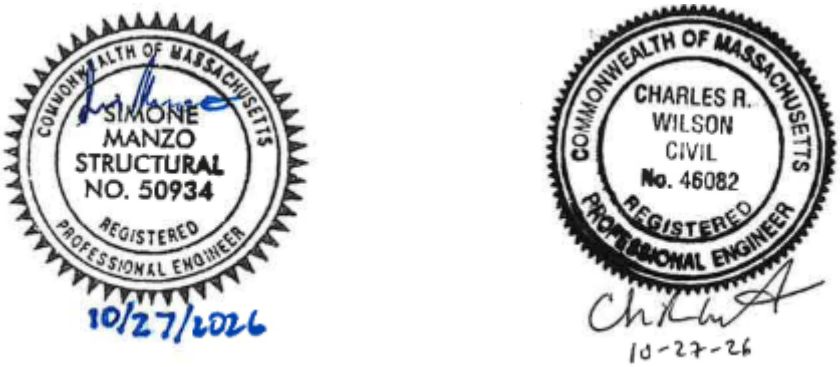
MASSACHUSETTS WATER RESOURCES AUTHORITY
33 TAFTS AVENUE
BOSTON, MASSACHUSETTS 02128

SPECIFICATIONS FOR

ALFORD STREET FACILITY SEAWALL REPAIRS
CHARLESTOWN, MA

MWRA Contract No. 8194



HAZEN AND SAWYER, P.C.
50 MILK STREET, SUITE 500
BOSTON, MA 02109

October 2026

SECTION 01010

SUMMARY OF WORK

PART 1 – GENERAL

1.01 CONTRACT TIME/LIQUIDATED DAMAGES

A. Contract Time – The Contract Time is 460 calendar days from the day of the Notice to Proceed to substantial completion (reference Article 5 of the Authority Contract Agreement.)

1. Refer to Paragraph 1.06 of this Section and Section 01015 – Sequence of Work for work restrictions.

B. Liquidated Damages – The liquidated damages amount is $1,811.00 per calendar day (reference Article 5 of the Authority Contract Agreement.)

1.02 SUMMARY

A. The Work to be done under this Contract and in accordance with these Contract Documents consists of furnishing all equipment, superintendence, labor, skill, materials and all other items necessary for the Work associated with this project. The Contractor shall perform all Work required for such construction in accordance with the Contract Documents and is subject to the terms and conditions of the Contract, complete and ready for use.

B. The Work in this Contract is located at the Alford Street Facility located at 169-171 Alford Street in Charlestown, Massachusetts.

C. The Work includes the construction of the temporary local stabilization of the exterior granite blocks along the CPS seawall. The Contractor shall furnish all labor, materials, tools, and equipment, and perform all operations necessary for the following items of work on the exterior granite blocks along the CPS seawall:

1. Install and maintain access scaffolding, platforms and/or barges as required to perform seawall stabilization repairs.

2. Establish and maintain a Staging Area for all trailers, equipment, and storage of materials/shelters at locations identified by the Authority as indicated on the Drawings. The Contractor shall provide an equipment trailer and a personnel trailer. Provision of electric power and heat and humidity control shall be provided by the Contractor.

3. Remove all scaffolding, platforms, and/or barges and equipment.

4. Final site cleaning and restoration of staging/laydown areas.

5. Perform a post-construction survey of the entire seawall to establish a baseline for the seawall monitoring program. The Contractor shall also install an additional permanent benchmark on the CPS property.

1.03 PROJECT/SITE CONDITIONS

A. Work is in areas and/or proximity to areas of active/live sewer infrastructure, possible groundwater and soil contaminants, carbon monoxide, volatile organic compounds, methane, oxygen deficient atmospheres, and materials containing asbestos, PCBs, and lead. Presence of hazardous materials is limited to the interior of the CPS building.

B. The CPS building shall not be entered throughout the duration of the Work.

C. Coordination:

1. The Contractor shall submit worker sign-in sheets to the Authority every morning to identify how many and which individual workers are on Site that day. The sign-in sheet will be used for contact and emergency purposes should an evacuation be necessary.

2. The Site and facility (i.e., pavement, grassed areas, fences, and gates) shall be restored as indicated on the Drawings prior to completion of work on Site.

3. Any damage done to the structures or equipment shall be repaired or replaced, at the sole option of and at no additional cost to the Authority.

D. Field Measurements:

1. All dimensions indicated on the Drawings and all dimensions required for the Work shall be verified by actual measurement of existing conditions by the Contractor prior to start of Work.

E. For existing condition photos, refer to Appendix A of these Specifications.

1.04 CONTRACT DOCUMENTS

A. The Work to be done is indicated in the Contract Drawings and specified in the accompanying Specifications (Contract Documents) entitled Alford Street Facility Seawall Repair. The numbers and titles of all Contract Drawings appear on the index sheet of the Contract Drawings. All Contract Drawings so enumerated shall be considered an integral part of the Contract Documents as defined herein.

B. Certain Document Sections refer to Divisions of the Contract Specifications. Sections are each individually numbered portions of the Specifications (numerically) such as 08110, 13182, 15206, etc. The term Division is used as a convenience term meaning all Sections within a numerical grouping. Division 16 would thus include Sections 16000 through 16903 (as an example).

1.05 CONSTRUCTION PERMITS, EASEMENTS AND ENCROACHMENTS

A. The Contractor shall obtain, keep current and pay all fees for any necessary construction permits in accordance with Section 01060 - Permits and Regulatory Requirements.

1.06 SCHEDULING AND CONSTRAINTS

A. Work shall only be performed between 7:00 AM to 3:00 PM Monday through Friday, except as further restricted herein.

1. Equipment and machinery shall not be started or operated prior to 7:00 AM except as otherwise noted.

2. Deliveries shall only be accepted and unloaded between the hours of 9:00 AM and 2:00 PM.

3. All Contractor personnel shall be off site by 3:00 PM.

4. Work hours can be extended upon written approval from the Authority.

B. Lay Down areas and sheltered work areas shall be cleaned and restored to as-found conditions once all site work is completed to the Authority's satisfaction and in accordance with the Contract Documents.

C. The Contractor shall be required to prepare a detailed site-specific Health and Safety Plan (HASP) covering all required work as specified in Section 01065 – Project Health and Safety Specifications. All Contractor personnel shall be equipped with and utilize all required PPE for the work covered by this project.

D. Authority Holidays – Do no work on the following holidays:

1. New Year's Day, Martin Luther King's Birthday, President's Day, Patriot's Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, and Christmas Day.

2. Authority observed holidays which fall on a Saturday will be observed by the Authority on a Friday, the day before. Authority observed holidays which fall on a Sunday will be observed on Monday, the day after.

1.07 PROJECT/SITE CONDITIONS

A. Field Measurements

1. Verify all dimensions, quantities, and locations of existing structures in the field before the fabrication, installation, or connection of any material or equipment that is dependent on the correctness of such information. Notify the Authority of any discrepancies between the Contract Documents and existing conditions before any work commences in the affected area.

1.08 FIRE PROTECTION AND RESCUE

A. The Contractor shall take all necessary precautions including but not limited to providing fire extinguishers to prevent fires at or adjacent to the work, buildings, etc., and shall provide adequate facilities for extinguishing fires which do occur.

B. The Contractor shall coordinate with the City of Boston Fire Department in accordance with Section 01065 – Project Health and Safety Specifications.

1.09 FIRST AID FACILITIES AND ACCIDENTS

A. First Aid Facilities

1. The Contractor shall provide at the Site a first aid kit (conforming with OSHA requirements) such equipment and facilities as are necessary to supply first aid for up to five (5) of his personnel who may be injured in connection with the Work.

B. Accidents

1. The Contractor shall promptly report, in writing, to the Authority all accidents whatsoever out of, or in connection with, the performance of the Work, whether on or adjacent to the site, which cause death, personal injury or property damage, giving full details and statements of witnesses.

2. If death, serious injuries, or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the Authority.

3. If any claim is made by anyone against the Contractor or a subcontractor on account of any accidents, the Contractor shall promptly report the facts, in writing, to the Authority, giving full details of the claim.

1.10 LIMITS OF WORK AREA

A. The Contractor shall confine construction operations within the Contract Limits as indicated on the Contract Drawings and/or property lines and/or fence lines.

Storage of equipment and materials, or erection and use of sheds outside of the Contract Limits, if such areas are the property of the Authority, shall be used only with the Authority's approval. Such storage or temporary structures, even within the Contract's Limits, shall be confined to the Authority's property and shall not be placed on properties designated as easements or rights-of-way unless specifically permitted elsewhere in the Contract Documents.

B. The Contractor shall assume full responsibility for security of all Contractor and subcontractors' materials and equipment.

C. The Contractor shall locate equipment and materials such that Authority and emergency vehicle access is maintained at all times.

D. If directed by the Authority, the Contractor shall move any equipment, materials and/or items which interfere with Authority operations or private property at no additional cost to the Authority.

E. The Contractor shall obtain and pay for offsite storage, staging or laydown areas in addition to those indicated on the Contract Drawings if needed to perform the Work.

F. The Contractor shall clear access ways at the end of each day’s work and when required by the Authority during the execution of work.

1.11 PERIODIC CLEANUP: BASIC SITE RESTORATION

A. During construction, the Contractor shall remove from the Site all accumulated debris and surplus materials of any kind at a minimum on a weekly basis. Unused equipment and tools shall be stored at the Contractor's yard or base of operations for the Project.

B. The Contractor shall perform cleanup work on a weekly basis and as frequently as ordered by the Authority. Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the required facilities in that area. When ordered by the Authority, cleanup shall be performed even if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.

C. Upon failure of the Contractor to perform periodic cleanup and basic restoration of the Site to the Authority's satisfaction, the Authority may, upon five (5) days prior written notice to the Contractor, without prejudice to any other rights or remedies of the Authority, cause such work for which the Contractor is responsible to be accomplished to the extent deemed necessary by the Authority, and all costs resulting therefrom shall be charged to the Contractor and deducted from the amounts of money that may be due him.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01015

SEQUENCE OF WORK

PART 1 – GENERAL

1.01 GENERAL

A. The active 60-inch diameter sewer which runs under the existing Alford Street Facility seawall foundation shall remain in operation during the Work. The Contractor's operations shall not impede operation of or access to the sewer by Authority staff or other contractors.

1.02 REQUIREMENTS

A. Construction staging and the location of temporary storage are indicated on the Contract Drawings and specified in the Specifications. These items are provided for guidance only. The Contractor is solely responsible for sequencing the Work such that all facility/process operations are maintained throughout the duration of the Work.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01060 – Permits and Regulatory Requirements

B. Section 01065 – Project Safety and Health Specifications

C. Section 01300 – Submittals

D. Section 01310 – Progress Schedules

1.04 SUBMITTALS

A. Submit a General Work Plan to the Authority.

1. The General Work Plan shall be submitted to the Authority for approval thirty (30) days prior to the planned commencement of work on Site.

2. The General Work Plan shall include a detailed sequence of Work and shall include a proposed schedule for the Work.

3. The General Work Plan shall be submitted in coordination and with and as required by Sections 01300 – Submittals and 01310 – Progress Schedules. The General Work plan shall also demonstrate conformance with the approved Project Schedule submitted by the Contractor as specified in

Section 01310 – Progress Schedules and with the constraints specified herein.

4. The General Work Plan is subject to revision by the Authority.

5. The General Work Plan is intended as a broad document to be used for coordination and schedule of work.

6. No work on the systems in question shall commence until a General Work Plan has been submitted, reviewed and approved by the Authority.

7. The Site-Specific Work Plans shall be submitted in coordination and with and as required by Sections 01300 – Submittals and 01310 – Progress Schedules.

1.05 CONSTRAINTS

A. The following constraints apply to the Contractor and all subcontractors for this Contract.

1. The Alford Street Facility building shall not be entered at any time.

2. No in-water shall be performed from January 15th to May 31st of any year in accordance with the NWP issued by the US Army Corps of Engineers in Appendix B.

3. No new piles or piers may be driven for the working surfaces to perform the work. The benthic disturbance cannot exceed the limits as outlined in the NWP issued by the US Army Corps of Engineers in Appendix B.

4. The Contractor shall not access the property owned by Constellation Mystic Power LLC c/o EY LLP adjacent to the Alford Street Facility. The Contractor shall maintain the area as indicated on the Contract Drawings for vehicle access to the adjacent property.

5. The Contractor shall not penetrate the ground at the DeLauri Pump Station for any reason.

6. The Contractor shall follow the provisions listed in the Permits Obtained by the Authority as indicated in Section 01060 – Permits and Regulatory Requirements.

7. Maintaining Operating Conditions:

i. The Contractor shall keep safe and clean working conditions during construction for the Authority's operation and maintenance

personnel including maintaining, providing, and performing the following:

a. Secure offices and lockers.

b. Foot and vehicular access to the site in accordance with OSHA approved methods. Vehicular access includes deliveries of equipment, chemicals, fuel and other supplies.

c. On-site parking for the Authority.

d. Storage/staging for the Authority.

ii. Areas shall remain accessible to the Authority to operate and maintain the Alford Street Facility at all times.

8. Work Schedule:

i. Working hours will be in accordance with Section 01010 – Summary of Work.

9. Permission to Work

i. Notify the Authority at least seventy-two (72) hours in advance, not including Saturdays, Sundays and holidays, prior to starting the work on-site after first receiving an 8(m) permit from the Authority.

10. Utility Services

i. Do not interrupt utilities serving facilities occupied by the Authority unless permitted by the following conditions:

a. No utilities such as electric power, water, gas, or other services shall be shut down without notice and approval from the Authority.

1.06 SEQUENCING

A. General Requirements for Each Stage:

1. Work listed herein is by no means meant to be a complete listing of all Work to be performed.

B. Stage 1: Contractor Mobilization (Submittals, Schedules, Work Plans, Permits and Mobilization to Site).

C. Stage 2: Upon Notice to Proceed, the Contractor shall perform Work as specified in Section 01010 – Summary of Work and in coordination with the work as indicated in the Contract Documents.

