Alignment of bolt holes.

   c. Placement, type, and thickness of hardened washers.

   d. Tightening of bolts.
2. Bearing-Type Connections Not Fully Tensioned (N, X): Snug tight condition with plies of joint in firm contact.

3. Fully Tensioned (FT) Bearing and Slip Critical (SC) Connections:
   a. Conduct preinstallation test.
   b. Monitor installation and tightening of DTIs or TC bolts.
   c. Monitor condition of faying surfaces for slip critical connections.

4. Preinstallation Test:
   a. Conduct jobsite test prior to start of work using a bolt tension measuring device.
   b. Select representative sample of not less than three bolts of each diameter, length, and grade.


6. Deficient assemblies shall be taken apart, corrected and reassembled, using new materials as required. ASTM A325 bolts may be retightened once only.

7. Reinspect defective and improperly tightened high-strength bolted connections. Retest fully tensioned bolts as necessary to demonstrate compliance of the completed work.

B. Welded Connections shall be tested in accordance with Section 05050.

END OF SECTION
SECTION 10430
EXTERIOR SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Plaque

1.2 SUBMITTALS
   A. A full scale drawing of the building plaque shall be submitted to the Engineer for approval.

PART 2 PRODUCTS

2.1 PLAQUE
   A. Monument plaque shall be 30-inches wide by 18-inches high cast bronze with a satin finish.
   B. Plaque shall have beveled edges, raised letters, and a pebble background.
   C. Text and letter style shall be selected by the Engineer.

PART 3 EXECUTION

3.1 INSTALLATION
   A. The plaque shall be mounted to the back of the seawall, with exact location to be determined in the field by the Engineer, using built-in wall anchors. Fastener devices shall be concealed by rosettes on other suitable means acceptable to the Engineer. The plaque shall be fully bedded in an adhesive compound when anchored to the wall.

3.2 CLEAN-UP
   A. Clean all dirt, grease, paint, stains, etc. from sign, after installation.

END OF SECTION