D. Stage 3: Site Restoration

1. Upon approval of the seawall repairs, site restoration shall be per Sections 01700 – Contract Closeout and 02498 – Restoration of Disturbed Areas, Seeding and Mulching.

E. Stage 4: Post-Construction Baseline Survey

1. Upon completion of site restoration, the Contractor shall perform a post-construction baseline survey per Section 01050 – Field Engineering.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 SCOPE

A. This Section describes the measurement of and payment for all Work to be completed under this Contract.

B. The Contractor shall acquaint itself with all Work associated with each payment item and shall have no claim for additional compensation due to its unfamiliarity with the requirements of various items.

C. Payment for all work shall be in accordance with the Contract Documents and the approved Schedule of Values, as described in Section 01370 – Schedule of Values.

D. No payment will be made for additional materials that are not installed on the Project.

1.02 BID ITEMS

A. Measurement for payment of lump sum items shall be based on a Schedule of Values dividing each such item into its appropriate component parts together with a quantity and a unit price for each part so that the sum of the products of prices and quantities will equal the Contract price for the item. This schedule shall be submitted by the Contractor for, and must have the approval of, the Authority before the first estimate becomes due.

B. Payment for lump sum items shall be full compensation for all mobilization and demobilization, labor, materials, and equipment required to furnish, install, construct, startup, and test the work covered under that lump sum item, whether listed in the related compensation subsection for each item or not. All supervision and overhead items, including but not limited to, bonds, insurance, and labor burden; and profit shall also be included. Payment shall fully compensate the Contractor for any other work which is not specified or shown, but which is necessary to complete the Work.

C. <u>Item No. 1: All Work Except for Work in Item Nos. 2 and 3, LUMP SUM</u>

1. Measurement. The work under Item 1 will be measured as a lump sum. Measurement for the work performed under Item 1 shall be based on the

physical progress for each activity in accordance with the accepted Schedule of Values.

2. Payment. Payment of the lump sum bid under Item 1 shall be full compensation for all mobilization and demobilization, labor, equipment, materials, tools, and supervision necessary to complete all Work as indicated or specified in the Contract Documents.

3. Ten (10) percent of the value of any items contained in the Contractor's Schedule of Values that require compressive strength, shrinkage or expansion testing will be withheld until the items have been tested as specified by the Contract and accepted by the Authority.

4. The Contractor shall assume three hundred (300) cubic feet of grout will be installed under Section 03600 – Grout.

D. Item No. 2: Price Adjustment Allowance for Diesel Fuel, Gasoline, Liquid Asphalt, and Portland Cement

1. An Allowance for price adjustments for Diesel Fuel, Gasoline, Liquid Asphalt, and Portland Cement, is established in the amount of TEN THOUSAND DOLLARS ($10,000).

   a. Payments for Price Adjustments will be in accordance with Section 00110 – Supplementary Instructions for Bidders (Price Adjustments).

   b. BIDDERS SHALL INSERT THE AMOUNT OF TEN THOUSAND DOLLARS ($10,000) IN THE SPACE PROVIDED FOR THIS PURPOSE IN ITEM NO. 2 FOR PRICE ADJUSTMENTS FOR DIESEL FUEL; GASOLINE; LIQUID ASPHALT, AND PORTLAND CEMENT, ALLOWANCE.

E. Item No. 3: Police Detail Services Allowance

1. An Allowance for Police Detail Services is established in the amount of SIX THOUSAND DOLLARS ($6,000).

   a. The Contractor will be paid by the Authority for the actual amount invoiced to the Contractor for Police Detail Services, including, without limitation, any amounts invoiced by the city, town, or State Police for administrative costs, and police vehicles, without overhead or profit applied for all work including any necessary details for MWRA valve operation, shut down, start up, mark out, pressure testing, and disinfection of new water mains, final cleaning, and inspection of the Work.

b. The Contractor will be paid for the actual number of hours required at the rate invoiced to the Contractor by the city, town, or State Police. The Contractor shall submit to the Authority a monthly statement documenting each officer's name, hours worked, dates worked, location of assignment, hourly rate, police vehicles furnished, and include a copy of the invoice from the city, town, or State Police. No cost shall be incurred under this Allowance without the prior written approval of the Authority.

c. BIDDERS SHALL INSERT THE AMOUNT OF SIX THOUSAND DOLLARS ($6,000) IN THE SPACE PROVIDED FOR THIS PURPOSE IN ITEM NO. 3 FOR THE POLICE DETAIL SERVICES, ALLOWANCE.

PART 2 PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**** END OF SECTION ****

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SECTION 01050

FIELD ENGINEERING

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes methods and requirements for field engineering including examination of sites and conditions of construction; establishment of project control monumentation, lines, grades, and easements; connections to existing facilities; and preparation of Redline Drawings.

B. Perform all field engineering required, including, but not limited to, construction layout and construction survey on the basis of primary survey controls furnished by the Authority for the proper examination and preparation of the sites for the installation of the Work.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals

1.03 CODES AND STANDARDS

A. Massachusetts Board of Registration of Professional Engineers and Land Surveyors:

1. 250 CMR 6.00: Land Surveying Procedures and Standards

B. Federal Geographic Data Committee, National Spatial Data Infrastructure:

1. FGDC-STD-007: Geospatial Positioning Accuracy Standards, Parts 1 – 5

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals:

1. Survey:

a. Proof of Qualifications of Professional Engineer or Professional Land Surveyor before starting survey work.

b. Detailed description of proposed survey method(s), network diagrams, and equipment type, accompanied by manufacturer's literature specifying accessories, calibration procedures, requirements, and frequencies.

c. Documentation verifying accuracy of survey work including, but not limited to, survey field books, sketches, drawings, and layouts.

d. Layout sketch signed and stamped by the Contractor's Massachusetts-Licensed Registered Professional Engineer or by the Contractor's Massachusetts-Licensed Registered Professional Land Surveyor, within fourteen (14) days of completion of each survey, certifying that the elevations and locations of the Work are in conformance with the Contract Documents.

e. A complete and accurate log of control and survey work, including documentation verifying accuracy of survey work as it progresses, and upon completion of the Work, including, but not limited to, survey field books, sketches, drawings, calculations, and layouts.

f. Maps showing final centerline, station, and other Contractor-installed monumentation for Authority approval.

2. Post Construction Baseline Survey:

a. Permanent brass markers shall be solid brass survey disks or approved equal, suitable for permanent exterior exposure in a marine environment. Markers shall be permanently stamped or engraved with unique monitoring point identification corresponding to the locations shown in Appendix C. Markers shall be mechanically anchored or epoxied into sound substrate in accordance with the manufacturer's written recommendations and the Contractor's approved installation procedures, set flush, and installed as not to damage or compromise the seawall. Following installation, the Contractor shall survey each marker horizontally and vertically, tie the marker coordinates and elevations to the project datum, and include the marker location, identification, elevation, station/offset, installation date, and photographs in the post-construction baseline survey submittal. Damaged, loose, mislocated, or improperly installed markers shall be replaced at no additional cost to the Authority.

b. Provide and install visual indicators of the seawall alignment stationing at intervals and locations shown in Appendix C or as approved by the Authority. Visual indicators shall be durable, corrosion-resistant, UV-resistant, and suitable for permanent exterior exposure in a marine environment. Indicators shall be of sufficient size, contrast, and placement to visible and legible from a boat under normal daylight inspection conditions and shall include stationing corresponding to the seawall alignment and monitoring locations. The Contractor shall submit the proposed marker type, dimensions, color, labeling format, stationing interval, attachment method, and proposed locations to the Authority for approval before installation. Indicators shall be securely installed without damaging or compromising the seawall. Final installed locations shall be documented in the post-construction baseline survey submittal with photographs and station references. Damaged, missing, mislocated, illegible, or improperly installed indicators shall be replaced at no additional cost to the Authority.

c. Field measurement data at the established monitoring locations included in the figure in Appendix C to be submitted in the format matching the standard inspection form, located in that same Appendix.

d. Land survey of deformation monitoring points and other control points included in the figure in Appendix C. The land survey data shall include an annotated CSV (comma-separated values) file of collected point data.

e. Drone Imagery of the seawall. The Contractor shall use Drone Imagery to create geo-referenced and scaled imagery from the terrestrial laser scan data collection effort. Sufficient drone imagery must be collected to allow for the correlation between visual observations and the collected monitoring data. The drone shall be operated by a licensed drone operator.

f. 3D point cloud file from the terrestrial laser scan to establish the initial dataset for comparison during future monitoring events.

3. Redline Documents:

a. Progress redline "as-built" drawings in electronic and paper format. All redline "as built" drawings files shall be in the format of the provided Contract Drawings. For Contract Drawings provided in AutoCAD format, redline "as built" drawings shall be provided in AutoCAD version 2024 format.

b. Up-to-date copy of progress redline "as-built" drawings and documents of completed work shall be submitted monthly. Prior to Substantial Completion, submit a complete set of redline "as built" drawings in electronic and paper format showing the full extent of the executed Work. Change Orders and field changes shall be included where applicable.

c. Redline "as built" shop drawings in electronic and paper format shall be included with each submission of redline "as built" drawings.

1.05 QUALITY ASSURANCE

A. Survey Accuracy Requirements – The land and underground surveys shall be compatible with the project feature placement tolerances specified and indicated in the Contract Documents, including tolerances for excavation and pipe placement, shall be in accordance with 250 CMR 6.00 - Land Surveying Procedures and Standards and FGDC-STD-007: Geospatial Positioning Accuracy Standards, Parts 1 – 5, and shall be as specified in this Section.

B. Prior to commencing construction work, verify all existing grades and building elevations and submit actual elevations if actual elevations differ from the elevations indicated.

1.06 QUALIFICATIONS

A. Planning and execution of work shall be performed and supervised by a Massachusetts-Licensed Registered Professional Engineer or by a Massachusetts-Licensed Registered Professional Land Surveyor, having experience with two (2) projects of similar type and cost to this project which required application of similar survey procedures and techniques within the last five (5) years.

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS

A. Field Engineering – Includes, but is not limited to, field layout and surveying required to be performed by the Contractor to examine the sites prior to installation and for execution of the Work.

1.10 TOLERANCE (NOT USED)

1.11 SURVEY LOG

A. Maintain a complete and accurate log of control and survey work as it progresses.

B. Maintain during Work one (1) set of each of the following documents, on site, in order to record actual revisions to the Work:

1. Contract Drawings
2. Redline “As Built” Drawings
3. Contract Specifications
4. Addenda
5. Change Orders and other modifications to the Contract Documents
6. Reviewed shop drawings, product data, and samples
7. Redlined “as built” shop drawings and product data
8. Written interpretations and clarifications
9. Field orders
10. Field Test Reports, verified as specified

11. Photographs

12. Permits

C. Maintain Redline Documents concurrent with construction progress and separate from the documents used for construction.

D. Specifications: Legibly mark and record at each Product section a description of the actual Products installed including the following:

1. Manufacturer's name, address and telephone number and Product model and serial number.

2. Product substitutions or alternates utilized.

3. Modifications.

4. Cross references to equipment tag numbers.

E. Redline "as-built" Drawings and Redline "shop" Drawings: Upon commencement of Work, the Authority will provide the Contract Drawings in electronic format. The Contractor and the subcontractors shall electronically, and legibly, mark these Drawings, and all Shop Drawings, to record actual construction, including the following items. Highlight changes made since the previous submittal by boldly encircling the change and by describing the change in the revision block at the bottom of the drawing:

1. Measured depths of foundations in relation to finished floor datum.

2. Measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements.

3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

4. Field changes of dimension and detail.

5. Details not on original Contract Drawings.

6. Field changes to Manufacturer's shop drawings.

PART 2 **PRODUCTS (NOT USED)**

PART 3 **EXECUTION**

3.01 EXAMINATION

A. Verify locations of survey control points prior to starting work.

B. Verify horizontal and vertical position of reference points by field traverse to two (2) other reference points prior to each use of reference point.

C. Notify the Authority of any discrepancies immediately upon discovery.

3.02 SURVEY REFERENCE POINTS

A. Primary Survey Reference Points:

1. The Authority has established basic survey control and reference points. These are indicated on the Contract Drawings.

B. The horizontal control datum for survey for the site is indicated on the Contract Drawings.

1. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

2. Report to the Authority immediately upon discovering the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

3. Replace dislocated survey control points based on original survey control at no additional cost to the Authority.

4. Notify the Authority immediately if any field conditions are observed to be different from those indicated on the Contract Drawings, including any required utility relocations not indicated.

5. Do not disturb, or excavate within 5 feet of, any survey monument within the limits of the Work under the Contract. Cease work at such places until the monument has been referenced or reset or otherwise disposed of. If the authorities having jurisdiction order or permit the removal of any such survey monument, the Contractor shall take it up and preserve it and, if required, remove it to a location designated by the Authority.

C. Secondary Survey Reference Points:

1. From the Authority's primary survey control and from the alignments and grades required for the completed Work, the Contractor shall, throughout the work, establish accurately all line and grade marks necessary for the execution of the construction and installation in accordance with the Contract Documents. Particular care shall be exercised in transferring lines and elevations from the ground surface to the grades for shafts, chambers, tunnels, and other underground facilities. The Contractor's Massachusetts-Licensed Registered Professional Engineer or the Contractor's Massachusetts-Licensed Registered Professional Land Surveyor, shall perform this work and be responsible for the accuracy of all line and grade marks and of the

alignments and grades of the completed work. Any imperfect or erroneous construction resulting from incorrect lines and grades or alignment and installation shall be replaced by the Contractor with construction satisfactory to the Authority, at no additional cost to the Authority. When so directed, copies of the Contractor's survey records, notes, and sketches shall be delivered to the Authority.

3.03 SURVEY REQUIREMENTS

A. Provide field engineering services. Utilize recognized engineering survey practices.

B. Establish three (3) permanent benchmarks on site, referenced to the Authority's established control points. Record locations, with horizontal and vertical data, on the Redline Drawings.

C. Establish elevations, lines and levels. Locate and lay out by instrumentation:

1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.

2. Grid or axis for structures.

3. Building foundations, column locations, ground floor elevations, and equipment centerlines and elevations.

4. Verify layouts every three (3) months.

D. Verify dimensions and locations of existing structures in the field before the fabrication or installation of any material or equipment.

E. Take all measurements and perform all computations necessary to determine the quantities to be used as a basis for payment under the unit price and lump sum items.

F. After all Work under the Contract is completed, furnish the Authority with all Redline Drawings indicating all the pertinent elevations, orientations, alignments, and geometry of the structures constructed.

G. The Authority will have the right, at any time, to determine the accuracy and completeness of the lines and grades, elevations, and orientations established and the alignments and installations made, to determine the accuracy and completeness of the measurements taken and the computations performed in determining the quantities to be paid for under the various unit price and lump sum items, and to take all other measurements necessary for the inspection, record, and payment. The Contractor shall give reasonable advance notice to the Authority of the times and places at which it intends to do work, to enable the Authority to check the Contractor's line and grade marks, and to check and take necessary measurements. Provide such materials and give such assistance to the Authority as may be required for such checking, for inspection,

and for taking measurements for record and payment, and shall carefully preserve the benchmarks and control points established by the Authority.

H. The Authority may draw the Contractor's attention to errors or omissions in lines or grades and in measurements and computations for payment, but no failure on the part of the Authority to point out such errors or omissions shall give the Contractor any right to claim against the Authority or shall in any way relieve the Contractor of its obligations according to the terms of the Contract.

3.04 FIELD MEASUREMENTS (Post Construction Baseline Survey)

A. Manually collect field measurements at control points identified in the figure in Appendix C using a plumb bob and tape measure. Manual measurements of these points shall be collected by use of a boat to access the top of the seawall.

3.05 THREE DIMENSIONAL (3D) LASER SCANNING (Post Construction Baseline Survey)

A. A 3D laser scan shall be performed using ultra-high speed 3D scanning equipment using the methodology detailed by CalTrans in the "Terrestrial Laser Scanning Specifications (June 2018)" and USIBD Level of Accuracy 30 (+/- 5mm). The scan shall be combined into a single point cloud model.

B. The horizontal limits of each scan should extend a minimum of 10 feet beyond the alignment limits and clearly capture all established control points to facilitate geo-referencing of the point cloud. The results should be provided to the Authority as a registered and geo-referenced point cloud file, accompanied by plan and elevation exhibits and a brief technical summary describing scan coverage control used.

3.06 DRONE IMAGERY (Post Construction Baseline Survey)

A. Drone imagery shall be collected alongside of the 3D laser scanning effort.

B. The drone shall be operated by a licensed drone operator.

3.07 GLOBAL POSITIONING (GPS) STANDARDS

A. GPS coordinates shall be tied into the Massachusetts State Plane Coordinate System.

B. GPS measurements shall have 0.39 inch (1.0 cm) accuracy, with 95% confidence interval less than or equal to 0.39 inch (1.0 cm) in accordance with FGDC-STD-007: Geospatial Positioning Accuracy Standards.

3.08 REDLINE "AS BUILT" DRAWINGS

A. Maintain redline "as built" drawings showing as-built locations and dimensions of work.

B. The as-built information on the redline drawings shall include the following:

1. For water lines: horizontal and vertical locations at every joint, at all changes in grade or direction, and at all fittings, valves, and hydrants. Prior to backfilling, obtain GPS coordinates tied into the Massachusetts State Plane Coordinate System at all joints, couplings, flange adapters, valves, and fittings.

    a. Provide pipeline joint deflections and offset distances at all joints.

2. For structures (including manholes, chambers and vaults), show the outside dimensions of the base structure. Show the locations of all valves and piping. Also provide the coordinates of the bottom center of the structure itself and coordinates of the cover. For vaults and square/rectangular structures, provide as-built coordinates of all top corners of the structure. Obtain and indicate the GPS coordinates tied into the Massachusetts State Plane Coordinate System at all structures.

3. Include the location of any existing utility that differs from the location indicated on the Contract Drawings.

4. Include the location of any utility not indicated but encountered during the Work.

5. Include all materials left in place from earth support operations including:

    a. The elevation of the top and bottom of any earth support system left in place.

6. Show the locations of all trees removed. Identify species and caliper.

7. Show the locations of all trees installed. Identify species and caliper.

8. For surface restoration: provide as-built topographic survey of the final condition of all work zones, including all surface features, limits of all surface materials (e.g., bituminous concrete, grass, concrete), and 1-foot contours.

9. All as-built information shall be surveyed by the Contractor's Massachusetts-Licensed Registered Professional Engineer or by the Contractor's Massachusetts-Licensed Registered Professional Land Surveyor, shall be based on the ground survey, and shall be completed in accordance with the standards established in 250 CMR 6.02.

10. All measurements, irrespective of survey method, shall be to a minimum accuracy of 0.39 inch (1.0 cm), with 95% confidence interval less than or equal to 0.39 inch (1.0 cm).

11. Vertical measurements shall be to the nearest hundredth of a foot.

**** END OF SECTION ****

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SECTION 01060

PERMITS AND REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes obtaining and paying for all permits, unless otherwise specified; complying with all applicable federal, state and local laws, rules, regulations, codes, and ordinances; and complying with all permits.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals

1.03 CODES AND STANDARDS

A. Commonwealth of Massachusetts:

1. 780 CMR - Massachusetts State Building Code
2. 527 CMR - Massachusetts Comprehensive Fire Safety Code
3. 310 CMR 7.00 - Air Pollution Control
4. 248 CMR 3.00 - General Provisions Governing the Conducting of Plumbing and Gas Fitting Work Performed in the Commonwealth
5. 271 CMR – Board of Examiners of Sheet Metal Workers

B. National Fire Protection Association:

1. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals:

1. Submit copies of all permits, licenses, certifications, or approvals obtained by the Contractor.
2. Submit copies of all written notifications submitted to regulatory agencies, where such notification is required by permit, license, or agency regulations.

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 REGULATORY AGENCIES

A. Massachusetts Division of Professional Licensure

1. Building, Plumbing, Electrical and Sheet Metal Inspections

a. The Authority's projects are subject to Massachusetts State Codes, including the requirements of the Massachusetts State Building, Plumbing, Electrical and Sheet Metal Codes per 780 CMR, 527 CMR, 248 CMR and 271 CMR. These state codes are administered by the Massachusetts Division of Professional Licensure (DPL). DPL is responsible for approvals, permitting, licenses, enforcement and inspection.

b. Obtain the DPL permits required for the Work, including the building, plumbing, electrical and sheet metal permits required by the State Building, Plumbing, Electrical and Sheet Metal codes. If the Work, or portions of the Work, is not covered by the codes, obtain written determination from DPL that no permit is required. Within five (5) working days of receipt of the permit or the determination that no permit is required, provide a copy of said permit or determination to the Authority. Pay all fees associated with permits and inspections.

c. Submit for review and approval a fire safety plan in conformance with NFPA 241 as required for issuance of a building permit.

B. Fire Safety Inspections

1. Comply with the Massachusetts Comprehensive Fire Safety Code, 527 CMR. The State Fire Marshal has jurisdiction over the Authority's projects. The Boston Fire Department will provide primary response to any fire or safety emergencies at the site.

C. Environmental Requirements

1. Comply with all applicable regulatory requirements including, but not limited to, those issued and/or enforced by the Massachusetts Executive Office of Energy and Environmental Affairs (EEA), Massachusetts Department of Environmental Protection (MADEP), U.S. Army Corps of Engineers (USACE), U.S. Coast Guard, Federal Aviation Administration (FAA), Massachusetts Historical Commission (MHC), Bureau of Underwater Archaeological Resources (BUAR), Tribal Historic Preservation Office (THPO) and the Boston Conservation Commissions.

2. Refueling and equipment maintenance shall be conducted in accordance with all applicable regulatory requirements and only within paved areas, and away from open excavations, unprotected storm drain catch basins, and unpaved areas. Spill containment equipment shall be stored on-site in an easily accessible location. Used petroleum products resulting from the maintenance of construction equipment, and construction debris, shall be collected and legally disposed of off-site. No on-site storage or disposal of these items is allowed.

3. Comply with Massachusetts Air Quality Regulations (310 CMR 7.09) pertaining to dust, odor, construction and demolition. Maintain construction equipment to minimize emissions.

1.12 PERMITS OBTAINED BY THE CONTRACTOR

A. Obtain, keep current and pay all fees for and associated with any necessary construction permits from those authorities, agencies, or municipalities having jurisdiction over land areas, utilities, or structures which are located within the Contract limits and which will be occupied, encountered, used, or temporarily interrupted by the Contractor's operations unless otherwise specified. Record copies of all permits shall be provided to the Authority within five (5) working days of receipt of the permit.

B. When construction permits are accompanied by regulations or requirements issued by a particular authority, agency, or municipality, it is the Contractor’s responsibility to comply with such regulations or requirements as they apply to the Work.

C. Obtain all permits, licenses, certifications or approvals required for the Work, including:

1. Obtain Division of Professional Licensure Building Permit.

2. Obtain MWRA 8(m) Permit(s). The MWRA 8(m) Permit Application Form is appended to this Section as Attachment 01060-A.

3. Obtain applicable Building and/or Construction permits from the City of Boston.

4. Notify the U.S. Coast Guard and Federal Aviation Administration (FAA) prior to construction for work within navigable waterways and proximity to Boston Logan Airport, respectively, if applicable.

D. Draft copies of all permit applications and other information or documents intended to be submitted to regulatory authorities shall be submitted to the Authority a minimum of five (5) working days before the document is submitted to the permitting agency.

E. Arrange for and obtain all other permits required to conduct the Work at no additional cost to the Authority.

1.13 PERMITS OBTAINED BY THE AUTHORITY

A. It is the Contractor's responsibility to comply with the provisions and conditions associated with the following permits and correspondence as they apply to the Work. Permits and concurrence approvals obtained by the Authority are described below and included in Appendix B - Permits and Approvals.

1. Boston Conservation Commission Order of Conditions (OOCs) and Project Management Form (Appendix B - 1). It is the Contractor's responsibility to comply with the OOCs and submit the items required by the Project Management Form to Boston Conservation Commission prior to the commencement of Work.

2. EEA MEPA Office Correspondence. The project has obtained concurrence from EEA MEPA that there is no Agency action (c.91 401 WQC) required for the project that would align with a potential wetland threshold (301 CMR 11.03(3)(b)1.a-f), and therefore does not require MEPA review.

3. MHC Determination of No Adverse Effect (Appendix B - 2)

4. BUAR and THPO Determination of No Adverse Effect. BUAR and THPOs were notified of the project in November 2025. Stockbridge-Munsee Community confirmed they have no comment regarding the project. No other replies obtained within thirty (30) days of notification; therefore No Adverse Effect is assumed.

5. Massachusetts Chapter 91 Minor Modification Approval (Appendix B - 3)

6. USACE Massachusetts General Permit 2 Self Verification Notification (pending approval, notification included in Appendix B - 4). The Contractor must comply with all applicable conditions of the General Permit (NAE-2022-02649), available on the New England District Regulatory website.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 ATTACHMENTS

4.01 Attachment 01060-A - MWRA 8(m) Permit Application Form

ATTACHMENT 01060-A
MWRA 8(m) Application Form

MASSACHUSETTS WATER RESOURCES AUTHORITY
APPLICATION FOR 8(m) PERMIT

==========

What is this application and why is it necessary?

This application, when completed and submitted, requests the MWRA to issue an 8(m) Permit. Section 8(m) of chapter 372 of the Acts of 1984 enables the Authority to issue permits to other entities to build, construct, excavate, or cross within an easement or other property interest held by the Authority.

How to complete and submit this application?

Please print legibly in black or dark blue ink or type all responses. Answer all questions: if a question does not apply to your project, write "Not Applicable" or "N/A". Include all necessary documents. Keep a copy of the completed application for your records.

Send a $100.00 non-refundable check for the administrative processing fee, the original and five (5) copies of the completed application and any other required documents to either:

Massachusetts Water Resources Authority
Wastewater 8(m) Permitting Unit
2 Griffin Way
Chelsea, MA 02150
Attn: Kevin McKenna

Or

Massachusetts Water Resources Authority
Waterworks 8(m) Permitting Unit
2 Griffin Way
Chelsea, MA 02150
Attn: Ralph A. Francesconi

Permit Process:

- The owner of the work, project, property or facilities that are resulting in the need for this 8m permit must be the party signing the permit application (not the project contractor or consultant).
- MWRA staff will review the application to determine if your request can be approved. If MWRA cannot issue the requested permit, you will receive a letter explaining the reasons for denying the request.
- If the permit application is approved, MWRA staff will send you three original 8(m) Permits for your signature. Additionally, a completed 8(m) Permit Assessment Fee Form noting any additional charges beyond the administrative processing fee (if required) will be sent.
- Upon receipt of all signed originals and payment for any additional fees, MWRA will execute the document.
- MWRA will mail the executed documents with a Notice to Proceed.
- All plans submitted shall be stamped by a Professional Engineer or Professional Land Surveyor licensed in the State of Massachusetts.
- All design, construction and excavation shall be conducted in accordance with all federal, state and local safety regulations including but not limited to federal OSHA regulations (29 CFR 1926) and Massachusetts Department of Public Safety regulations (520 CMR 14.00). During construction, appropriate sheeting and shoring measures must be taken to protect the integrity of the Authority's water mains. Any sheeting and shoring design must be submitted to MWRA prior to the start of the construction. The submitted design of excavation trench support and all temporary supports associated with excavating under or near MWRA water lines shall be stamped by a Professional Engineer, licensed in Massachusetts.

Questions and answers:

For answers to questions about this application and MWRA 8(m) Permits, contact MWRA's Wastewater 8(m) Permitting Unit at (617) 305-5956 or MWRA's Waterworks 8(m) Permitting Unit at (617) 305-5827.

MASSACHUSETTS WATER RESOURCES AUTHORITY

APPLICATION FOR 8(m) PERMIT

1. **Applicant Owner Permit Issued To (Town or City, Utility Co. Owner of Property)**

   Name: Massachusetts Water Resources Authority

   Mailing Address: 2 Griffin Way, Chelsea, MA 02150

   Telephone (include area code): (617) 242-6000

   Email Address: ask.mwra@mwra.com

2. **Person to contact about this application** (*if other than the applicant*):

   Name: Caitlin Carbonello

   Mailing Address: 2 Griffin Way, Chelsea, MA 02150

   Telephone (include area code): (617) 305-5704

   Email Address: Caitlin.Carbonello@mwra.com

3. **Location of the proposed work**: Alford Street Facility

   Street Address: 169-171 Alford Street (Route 99)

   City/Town: Charlestown

   MWRA water line, section, nearest manhole: Cambridge Branch Sewer

   Deed Book and Page or Land Court Certificate (if known): Suffolk Registry: Book 2142, Page 311 & Book 2294, Page 225. Middlesex Registry: Book 2391, Page 1.

4. **Brief description of work to be performed**: The work includes the design and construction of the temporary local stabilization of the exterior granite blocks along the Alford Street Facility seawall. Repair methods include installation of wedge blocks

within larger voids and joints within the seawall and filling remaining voids with injection of grout and possible dry packing of grout. The work is limited to a defined section of the southeastern corner of the seawall (see plans for additional details).

Approximate Start Date: 7/1/2026 Estimated Completion Date: 7/2/2027

5. Permits other than MWRA 8(m) Permit that need to be obtained before work can commence:

Boston Construction Permits (e.g. building permit)

Please attach available plans and specifications of work to be performed and any other information that would be helpful in reviewing this application.

6. **OTHER FILINGS**

There are circumstances when the MWRA cannot issue a permit to you until you fulfill the requirements of another agency. This page asks for information about whether you are required to file with the Massachusetts Historical Commission (MHC) or under the Massachusetts Environmental Policy Act (MEPA) and the status of your filing, if any. If you have any questions about the requirements of those agencies, please contact them for information: MHC may be reached at 617-727-8470; the MEPA office may be reached at 617-727-5830.

1. Is the activity for which you require an MWRA permit a part of a project that is likely to impact a geographic area and affect or cause a change in the historical, architectural, archeological, or cultural qualities of a property as defined by the Massachusetts Historical Commission (MHC)? (For example, answer "no" if this application is for a permit renewal or you are not doing new construction. MHC defines "new construction" as a modification to the land or any existing structure.) □ ☒Yes ☐No If "no," skip question 2.

2. If your answer to question 1 is "yes:"

a) Have you provided the required project notification form (950 CMR 71, Appendix A) to the MHC? ☐Yes ☒No

b) Briefly describe the status of the project with MHC. Provide documentation (see 950 CMR 71.07) allowing the MWRA to act on this application. If you have not provided notice to the MHC, explain why you have not provided notice and when you will provide notice.

The project notification form was submitted to MHC and received on August 5th, 2025. On August 28th, 2025, MHC issued a notice of no adverse effect on significant historic or archeological properties.

3. Is the activity for which you require an MWRA permit a part of a project that is subject to review under the Massachusetts Environmental Policy Act (MEPA)? (For example, answer "no" if this application is for a permit renewal or not part of a larger project. The MEPA review thresholds are found in 301 CMR 11.00.) ☐Yes ☒No If "no," skip question 4.

4. If your answer to question 3 is "yes:"

a) Have you made the required MEPA filing? □Yes □No

b) Briefly describe the status of the MEPA review. Provide documentation (see 301 CMR 11.10) allowing the MWRA to act on this application. If you have not filed with MEPA, explain why you have not filed and when you will file.

The proposed project is currently in discussions with the MEPA Office, seeking concurrence that the proposed work does not exceed thresholds and does not involve a state agency action. A Ch. 91 Administrative Request for the project was submitted to the MassDEP Waterways Regulation Program and they determined that the proposed activities meet the maintenance provisions in 310 CMR 9.22(1) and therefore, no application for license or license amendment is required (see attached approval). The MEPA office sought this Ch91 approval prior to providing concurrence that this proposed work would not require MEPA review.

7. Applicant Certification:

I certify, under penalty of law, that this document and all attachments were prepared under

my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Applicant's Signature: _____ Date: _____

Print the name of the person whose signature is above: _____

Corporate Title (if any): _____

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SECTION 01065

PROJECT HEALTH AND SAFETY SPECIFICATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes preparing a site-specific Health and Safety Plan (HASP) specifying protection for all workers, including the subcontractors, onsite personnel, visitors and abutters from all potential hazards. During the performance of all Work, provide all labor, materials and equipment necessary to implement the HASP and to fulfill all applicable requirements under federal, state and local laws, ordinances, rules and regulations governing the safety of persons and protection of property. The HASP shall include a Site Specific Safety Plan (SSSP) meeting all requirements applicable to the Work, including but not limited to, OSHA requirements, and any and all federal, state or local requirements.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals.

1.03 CODES AND STANDARDS

A. Occupational Safety and Health Administration (OSHA) regulations:

1. 29 CFR 1910 - Occupational Safety and Health Standards

2. 29 CFR 1926 - Safety and Health Regulations for Construction

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals:

1. General:

a. SSHO Qualifications: Submit qualifications of a Site Safety and Health Officer (SSHO) who will be responsible for implementing, monitoring and enforcing the Health and Safety Plan during work, in the form of a resume demonstrating qualifications specified in this Section, within ten (10) work-days after the Notice to Proceed.

b. CIH Qualifications: If any of the Work is subject to the provisions of 29 CFR 1910.120, submit qualifications of a Certified Industrial Hygienist (CIH) who shall be responsible for preparation of the HASP, in the form of a resume demonstrating qualifications specified in this Section, within ten (10) work-days after the Notice to Proceed.

c. HASP, including the SSSP: Within thirty (30) work-days after Notice to Proceed, submit a project-specific HASP and SSSP prepared by the CIH, which identifies all known and potential hazards and describes the methods and procedures for protecting worker health and safety. If any of the work is subject to the provisions of 29 CFR 1910.120, the HASP and SSSP shall be prepared by a CIH. No work shall be performed until the Authority has reviewed the HASP.

d. Daily Safety Logs: Maintain daily safety logs and reports covering the implementation of the HASP during the duration of the work. The format shall be developed to include daily safety logs, weekly reports, and a phase out report. Submit copies of all logs and reports on a weekly basis. Daily Safety Logs shall include the following:

i. Date

ii. Area (site specific) checked

iii. Employees in particular area

iv. Site visitors, name, affiliation, purpose of site visit

v. Equipment being utilized by employees

vi. Protective clothing being worn by employees

vii. Protective devices being used by:

1) The Contractor's personnel

2) Visitors

3) Designated state and federal representatives

viii. Air monitoring data including description of area being monitored, equipment used, and readings taken

ix. SSHO signature and date

e. Monthly Safety Reports

1.05 QUALITY ASSURANCE

A. If any of the work is subject to the provisions of 29 CFR 1910.120, provide a CIH who has performed at least five (5) construction projects of similar or greater size and complexity within the past ten (10) years.

B. Conduct a Site reconnaissance to determine the appropriate safety procedures and level of worker safety equipment for use in preparation of the HASP which shall conform to

current worker safety practices. If any of the work is subject to the provisions of 29 CFR 1910.120, the site reconnaissance shall include hazardous waste safety practices and the HASP shall be stamped and signed by the CIH.

C. Onsite workers shall have training and certification for health and safety and for confined space entry, if any is required to perform the work, as required under OSHA regulations.

D. The SSHO shall be trained and certified in accordance with OSHA regulations, including confined space entry requirements (29 CFR 1910.146), if any is required to perform the work. The SSHO shall have performed at least five (5) construction projects of similar or greater size and complexity within the past ten (10) years.

E. The Contractor's SSHO shall be present on-site for all working hours to monitor health and safety requirements throughout the performance of work. It shall be the SSHO's responsibility to notify the Authority of any deviations from the HASP.

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 SYSTEM DESCRIPTION

A. All Work shall be conducted in compliance with OSHA 29 CFR 1910 and 1926.

B. Safety:

1. The Contractor, the subcontractors, employees, agents and invitees shall comply with the Health and Safety Plan while on Site.

2. No later than the fifth working day of each month submit a monthly safety report for the prior month providing statistical information on hours worked, number of accidents and injuries, and amount of time lost due to injuries.

3. Provide protection per the SSSP for all persons including, but not limited to, the Contractor's employees and employees of other contractors or subcontractors; members of the public; and employees, agents, and representatives of the Authority and regulatory agencies that may be on or about the work areas.

4. Protect from damage all Authority owned property including, but not limited to, structures, pipes, and utilities, above and below ground.

5. No work on site shall be performed until the HASP, SSSP, and Lock-Outs are reviewed by the Authority. (The Lock-Out system is a safety procedure to prevent unintended equipment activation.) Compliance with OSHA requirements for the control of the release of hazardous energy during the service and maintenance of equipment shall remain the responsibility of the Contractor.

6. Regulated, Hazardous, and Flammable materials stored in quantities greater than the federal, state, and local Reportable Quantities (RQ) require the Authority's review before they are brought on Site. These materials must be stored in containers, cabinets, or containment structures designed for such storage. Keep any flammable materials such as cleaning solvents, thinners, or adhesive materials away from open flames, sparks or high temperatures. Drums containing regulated, hazardous or flammable materials shall be labeled in accordance with applicable law, not greater than forty-six (46) gallons in size, be grounded (if flammable), and shall be stored over full drum containment (110% capacity of largest single vessel).

7. Maintain clean work areas, free of recognized hazards, and maintain readily accessible first aid kits with emergency equipment providing for the risks involved in the Contractor's work.

8. Smoking is not permitted at MWRA facilities or on MWRA property.

9. The Health and Safety Plan shall note the NFPA 70 hazard classifications of each area of the building(s) and shall address requirements for the use of gas monitors, spark free tools and other steps required to safely work in a classified environment. Area classifications are as indicated on the Contract Drawings.

10. Submit for review and approval valid diver certifications and trainings for all divers meeting or exceeding local commercial diver requirements as indicated on the Contract Drawings.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PREPARATION OF HEALTH AND SAFETY PLAN

A. The HASP shall be in compliance with the health and safety standards set forth by OSHA as described in 29 CFR 1910 and 1926. The site-specific HASP shall include but not be limited to the following:

1. Identification of Key Personnel

2. Understanding of Project Work

3. Identification of Chemical and Physical Hazards and Risks

4. Excavation Entry

5. Personal Protective Equipment (PPE)

6. Respiratory Protection Equipment (RPE)

7. Standard Operating Procedures

8. Worker Training and Medical Requirements

9. Emergency Response Plans and Procedures

10. Personnel Monitoring Program

11. Environmental Monitoring Program

3.02 PREPARATION OF CONFINED SPACE ENTRY PLAN, IF REQUIRED TO PERFORM THE WORK

A. All entries into and exits out of the confined spaces shall be in accordance with the procedures described in OSHA Confined Space Pre-Entry Check List and Entry Permit. Entries and exits from the confined space shall be documented and kept on file. Provide copies of the checklist to the Authority following each entry/exit.

B. If Confined Space Entry is required to perform the work, the SSSP shall include a Confined Space Entry Plan in compliance with 29 CFR 1910.146 which shall contain personnel, equipment and procedures for confined space entry, including but not limited to:

1. Scope of Confined Space Entry Work

2. Entry/Exit Procedures

3. Project Personnel and Training/Certification Requirements

4. Hazard Evaluation: Description of atmospheric, chemical, physical, biological and engulfment hazards which may be encountered, and the steps taken to reduce occurrence and/or protect personnel from the hazards

5. Equipment and PPE

6. Air Monitoring and Atmospheric Testing

7. Communication Procedures

8. Emergency/Rescue Contacts

9. Emergency/Rescue Team

10. Permit Forms

11. Ventilation Procedures

C. A pre-entry conference will be required within forty-eight (48) hours of initial confined space entry to review tasks, known and suspected hazards and individual responsibilities during the entry/exit. Within seventy-two (72) hours of completion of all work requiring confined space entry procedures, conduct and attend a brief post-entry conference with the Authority to review accidents, incidents, or safety concerns that occurred, if any, and assess overall success of completed work.

D. Document all entries and exits into confined space using the inspection checklists. Copies of CONFINED SPACE ENTRY permits and any incident reports and/or investigation forms shall be provided to the Authority and kept on file for the duration of the project.

E. Site Specific Safety Plan Program:

1. A sample SSSP is appended to this Section as Attachment 01065-A. The Contractor's corporate safety plan may be used as the basis for the SSSP, but the corporate plan must be adapted to address all site specific safety requirements.

2. The SSSP shall include at least the following:

a. Site description including the limits of construction, special conditions, intrinsic hazards and a street address for responders.

b. A description of the Site specific safety organization identifying who has on-site safety responsibilities, their qualifications as well as a description of all safety management reports.

c. Description of the work being performed.

d. A Job Hazard Analysis (JHA) specific to the work and work area.

e. Hazard mitigation strategies.

f. Identification of required procedures in accordance with all work plans and applicable regulations, including OSHA (e.g. Confined Space, Respirator Use).

g. Training Matrix identifying the needed training and affected employees for hazard mitigation and procedural compliance.

h. Documentation of the training process.

F. It shall be the Contractor's responsibility to notify the Authority orally and in writing as quickly as possible should any unforeseen safety hazard or condition become evident during the performance of the work. In the interim, the Contractor shall take action to establish and maintain safe working conditions and to safeguard employees, the public, and the environment.

PART 4 ATTACHMENTS

4.01 ATTACHMENT 01065-A - SAMPLE SITE SPECIFIC HEALTH AND SAFETY PLAN

ATTACHMENT 01065-A

SAMPLE SITE SPECIFIC HEALTH AND SAFETY PLAN

SAMPLE

Site Specific Safety Plan for Installing a Widget at the Deer Island Treatment Plant

Contract Number XXXX

Submitted by The Acme Construction Corp.

Jane Smith, Senior Safety Officer

Date: xx/xx/xx

Revision Number 1

1.0 Site Description:

The Deer Island Treatment Plant (DITP) is a large, Publicly Owned Treatment Works (POTW), located in Boston Harbor. Its street Address is 190 Tafts Avenue, Winthrop Massachusetts, 02152. Vehicle access can only be made through the community of Winthrop, Massachusetts via Tafts Avenue. All construction vehicles must use the approved truck route to ensure public safety.

The DITP is located on over 150 acres, has over fifty structures and 70,000 pieces of equipment. The facility has several areas that under either normal or upset conditions could reasonably be assumed to contain explosive concentrations of toxic and ignitable gasses.

The DITP stores and transports large volumes of regulated materials, most of which are either corrosive or ignitable. In addition to the materials utilized in the process, the DITP has hundreds of unlabeled confined or restricted spaces. Therefore, all manholes, basins, basements, and vaults are considered to be permit required unless otherwise described by the DITP.

The DITP has a very significant hydraulic profile and the forces associated with the hydraulics are of a vast magnitude. Care must be used whenever working on or near piping, valves, pumps, or vessels of any kind.

NOTE: The DITP is non-smoking environment. The CONTRACTOR is not allowed to smoke at the DITP.

2.0 Acme Corporation's Site Safety Organization:

The Acme Corporation has a corporate Safety Officer, Ms. Jane Smith, who is responsible for overall safety management. On this project for the MWRA, our foreman, John Jones, will serve as our on-site safety representative. Their contact information is included in Section XX and Mr. Jones' credentials are included in our attached Training Matrix.

3.0 Description of the Work:

The Acme Corp. will be installing six large widgets in the lower level of the North Main Pump Station. The widgets are large in size and will require the use of rigging to seat them on their pads. Once seated the widgets will be welded in place, painted, electrically connected, and tested to ensure functionality. A job hazard analysis is provided in Section X of this plan and will provide more detailed information on the tasks themselves.

4.0 Procedures:

The following Acme procedures are attached for use on MWRA Project XXXX:

- Personal Protective Equipment
- Right to Know (Hazard Communications)
- Hoisting and Rigging
- Crane Safety
- Hot Works
- Lockout/Tagout (LOTO)
- Electrical Safety
- Fall Protection/Elevated Work Areas.

5.0 Communications:

NAME	TITLE	PRIMARY CONTACT NUMBER	SECONDARY CONTACT NUMBER
Sara White	Acme Project Manager	xxx.xxx.xxxx	xxx.xxx.xxxx
Jane Smith	Acme Safety Officer	xxx.xxx.xxxx	xxx.xxx.xxxx
Gretchen Green	MWRA Project Manager	xxx xxx xxxx	xxx xxx xxxx

NOTE: All on-site (DITP) emergency communications will be directed through the DITP's Emergency Phone Number 617.660.7666.

6.0 First Aid:

At least one of the Acme employees on-site at the DITP will be trained in CPR/First Aid. Additionally, Acme Corporation will have an OSHA compliant 25 person first aid kit available for its employees at all time. All injuries will be reported to the MWRA within the shift that they occur. Any incident requiring more than basic first aid will be immediately forwarded to the DITP Emergency Phone at 617.660.7666 for appropriate handling and review.

7.0 Traffic and Roadway Safety:

The maximum speed limit on the DITP property is 20 M.P.H. The CONTRACTOR working in or adjacent to roadways will develop and submit a procedure for doing so.

8.0 Hazardous and Regulated Materials:

This project calls for the use of paints and solvents that are regulated by the Massachusetts Department of Environmental Protection. Our employees are trained on the hazards of the materials and on how to store and apply these products. MSDS sheets have been attached for these materials. Acme Construction Corporation is responsible for the clean-up of any spilled materials caused by Acme's use or storage of those materials. Acme shall additionally be responsible for any spills caused by their employees.

9.0 Training:

The Acme Corporation has selected employees properly trained to complete the tasks associated with this project or which are required by regulation for the completion of the intended work, including the DITP CONTRACTOR Orientation training. A Training Matrix has been attached which details the relevant training our employees have received. This includes training for the use and application of Personal Protective Equipment, Right to Know (Hazard Communications), Hoisting and Rigging, Hot Works, Lockout/Tagout (LOTO) and Electrical Safety.

10.0 Attachments:

1) Procedures:

- Personal Protective Equipment
- Right to Know (Hazard Communications)
- Hoisting and Rigging
- Crane Safety
- Hot Works
- Lockout/Tagout (LOTO)
- Electrical Safety
- Fall Hazards/Elevated Work Areas

2) Training Matrix

3) Job Hazard Analysis (JHA) Form

JHA for MWRA Contract Number XXXX

Task	Hazard	Mitigation
1. Receive and unload widgets at the DITP	1a. Traffic Safety. The Widget will arrive on a flatbed tractor trailer which will need to be positioned for unloading by a crane. 1b. Each widget weighs approximately 1500 pounds.	1a. Two flagman will be provided to position both the tractor trailer and the crane. The flagman will be responsible for establishing a work zone and restricting access. 1b. See Hoisting and Rigging Procedure.
2. Lower Widgets onto housekeeping pads.	2a. Crush Hazards relating to lowering widget onto housekeeping pad. 2b. Fall Hazard working over the widget shaft.	2a. See Hoisting and Rigging Procedure. 2b. See Fall Hazards/Elevated Work Areas Procedure.
3. Install and Paint Widget.	3a. Hand and Power tool use while bolting-up widget.	3a. All Acme Corp. employees are either journey, or apprentice, trades persons knowledgeable and experienced in using hand tools. All electrically powered tools will be powered through an appropriate ground fault circuit interrupter (GFCI).
4.0 Electrical Installation and bump testing of widgets.	4a. Accidental contact with electric current.	4a. Acme will utilize its LOTO program (see LOTO Procedure. All staff will be appropriately licensed to complete this work.

Training Matrix

Employee Name	Training Type							
	LOTO	RTK	Hoisting & Rigging	Hand Tool Safety	PPE	Electrical Safety	Fall Prot./Elev. Work Platforms	Staging Competent Person
Jane Smith	X	X	X	X	X	X	X	X
John Jones	X	X	X	X	X	X	X	X
Sara White	X	X	X	X	X	X	X	X
Bill Green	X	X	X	X	X	-	-	-
Steve Black	X	X	X	X	X	-	-	-
Bob Brown	X	X	X	X	X	-	-	-

**** END OF SECTION ****

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SECTION 01070

ABBREVIATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes standard abbreviations and definitions used in Contract Documents.

1.02 RELATED SECTIONS (NOT USED)

1.03 CODES AND STANDARDS

A. Reference Standard - Reference to standards of any technical society, organization, or association, or to codes of local or state authorities, shall mean latest standard, code, specification, or tentative standard adopted and published at date of receipt of bids, unless specifically stated otherwise.

B. References in Contract Documents to local codes means Commonwealth of Massachusetts Building Code.

1.04 ABBREVIATIONS AND DEFINITIONS

A. The following is a partial list of typical abbreviations which may be used in the Specifications, and the organizations to which they refer:

1. AASHTO - American Association of State Highway and Transportation Officials
2. ACI - American Concrete Institute
3. AFBMA - Anti-Friction Bearing Manufacturer's Association
4. AGA - American Gas Association
5. AGMA - American Gear Manufacturers Association
6. AIA - American Institute of Architects
7. AISC - American Institute of Steel Construction
8. AISI - American Iron and Steel Institute
9. ANSI - American National Standards Institute
10. API - American Petroleum Institute

11. ASCE - American Society of Civil Engineers
12. ASHRAE - American Society of Heating, Refrigeration, and Air Conditioning Engineers
13. ASME - American Society of Mechanical Engineers
14. ASTM - American Society for Testing and Materials International
15. AWS - American Welding Society
16. AWWA - American Water Works Association
17. CEMA - Conveyor Equipment Manufacturer's Association
18. CFR – Code of Federal Regulations
19. CM – Construction Manager
20. CMR – Code of Massachusetts Regulations
21. CRSI - Concrete Reinforcing Steel Institute
22. CWSRF - Clean Water State Revolving Fund
23. DE – Design Engineer
24. DWSRF - Drinking Water State Revolving Fund
25. DIPRA - Ductile Iron Pipe Research Association
26. DRB – Dispute Review Board
27. EOEEA – Executive Office of Energy and Environmental Affairs
28. EPA – Environmental Protection Agency
29. FED SPEC - Federal Specifications
30. GBR – Geotechnical Baseline Report
31. GDR – Geotechnical Data Report
32. IEEE - Institute of Electrical and Electronic Engineers
33. ICEA - Insulated Cable Engineers Association

34. ISO - Insurance Services Office

35. MHC – Massachusetts Historical Commission

36. MassDEP – Massachusetts Department of Environmental Protection

37. MassDOT - Massachusetts Department of Transportation

38. MEPA – Massachusetts Environmental Policy Act

39. MGL - Massachusetts General Law

40. NEC - National Electric Code

41. NEMA - National Electrical Manufacturers Association

42. NFPA - National Fire Protection Association

43. NIST – National Institute of Standards and Technology

44. NPDES – National Pollutant Discharge Elimination System

45. NSF – National Sanitation Foundation

46. OSHA – Occupational Safety and Health Administration

47. PCI - Precast Concrete Institute

48. SWPPP – Stormwater Pollution Prevention Plan

49. UL - Underwriters Laboratories

50. USGS - United States Geological Survey

B. Wherever the words defined in this Section or pronouns used in their place occur in the Contract Documents, they shall have the meanings herein given.

1. Elevation

    a. The figures given on the Contract Drawings or in the other Contract Documents after the word "elevation" or abbreviation of it shall mean the distance in feet above the datum adopted by the Authority.

2. Provide

    a. The word “provide,” wherever used, shall mean the full purchase and complete installation and testing, if applicable, of referenced materials and equipment.

3. Underground Facilities

    a. The phrase “Underground Facilities” wherever used, shall mean all underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01090

REFERENCE STANDARDS

PART 1 GENERAL

1.01 THE REQUIREMENT

A. Wherever reference is made to any published standards, codes, or standard specifications, it shall mean the latest standard code, specification, or tentative specification of the technical society, organization, or body referred to, which is in effect at the date of invitation for Bids.

B. All materials, products, and procedures used or incorporated in the work shall be in strict conformance with applicable codes, regulations, specifications, and standards.

C. A partial listing of codes, regulations, specifications, and standards includes the following:

Air Conditioning and Refrigeration Institute (ARI)

Air Diffusion Council (ADC)

Air Moving and Conditioning Association (AMCA)

The Aluminum Association (AA)

American Architectural Manufacturers Association (AAMA)

American Concrete Institute (ACI)

American Gear Manufacturers Association (AGMA)

American Hot Dip Galvanizers Association (AHDGA)

American Institute of Steel Construction, Inc. (AISC)

American Iron and Steel Institute (AISI)

American National Standards Institute (ANSI)

American Society of Civil Engineers (ASCE)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE)

American Society of Mechanical Engineers (ASME)

American Society for Testing and Materials (ASTM)

American Standards Association (ASA)

American Water Works Association (AWWA)

American Welding Society (AWS)

American Wood-Preserver's Association (AWPA)

Anti-Friction Bearing Manufacturers Association (AFBMA)

Building Officials and Code Administrators (BOCA)

Conveyor Equipment Manufacturers Association (CEMA)

Consumer Product Safety Commission (CPSC)

Factory Mutual (FM)

Federal Specifications

Instrument Society of America (ISA)

Institute of Electrical and Electronics Engineers (IEEE)

National and Local Fire Codes

Lightning Protection Institute (LPI)

National Electrical Code (NEC)

National Electrical Manufacturer's Association (NEMA)

National Electrical Safety Code (NESC)

National Electrical Testing Association (NETA)

National Fire Protection Association (NFiPA)

Regulations and Standards of the Occupational Safety and Health Act (OSHA)

Southern Building Code Congress International, Inc. (SBCCI)

Sheet Metal & Air Conditioning Contractors National Association (SMACCNA)

Standard Building Code

Standard Mechanical Code

Standard Plumbing Code

Uniform Building Code (UBC)

Underwriters Laboratories Inc. (UL)

D. The Contractor shall, when required, furnish evidence satisfactory to the Authority that materials and methods are in accordance with such standards where so specified.

E. In the event any questions arise as to the application of these standards or codes, copies shall be supplied on-site by the Contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

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SECTION 01200

COORDINATION AND MEETINGS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes requirements for preconstruction, progress, and scheduling and coordination meetings with the Authority, and other requirements for coordination and scheduling.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals

B. Section 01310 – Progress Schedules

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals:

1. Following the preconstruction/Notice to Proceed, scheduling and coordination meetings, provide a preliminary Critical Path Method (CPM) schedule detailing construction staging, and highlighting potential shutdowns, access restrictions and modifications to existing facility operations.

a. CPM schedules shall be in accordance with Section 01310 – Progress Schedules.

2. Prior to monthly scheduling and coordination meetings, provide a detailed monthly schedule for all activities to be completed within the following four (4) weeks, including dates for deliveries of large equipment and proposed dates for any system shutdowns. Where applicable, staging drawings shall be provided for review.

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 PRE-CONSTRUCTION MEETING WITH THE AUTHORITY

A. A pre-construction meeting will be held as a Notice to Proceed meeting, but prior to starting work at the Site, at a time and place as determined by the Authority.

B. Attendance:

1. The Authority
2. The Authority's Representatives
3. The Contractor
4. Major Subcontractors
5. Safety Representative
6. Representatives of governmental or other regulatory agencies

C. Minimum Agenda:

1. Tentative construction schedule
2. Critical work sequencing
3. Designation of responsible personnel
4. Processing of Field Decisions and Change Orders
5. Adequacy of distribution of Contract Documents
6. Submittal of Shop Drawings and samples
7. Procedures for maintaining record documents
8. Use of Site and the Authority's requirements
9. Major equipment deliveries and priorities
10. Safety and first aid procedures
11. Security procedures
12. Housekeeping procedures
13. Processing of Partial Payment Requests

14. General regard for community relations

1.12 PROGRESS MEETINGS WITH THE AUTHORITY

A. Progress meetings will be held twice each month during the performance of the work. Additional meetings may be called as progress of work dictates.

B. The Authority will preside at meetings and record minutes of proceedings and decisions. The Authority will distribute copies of minutes to participants.

C. Attendance:

1. The Authority

2. The Authority's Representatives

3. The Contractor

4. Subcontractors, only with Authority's approval or request, as pertinent to the agenda

D. Minimum Agenda:

1. Review and approve minutes of previous meetings

2. Review affirmative action compliance

3. Review public affairs issues

4. Review safety, security and fire protection issues

5. Review progress of work since last meeting

6. Review proposed 2-week look-ahead construction schedule and proposed 6-week construction schedule

7. Note and identify problems which impede planned progress

8. Develop corrective measures and procedures to regain planned schedule

9. Revise construction schedule as required, and plan the progress to be achieved in the next work period

10. Maintaining of quality and work standards

11. Completing other current business

12. Coordination of work with others

13. Status of procurement of equipment and materials

14. Status of Submittals

15. Status of Requests for Information (RFIs)

16. Outstanding actions, decisions, or reviews that affect work activities

17. Status of Operations & Maintenance deliverables

18. Status of Change Orders and Claims

19. Status of pay requests

20. Schedule next progress meeting

1.13 SCHEDULING AND COORDINATION MEETINGS

A. Plan to attend a minimum of four (4) scheduling and coordination meetings prior to the start of work, and, at a minimum, two (2) scheduling and coordination meetings per month throughout the duration of the work. Note that the scheduling and coordination meetings are in addition to the progress meetings of Paragraph 1.12.

B. Scheduling and coordination meetings shall be held to detail the plans for staging of the work, detail proposed system shutdowns and durations, review coordination drawings, and review proposed schedules and sequences of work.

1.14 COORDINATION AND SCHEDULING

A. Work Notification:

1. Notify the Authority, and the community in which the work will be performed if the community does not participate in DIG SAFE, in writing, at least three (3) working days prior to the start of work on site. No work on site shall be performed prior to obtaining all required permits, including 8(m) Permit(s) and Trench Excavation Permit(s) from the Authority and street opening and excavation permit(s) from the local community, in accordance with Section 01060 – Permits and Regulatory Requirements.

B. Utilities:

1. Notify DIG SAFE at 811, at least seventy-two (72) hours before digging, trenching, rock removal, demolishing, boring, backfilling, grading, landscaping or other earthmoving operations.

a. Note that the Authority does not participate in DIG SAFE. DIG SAFE does not mark out or provide clearance for Authority infrastructure.

C. Notices to Owners and Authorities:

1. Notify the Authority four (4) weeks in advance of work on each permanent/temporary easement. The Authority will notify property owners.

2. Contact utilities, and local and state authorities at least ten (10) working days prior to cutting or closing streets or other traffic areas or excavating near underground or overhead utilities.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

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SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes methods and requirements for submittals.

1.02 RELATED SECTIONS

A. Where submittals are specified or required.

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS

A. Progress Schedule

1. Within ten (10) days after issuance of the Notice to Proceed, prepare and submit one (1) electronic copy in the format specified in Section 01310 - Progress Schedules of the proposed progress schedule to the Authority for review and approval. Refer to Section 01310 – Progress Schedules for detailed construction schedule requirements.

2. If so required, revise the schedule until it is approved by the Authority.

3. Update the schedule monthly, depicting progress to the last day of the month, and submit one (1) electronic copy to the Authority not later than the fifth day of the month, and prior to the application for progress payment. Failure to provide monthly schedule updates will be grounds for the Authority to withhold progress payment approval.

4. Prepare the schedule in the form of a horizontal bar chart showing in detail the proposed sequence of the work and identifying construction activities for each structure and for each portion of work.

5. Time scale the schedule, identifying the first day of each week. Provide the schedule with estimated dates for Early Start, Early Finish, Late Start and Late Finish. Schedule the work to complete the Project within the Contract Time. The Late Finish Date shall equal the Contract Completion Date.

6. Show durations (number of days) and float on the schedule for each activity. Define float as the measure of leeway in starting or completing a scheduled activity without adversely affecting the project completion date established by the Contract Documents.

7. Show all changes since the previous submittal on the updated schedule.

8. Revisions to the schedule must have the prior approval of the Authority.

B. Equipment and Material Orders Schedule

1. Prepare and submit one (1) electronic copy of the schedule of principal items of equipment and materials to be purchased to the Authority for review and acceptance.

2. If so required, revise the schedule until it is approved by the Authority.

3. Update the schedule monthly and submit one (1) electronic copy to the Authority not later than the fifth day of every month with the application for progress payment.

4. Base the updated schedule on the Progress Schedule developed under the requirements of this Section.

5. Schedule shall be in tabular form with appropriate spaces to insert the following information for principal items of equipment and materials:

   a. Dates on which Shop Drawings are requested and received from the manufacturer.

   b. Dates on which certification is received from the manufacturer and transmitted to the Authority.

   c. Dates on which Shop Drawings are submitted to the Authority and returned by the Authority for revision.

   d. Dates on which Shop Drawings are revised by manufacturer and resubmitted to the Authority.

   e. Dates on which Shop Drawings are returned by the Authority annotated as either "No Exceptions Taken" or "Make Corrections Noted".

   f. Dates on which accepted Shop Drawings are transmitted to manufacturer.

   g. Dates of manufacturer's scheduled delivery.

h. Dates on which delivery is actually made.

C. Working Drawings

1. Within thirty (30) days after the Notice to Proceed, prepare and submit one (1) electronic copy of the Preliminary Schedule of Working Drawing submittals to the Authority for review and acceptance. If so required, revise the schedule until it is approved by the Authority.

2. Working Drawings include, but are not limited to, Shop Drawings, layout drawings in plan and elevation, installation drawings, manufacturer's data, etc. Secure all of the information, details, dimensions, drawings, etc., necessary to prepare the Working Drawings required and necessary under this Contract and to fulfill other requirements of this Contract. Secure such information, details, drawings, etc., from possible sources including the Contract Drawings, Working Drawings prepared by the subcontractors, suppliers, etc.

3. Working Drawings shall accurately and clearly present the following:

   a. All working and installation dimensions.

   b. Arrangement and sectional views.

   c. Units of equipment in the proposed positions for installation, details of required attachments and connections, and dimensioned locations between units and in relation to the structures.

4. Working Drawings shall be prepared and submitted electronically. Working Drawings shall conform to recognized drafting standards and be neat, legible and drawn to a large enough scale to show in detail the required information.

5. Contract Drawings are used for engineering and general arrangement purposes only and are not to be used for Working Drawings.

6. Shop Drawings

   a. Prepare and submit Shop Drawings for review by the Authority for all fabricated work and for all manufactured items required to be furnished by the Contract Documents.

      i. Include drawings and descriptive information to show kind, size, arrangement, operation of component materials devices; external connections, anchorages, and supports; performance characteristics, and dimensions needed for installation and correlation with other materials and equipment. Modify drawings and diagrams to delete information which is not applicable.

b. Structural and all other layout drawings prepared specifically for the Project shall have a plan scale of not less than 1/4 inch = 1 foot.

c. Where manufacturer's publications in the form of catalogs, brochures, illustrations or other data sheets are submitted in lieu of prepared Shop Drawings, such submittals shall specifically indicate the item for which approval is requested. Items shall be clearly identified, and irrelevant information shall be clearly crossed out. Submittals showing only general information are not acceptable.

7. Layout and Installation Drawings

a. Prepare and submit for review by the Authority Layout and Installation Drawings for grouting under this Contract. The final dimensions, elevation, location, etc., of grouting may depend upon the dimensions of voids encountered during construction.

b. Provide Layout and Installation Drawings files to the Authority in electronic format. Where design files are provided in AutoCAD 2024 format, all Layout and Installation Drawings shall be provided to the Authority in AutoCAD 2024 format. Layout and Installation Drawings by the Contractor and all subcontractors shall be part of the same AutoCAD 2024 model. Where design files are provided in CADD format, all Layout and Installation Drawings shall be provided to the Authority in AutoCAD 2024 format.

8. The Contractor's Responsibilities

a. Submittals from the subcontractors, manufacturers and suppliers shall be sent directly to the Contractor for checking. Thoroughly check drawings for accuracy and conformance to the intent of the Contract Documents. Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors, manufacturers, or suppliers for correction before submitting them to the Authority.

b. Submittals shall be bound, dated, properly labeled and consecutively numbered. Information on the label shall indicate Specification Section number, Drawing number, the subcontractor's, manufacturer's or supplier's name and the name or type of item the submittal covers. Each part of a submittal shall be marked and tabulated.

c. Submit Working Drawings as a single complete package including all associated drawings relating to a complete assembly of the various parts necessary for a complete unit or system.

d. Submit Shop Drawings as a single complete package for any operating system and include all items of equipment and any mechanical units involved or necessary for the functioning of such system. Where applicable, include elementary wiring diagrams showing circuit functioning and necessary interconnection wiring diagrams for construction.

e. Thoroughly check submittals for accuracy and conformance to the intent of the Contract Documents before submitting to the Authority. Submittals shall bear the Contractor's stamp of approval certifying that they have been so checked. Submittals without the Contractor's stamp of approval will not be reviewed by the Authority and will be returned.

f. If the submittals contain any departures from the Contract Documents, specific mention thereof shall be made in the letter of transmittal. Otherwise, the review of such submittals shall not constitute approval of the departure.

g. No materials or equipment shall be ordered, fabricated, shipped or any work performed until the Authority returns the submittals, herein required, annotated as “No Exceptions Taken" or "Make Corrections Noted".

h. Coordinate the Layout and Installation Drawings, and ensure that coordination is sequenced and checked such that all drawings accurately represent the final locations of grouting.

9. Redline Drawings

a. Maintain current Redline Drawings onsite for the Authority’s review. Redline Drawings shall be updated monthly at a minimum. Hand-marked Redline Drawings will be acceptable for monthly payment applications.

b. Prior to final payment, furnish the Authority one (1) complete set of all accepted Redline Drawings, including Redline Shop Drawings for grouting. Submit Final Redline Drawings of the Contract Drawings electronically in the format in which the Contract Drawings were provided as specified herein. Submit Final Redline Drawings of the Shop Drawings in PDF format.

c. Redline Drawings furnished shall be corrected to include any departures from previously accepted Redline Drawings.

d. Provide Redline Drawings to the Authority in electronic copies. For Contract Drawings provided in AutoCAD 2024 format Redline Drawings shall be provided in AutoCAD 2024 format. For Contract Drawings provided in CADD format Redline Drawings shall be provided in AutoCAD 2024 format.

D. Samples

1. Furnish for review all samples as required by the Contract Documents or requested by the Authority.

2. Samples shall be of sufficient size or quantity to clearly illustrate the quality, type, range of color, finish or texture and shall be properly labeled to show the nature of the material, trade name of manufacturer and location of the work where the material represented by the sample will be used.

3. Samples shall be checked for conformance to the Contract Documents before being submitted to the Authority and shall bear the Contractor's stamp of approval certifying that they have been so checked. Transportation charges on samples submitted to the Authority shall be prepaid by the Contractor.

4. The Authority's review will be for compliance with the Contract Documents and the Authority's comments will be transmitted to the Contractor with reasonable promptness.

5. Accepted samples will establish the standards by which the completed work will be judged.

E. Construction Photographs

1. Submit photographs in accordance with Section 01380 – Construction Video Recording and Photographs.

F. Project Management Information System (PMIS) and Electronic Submittal Requirements

1. An internet-based PMIS for construction document control shall be used by the Contractor and the Authority for tracking and management of construction documents including contract specifications, contract drawings, submittals, schedules, pay applications, RFIs and Change Orders. The PMIS shall be provided by the Contractor and shall be maintained and hosted for the duration of the Contract and through the end of the Contract warranty period. The Contractor shall transfer all project files from the PMIS to the Authority at the conclusion of the project.

   a. The PMIS shall be:

      1) Procore by Procore Technologies;

      2) ProjectSight by Trimble;

      3) Portfolio Insights by Arcadis;

4) Or equal.

b. The Contractor will provide training on the selected PMIS for the Authority's and the Contractor's staff.

2. Provide electronic versions of all submittals for review by the Authority. Electronic submittals shall be in PDF format conforming to the following requirements:

   a. PDF Version & Format: Adobe Version PDF 1.7 (ISO 32000-1), PDF/A- 2b.

   b. Resolution: 300 dpi or higher.

   c. Color: Same as original document.

   d. File Image: Text searchable.

   e. Reproducibility: PDF file shall provide true copy of the original that contains all details of the document from which it was made.

   f. Engineering Plans: PDF page size shall be the same size as the original printed engineering drawing document.

3. The PMIS will sequentially number submittals. Re-submittals shall have original number with an alphabetic suffix.

   a. Identify Contract, the Contractor, the subcontractor and/or supplier; pertinent drawing sheet and detail number(s), and Specification Section number, as appropriate. On standard drawings or data sheets, clearly indicate model, option being proposed, and strike out all non-relevant data.

   b. All proposed product lists, Shop Drawings, product data, manufacturer's instructions and manufacturer's certificates shall be in accordance with the requirements of the work as specified.

   c. Apply the Contractor's stamp and sign or initial.

4. All technical submittals or calculations shall bear the stamp and signature of a Professional Engineer licensed in the Commonwealth of Massachusetts.

5. Schedule submittals in accordance with the Progress Schedule (refer to Section 01310 – Progress Schedules) and deliver to the Authority. Coordinate submission of related items.

6. Identify variations from the Contract Documents on Shop Drawings submitted for review.

7. Provide three (3) inch by five (5) inch space for the Authority's review stamp.

8. Revise and resubmit submittals within fourteen (14) days. Identify in writing all changes made since previous submittal.

9. Comply with detailed submittal requirements specified in the technical Specification Sections.

G. Fire Safety Plan

1. Prepare and submit for review and approval a fire safety plan in conformance with NFPA 241.

1.05 PROCEDURE FOR REVIEW

A. Transmit submittals in sufficient time to allow the Authority at least thirty (30) days for review and processing.

B. Transmit one (1) electronic copy of all technical data or drawings to be reviewed.

C. Submittals shall be accompanied by a letter of transmittal containing date, project title, the Contractor's name, number and titles of submittals, a list of relevant Specification Sections, notification of departures from any Contract requirement, and any other pertinent data to facilitate review.

D. Submittals will be annotated by the Authority in one of the following ways:

1. "Code 1" – No Exceptions Taken

2. "Code 2" – Make Corrections Noted

3. "Code 3" – Revise and Resubmit

4. "Code 4" – Rejected – See Remarks

5. "Code 5" – Reviewed for Informational Purposes Only

E. If a submittal is satisfactory to the Authority in full or in part, the Authority will annotate the submittal "Code 1", "Code 2", or "Code 3". In the case of "Code 3" a partial resubmittal or additional information is required as specifically requested.

F. If a full resubmittal is required, the Authority will annotate the submittal "Code 4".

G. Resubmit submittals in part if they are returned "Code 3" or in full if they are returned "Code 4" as required by the Authority until submittals are acceptable to the Authority. It is understood that the Authority may charge the Contractor the Authority's charges for

review in the event a submittal is not accepted (either "Code 1" or "Code 2") by the third submittal for a system or piece of equipment. These charges shall be for all costs associated with engineering review, meetings with the Contractor or manufacturer, etc., commencing with the fourth submittal of a system or type of equipment submitted for a particular Specification Section.

H. Acceptance of a Working Drawing by the Authority will constitute acceptance of the subject matter for which the Working Drawing was submitted and not for any other structure, material, equipment or appurtenances indicated.

I. The Authority's Review

1. The Authority’s review of the Contractor's submittals shall in no way relieve the Contractor of any of its responsibilities under the Contract. An acceptance of a submittal shall be interpreted to mean that the Authority has no specific objections to the submitted material, subject to conformance with the Drawings and Specifications.

2. The Authority’s review will be confined to general arrangement and compliance with the Drawings and Specifications only, and will not be for the purpose of checking dimensions, weights, clearances, fittings, tolerances, interferences, coordination of trades, etc.

1.06 PROJECT ELECTRONIC DATA PROTOCOL

A. General Provisions: The Project Electronic Data Protocol (Protocol) establishes the procedures relative to the transmission or exchange of Electronic Data for the Project. A Protocol will be established specifically for this Contract.

B. Definitions

1. Electronic Data – Electronic Data is defined as information communications, Drawings, or designs created or stored for the Project in electronic or digital form.

2. Confidential Information – Confidential Information is defined as Electronic Data that the transmitting party has designated as confidential and clearly marked with an indication such as “Confidential” or “Business Proprietary”.

3. Written or In Writing – In addition to definitions in the Contract Documents, “written” or “in writing” shall mean any communication, including without limitation a notice, consent or interpretation, prepared and sent to an address provided in this Protocol using a transmission method sent forth in this Protocol that permits the recipient to print or store the communication. Communications transmitted electronically are presumed received if sent in conformance with the Protocol established for this Contract.

C. Transmission of Electronic Data

1. The transmission of Electronic Data constitutes a warrant by the transmitting party to the receiving party that the transmitting party (1) is the copyright owner of the Electronic Data, (2) has permission from the copyright owner to transmit the Electronic Data for its use on the Project, or (3) is authorized to transmit Confidential Information.

2. The receiving party agrees to keep Confidential Information strictly confidential and not to disclose it to any other person except to (1) its employees, (2) those who need to know the content of the Confidential Information to perform services or construction solely and exclusively for the Project, or (3) its consultants and the contractor(s) whose contracts include similar restrictions on the use of Confidential Information.

3. For exchanging electronic data, the Contractor and the Authority shall use the specified internet-based Program Management Information System (PMIS). The PMIS website address shall be furnished to the Authority within ten (10) days after the Notice to Proceed. To access the PMIS website, the Contractor shall acquire and maintain for the duration of the Contract, and through the end of the Contract warranty period: high-speed internet service suitable for transferring electronic data; and internet browsing software such as Microsoft Internet Explorer 9.0 or greater.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01310

PROGRESS SCHEDULES

PART 1 GENERAL

1.01 SUMMARY

A. This Section details requirements for progress schedules, including the use of float, schedule recovery, Contract requirements, early completions and non-compliance, CPM (critical path method) schedules and narratives, activity reports, monthly schedules, rate-of-progress data, and tolerances.

1.02 RELATED SECTIONS

A. Section 01200 – Coordination and Meetings

B. Section 01300 – Submittals

C. Section 01370 - Schedule of Values

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals:

1. Critical Path Method (CPM) Schedule:

a. The CPM Schedule shall: show the overall priority and sequencing of activities with which the Contractor intends to accomplish the Work, the work remaining to comply with the Contract Time, and the sequences of work specified or indicated by the Contract Documents; anticipate foreseeable events or site conditions that may in any manner affect the cost progress schedule, performance, and furnishing of the Work or work remaining; reflect the means, methods, techniques, sequences, and procedures of construction chosen by the Contractor (subject to the requirements of the Contract Documents); and accurately record how completed work was performed as to sequencing and timing. Verify all data on the CPM Schedule, and review and coordinate the sequences in the CPM Schedule with the requirements of the Work. Each CPM Schedule shall be assigned a revision number, starting with "Rev. 0" for the CPM Schedule for the Work as awarded. After reviewing that the CPM Schedule complies with the above, sign and submit to the Authority one (1) electronic copy of the CPM Schedule.

b. The Authority will review and return the CPM Schedule submittal within the time described in Paragraph 3.03.E of this Section. The Authority's review will be only for conformance with the Contract Time and those sequences of work indicated in or required by the Contract Documents, to record early and late dates for milestones, to identify the use of float, to compare as-built data with that represented in monthly schedules, and for conformance with the requirements of this Section and other information given in the Contract Documents which may have a bearing on the CPM Schedule. The Authority's review shall not extend to the accuracy of other matters dealt with by the CPM Schedule. This includes whether or not work is omitted, and whether or not activity durations, the level of labor, materials and equipment, the means, methods, techniques, procedures, or sequences of construction, and sequences and timing for work remaining, are practicable, the correctness of which shall remain the sole responsibility of the Contractor.

c. When reviewed by the Authority, one (1) electronic copy of each CPM Schedule submittal will be returned to the Contractor as either "Revise and Resubmit" or "No Exceptions Taken". Submittal stamped as "No Exceptions Taken" will represent the most-current Contract Schedule as of the date of the submittal. Neither the Authority review of a CPM Schedule, nor the Authority's statement of "No Exceptions Taken", will relieve the Contractor from responsibility for complying with the Contract Time requirements, adhering to those sequences of work indicated in or required by the Contract Documents, or from completing any omitted work within the Contract Time.

d. Make appropriate adjustments or corrections in a CPM Schedule submittal returned as "Revise and Resubmit", and deliver to the Authority one (1) signed electronic copy of the CPM Schedule re-submittal directing specific attention in writing to adjustments or corrections made other than those made in response to the Authority's comments on previous submittal. Resubmittals shall use the same revision number followed by the letters "A", "B", etc., as applicable. The Authority will review and return the resubmittals using the same procedures as noted in Paragraph 1.04.A.1.b above.

e. Provide a CPM Schedule, noting all shutdowns, startups, and testing, that will be continuously updated throughout the project. This schedule shall be provided for review prior to the scheduling meetings detailed in Section 01200 – Coordination and Meetings. The schedule shall be updated monthly, or when dates of shutdowns or other activities change, and shall be reviewed at all project progress meetings.

2. Written recovery schedule as specified herein

3. CPM Software Submittal

4. Monthly Schedules

1.05 QUALITY ASSURANCE

A. In preparing progress schedules, work with each subcontractor and supplier to obtain information on activities and sequencing, and request written interpretations of schedule requirements from the Authority as necessary.

B. Use Microsoft Project Professional CPM scheduling software to produce the progress schedules. This software shall run on PC compatible equipment, be commercially available for lease or purchase, and be capable of processing and plotting progress schedule data as specified in this Section.

1.06 QUALIFICATIONS

A. Perform the work covered by this Section with personnel having at least three (3) years of experience using computer-based scheduling programs on construction projects.

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS

A. The following terms used in this Section shall have the following meanings:

1. Activity - An element in a CPM Schedule or monthly schedule establishing the time and resources required for performing or furnishing a part of the work, or a requisite step.

2. Contract Float - Working days between the Contractor’s anticipated date for early completion of the work, or specified part, and the corresponding Contract Time.

3. Contract Schedule - The most current version of the CPM Schedule that has been reviewed by the Authority and returned to the Contractor stamped "No Exceptions Taken." The as-planned Contract Schedule is the initial (Rev.0) Contract Schedule.

4. CPM Schedule - Computerized schedule which accounts for the entire Work and reflects work remaining and how completed work was performed as to sequencing and timing, in CPM format.

5. Critical Path - A sequence of activities controlling achievement of Contract Time.

6. Early Dates - The early start dates and early finish dates, i.e., the dates each activity will start and finish if each is started at the earliest end of the range of dates that the CPM Schedule indicates the activities can be performed.

7. Late Dates - The late start dates and the late finish dates; i.e., the dates each activity will start and finish if each is started at the latest end of the range of dates that the CPM Schedule indicates the activities can be performed and still achieve the milestones and Contract Time.

8. Progress Schedule - All of the information and data required for disclosure by this Section.

9. Monthly Schedule - A detailed progress schedule disclosing the next month's work and the as-built schedule for the previous month's work.

10. Total Float – Number of working days by which a part of the work in the progress schedule may be delayed from its early dates without necessarily extending the Contract Time.

1.10 TOLERANCE (NOT USED)

1.11 REQUIREMENTS

A. Planning, scheduling and execution of the work shall be included in progress schedules.

B. References to the CPM shall be to established technical standards for CPM not in conflict with this Section.

1.12 USE OF FLOAT

A. Float belongs to the Project and may be used as agreed upon with the Authority to accommodate changes in the work, or to mitigate the effect of events that delay performance or conformance with the Contract Time.

B. Changes or delays that influence activities that have float and that do not extend the critical path are not justification for an extension of the Contract Time.

1.13 SCHEDULE RECOVERY

A. When directed in writing by the Authority, undertake appropriate action, at no additional cost to the Authority, to recover schedule whenever the Contract Schedule is not met, or the progress is not commensurate with that required to adhere to the Contract Time.

B. Submit with the next Application for Payment (following recognition of the problem) a written recovery schedule to the Authority describing the cause for the slippage and the actions planned to recover schedule within the shortest amount of time whenever activities are not completed within the late dates in the Contract Schedule.

C. Appropriate recovery actions may include, but not be limited to, assignment of additional labor, subcontractors, or equipment, shift or overtime work, expediting of submittals or

deliveries, or any combination thereof. Overlapping of activities or sequencing changes to increase activity concurrence shall be deemed appropriate only if properly substantiated in the submittal.

D. Refusal, failure or neglect to take appropriate recovery action or to submit a written recovery schedule shall constitute enough evidence that the Contractor is not prosecuting the work, or separable part, with the diligence that will ensure its completion within the Contract Time and shall constitute sufficient basis for the Authority to recommend to withhold any payment otherwise due, or identify and order alternate recovery actions on the basis of the information in the Contract Schedule, or to take any other action allowable under the Contract Documents.

1.14 CONTRACT REQUIREMENTS

A. All versions of the progress schedule up to, and including, the as-planned Contract Schedule, shall be based solely on the requirements of the Contract Documents.

1.15 EARLY COMPLETION

A. An early completions CPM Schedule is one which anticipates completion of all, or an identified part, of the work ahead of the corresponding Contract Time.

1.16 NON-COMPLIANCE

A. The Authority will withhold payment if, in the Authority's opinion, the Contractor's failure, refusal or neglect to provide the required progress schedule information precludes a proper evaluation of the Contractor's progress.

PART 2 PRODUCTS

2.01 CPM SCHEDULE

A. The CPM Schedule shall break down the Work into activities and relationships to disclose the overall approach to the Work as itemized in Paragraph 1.04.A, and to allow the Authority to fulfill the review objectives itemized in Paragraph 1.04.A. The CPM Schedule shall divide the Work into activities and shall specify the progression from the Notice to Proceed to the end of the Contract Time. It shall also identify the requisite duties and responsibilities of the Contractor, and the items related to materials or equipment, including time allowances of sixty (60) days for the resubmittal and re-review of Shop Drawings from Divisions 01 through 16; items of interface with work performed by others; and specified construction, start-up and performance tests. Site-related activities shall not combine work located in separate structures, distinct areas or elevations within a structure, work corresponding to different Divisions of the Specifications, work performed by different subcontractors (first and second tiers), nor rough-in and finish work of the same trade. The CPM Schedule shall use the same work

breakdown structure specified in Section 01370 – Schedule of Values; however, the breakdown may include more detail to meet the requirements of this Section. Unless otherwise specified, a site-related activity shall span twenty (20) working days or less, and have a value not exceeding $100,000.

B. CPM diagrams shall be based on precedence diagram format, shall be plotted on a time-scaled calendar, and shall expressly identify the Contract Time, milestones, the critical path(s), and all activities. Activities shall be identified on their early dates, with their total float noted beside them. Connections between activities, whether on the same sheet or on different sheets, shall identify both predecessor and successor work.

C. Activity descriptive data shall include the activity code, activity description fully conveying the work included, and special codes. The use of start or finish restraint dates shall be annotated as to the basis for the chosen restraints.

D. Intermittent or indirect activities shall be included for indirect or home office activities including such items as supervision, site management, clean-up, dust control, shop drawings, redline drawings, testing, demobilization, and the like. Work being performed by MBE/WBE firms shall be identified as separate CPM activities.

2.02 ACTIVITY REPORTS

A. Activity reports shall include: code, description and duration; early start and early finish date, late start and late finish dates, total float and percent complete or remaining duration. Activity dates shall be stated in calendar-days. The Contract Time shall restrain the late finish dates; any milestones representing commencement of work conditions shall be indicated as restraining early start dates. A report shall also be provided showing each relationship type (lead/lag, lead times, etc.) between each activity and each of its preceding and succeeding activities.

2.03 CPM SCHEDULE NARRATIVE

A. A CPM Schedule narrative shall compare current early dates versus the corresponding as-planned Contract Schedule dates for any milestones and the Contract Time; provide sufficient detail to allow verifications of the progress of the Work; identify the assumptions made in incorporating work related to Change Orders; describe actual or potential delays, including related causes, and the steps taken or anticipated to mitigate their impact; and itemize any changes in CPM Schedule activities and sequences, and their basis.

2.04 MONTHLY SCHEDULES

A. Monthly schedules may be in precedence diagram or bar chart form with appropriate logic ties between bars. Each site-related activity shall reflect the work of a specific crew, span twenty (20) working days or less, and indicate which CPM Schedule activity

includes the same work. Procurement-related activities shall reflect, in detail, all items involved in the preparation, submittal, review and return of shop drawings and samples, and in the fabrication, delivery, receipt and inspection of the items of materials and equipment, and shall not combine items furnished by separate suppliers (first and second tiers).

B. A monthly schedule shall consist of "look-ahead" and "as-built" charts. The look-ahead chart shall record the Contractor's plan for the current monthly period. The as-built chart shall record when and how work on the previous look-ahead chart was performed.

2.05 RATE-OF-PROGRESS DATA

A. Rate-of-progress data shall consist of monthly and cumulative quantity plots for significant measurable quantities of work as specified by the Authority at the pre-construction meetings, labor plots for trades associated with the significant measurable quantities, and payment plots. Rate-of-progress plots shall compare the anticipated rate of progress for the most-current Contract Schedule and the as-planned Contract Schedule, and shall conform to the corresponding activity early and late dates. The plots shall be in forms acceptable to the Authority.

PART 3 EXECUTION

3.01 TOLERANCES

A. If the Authority elects to review an early-completion CPM Schedule submittal showing activities on the critical path with total float less than the appropriate contract float, the Authority will do so with the understanding that schedule is to be deemed to include an activity at the end of the critical path of duration equal to the difference between the contract float and the indicated total float values.

B. The review of a portion of the CPM Schedule or an incomplete CPM Schedule submittal shall not indicate acceptance of the entire CPM Schedule.

3.02 CPM SOFTWARE SUBMITTAL

A. Within fifteen (15) working days after the Notice to Proceed, the Contractor shall, at no additional cost to the Authority, furnish a fully-licensed copy of the Microsoft Project Professional software to the Authority for the Authority's exclusive use for the duration of the Contract.

3.03 Rev.0 CPM SCHEDULE

A. The CPM Schedule Rev.0 submittal shall consist of the CPM diagrams, the Schedule of Values, computer reports, rate-of-progress plots, narrative, and a CD or DVD with CPM software files duplicating the Contractor's files in an Authority specified ASCII format. The CPM report shall be sorted by 1) activity code in order of ascending activity number,

2) total float in order of ascending Total Float values, and by: (a) ascending early start dates; (b) ascending activity numbers, within the same total float values; and 3) early start dates, in chronological order (and by ascending activity numbers within the same early start dates).

B. Submit the Rev.0 CPM Schedule within ten (10) working days after the date of the Notice to Proceed. The Rev.0 submittal shall reflect the Work as awarded. Receipt by the Authority of a Rev.0 submittal shall be a condition precedent to processing the first Application for Payment.

C. In addition to the requirements in Paragraph 2.03, the CPM Schedule narrative shall identify the Contractor's plan for management of the Site (e.g., lay down and staging areas, construction traffic, etc.), the utilization of construction equipment and the buildup of trade labor. Proposed Change Orders shall not be incorporated into the CPM Schedule.

D. Two (2) sets of rate-of-progress data shall be provided: one (1) set shall correlate to the early dates, and the other to the late dates, as identified in the Rev.0 CPM Schedule.

E. The Authority will return the Rev.0 submittal within thirty (30) working days. If a resubmittal is required, respond with the revised, CPM Schedule resubmittal, labeled as Rev.0A, within ten (10) working days.

F. Once the Rev.0, or Rev.0A, submittal is returned by the Authority as "No Exceptions Taken", it will be considered as the as planned Contract Schedule for the Work, and as such become the basis for (a) the monitoring progress against Milestones and Contract Time, and (b) the evaluation and reconciliation of extensions in Contract Time, if and when the Contract Time is indeed extended.

G. All schedules shall be in accordance with the Contract Time requirements of the Contract. Nothing contained in this Section shall relieve the Contractor from compliance with the Contract Time.

3.04 CPM SCHEDULE REVISIONS

A. Each schedule revision, starting with the Rev.1 submittal, shall consist of the required copies of the updated CPM diagram, reports, rate-of-progress plots, narrative, and CD or DVD data, as specified in Paragraph 3.03.A. CPM Schedule revisions shall update and revise the current Contract Schedule with data every month following review of the initial CPM Schedule, for the duration of the Contract. Receipt by the Authority of a compliant submittal will be a condition precedent to processing that Application for Payment.

B. CPM Schedule revisions shall represent all changes, adjustments, or updates in the sequencing and timing of work remaining to be made, or required to be made, to ensure that the CPM Schedule stays current with the revised plan for performing and furnishing

work remaining. If the CPM Schedule submittal indicates slippage or delayed progress caused by delays failing to meet the requirements for extensions in Contract Time, follow the schedule recovery requirements as specified in Paragraph 1.14 of this Section. Any revisions made due to the issues covered under Paragraph 3.04.B shall be considered revisions made for convenience and shall be excluded when reconciling an extension to any milestone or Contract Time until the timing and sequences purported by those revisions actually take place.

C. Incorporate revisions which have been agreed upon in Change Orders ordered since the last revision. These types of revisions shall be included in the CPM Schedule when reconciling extensions in Contract Time. Show any proposed effects resulting from any Change Orders which are being negotiated with the Authority.

D. Ensure that the CPM Schedule diagram accurately reflects for each activity the "as-built" information indicated on previous monthly schedules, including: actual start dates (discounting early starts not representative of true as-built conditions), remaining days of work, percent complete, and actual finish dates (when the activities were completed so that dependent work could proceed).

E. The Authority will initially return a revision submittal with comments limited to the uncompleted work items within fifteen (15) working days of receipt by the Authority. If a resubmittal is required, respond with the required copies of a revised CPM Schedule revision submittal within ten (10) working days of receipt of the Authority’s comments. Once the Contractor's CPM Schedule revision submittal, or resubmittal, is returned as "No Exceptions Taken", it shall represent the Contract Schedule for the Work as of the date of the submittal, and it shall be the basis for the monitoring of performance and progress.

3.05 MONTHLY SCHEDULES

A. The first monthly schedule (Rev.0) submittal is due within five (5) working days after receipt of the Notice to Proceed and shall cover the look-ahead period starting with the Notice to Proceed. Subsequent submittals shall be due monthly, with (attached to) each Application for Payment, and consist of the previous look-ahead chart updated with progress (as-built chart), and a revised look-ahead chart for the next four (4) weeks. Receipt by the Authority of a responsive monthly schedule will be a condition precedent to processing that Application for Payment.

B. Each monthly schedule submittal shall consist of one (1) electronic copy of the as-built and look-ahead charts, and corresponding rate-of-progress plots for the two (2) periods covered. As-built data for activities which were scheduled in the previous period shall be as specified in Paragraph 3.04.D, except that the data may be conveyed simply by marking-up the previous period's look-ahead chart.

C. Monthly schedule and payment review meetings shall be held between the Authority and the Contractor within seven (7) days prior to the cutoff date of each progress payment period. Five (5) working days prior to each meeting, deliver the monthly schedule submittal then due so that the Authority may verify as-built data against field and submittal records, evaluate completion and make recommendations as to payments for work performed, and become familiar with the progress objectives for the next month.

D. Make revisions to the monthly schedule as may be required at the meeting and include the revised monthly schedule with the resubmittal of that Application for Payment within five (5) working days from the date of the monthly meeting.

**** END OF SECTION ****

SECTION 01370

SCHEDULE OF VALUES

PART 1 GENERAL

1.01 SUMMARY

A. This Section defines the process whereby the Schedule of Values shall be developed and incorporated into the cost loading function of the Critical Path Method (CPM) Schedule as specified in Section 01310 – Progress Schedules. Monthly progress payment amounts shall be determined from the monthly progress updates of the CPM Schedule activities.

B. The Schedule of Values shall be developed independently, but simultaneous with the development of the CPM Schedule activities and logic, as follows.

1.02 RELATED SECTIONS

A. Section 01200 – Coordination and Meetings

B. Section 01300 – Submittals

C. Section 01310 – Progress Schedules

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS

A. Submit the Schedule of Values in accordance with Section 01300 – Submittals and per the requirements below:

1. Identify the Schedule of Values with:

    a. Contract Name and location

    b. Contract Number

    c. Name and Address of Contractor

    d. Date of Submission

2. The Schedule of Values shall provide a breakdown of all lump sum items.

    a. Revise and resubmit the Schedule of Values until approved by the Authority.

    b. The sum of the items listed in the Schedule of Values shall equal the price bid.

c. Mobilization and demobilization shall be broken out as separate line items in the Schedule of Values. Under both mobilization and demobilization, the Schedule of Values shall include separate line items for bond premiums and temporary construction facilities. Mobilization shall include costs of: submittals required by Section 01300 - Submittals, as applicable; establishing construction offices for the Contractor and the Authority, including communications and temporary utilities; transporting construction equipment to the site; construction permits not obtained by the Authority; project signs; and site preparation required for temporary facilities and utilities.

d. 10% of the values of the work will be withheld until the work has been accepted by the Authority.

e. Breakdown installed costs into:

i. Delivered cost of product.

ii. Total installed cost with overhead and profit.

1) Do not list overhead and profit as separate items.

iii. Cost for testing and placing into service.

3. An unbalanced Schedule of Values providing for overpayment on items of work performed will not be approved.

4. The Schedule of Values, after review by the Authority, shall be used as the only basis for the Contractor's Application for Payment.

5. The Schedule of Values shall be supported by the Construction Schedule as outlined in Section 01310 – Progress Schedules.

6. The Schedule of Values shall include:

a. The value of both the installed and removed component parts of the work with sufficient detail and with documentation to support the values in the Schedule. A component part is defined as any activity spanning greater than twenty (20) working days and having a value greater than $100,000.

b. Values that are the same as the values used for activity nodes on the Construction Schedule.

c. Anticipated payments for products delivered, but stored off-site.

d. The cost of each of the following items: site maintenance; health and safety plan; dust control, noise control, construction photographs; pre- and post-construction

surveys; existing structures monitoring; existing utilities monitoring; and pest control.

e. The cost of any other items not assigned a unit price cost.

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 PRELIMINARY SCHEDULE OF VALUES

A. Submit a preliminary Schedule of Values for the major components of the work at the pre-construction meeting. The listing shall include, at a minimum, the proposed value for the following major work components:

1. The Contractor and all subcontractors – Mobilization/Demobilization. Mobilization/Demobilization costs shall constitute no more than 5% of the total Contract values.

2. The total value of structural reinforced concrete work. Miscellaneous and minor concrete work may be listed as one item in this breakdown.

3. The total value of site civil work inclusive of regrading, grading, cold planning, paving, curbs and sidewalks, and landscaping.

B. After the Pre-construction meeting, meet with the Authority and jointly review the preliminary Schedule of Values and make any adjustments in value allocations if, in the opinion of the Authority, these are necessary to establish fair and reasonable allocation of values for the major work components. Front end loading will not be permitted. The Authority may require reallocation of major work components from items in the above listing if in the opinion of the Authority such reallocation is necessary. This review and any necessary revisions shall be completed within fourteen (14) days from the date of the Notice to Proceed.

1.12 DETAILED SCHEDULE OF VALUES

A. Prepare and submit a detailed Schedule of Values to the Authority within twenty-one (21) days from the date of Notice to Proceed. The detailed Schedule of Values shall be

based on the accepted preliminary Schedule of Values for major work components. Because the ultimate requirement is to develop a detailed Schedule of Values sufficient to determine appropriate monthly progress payment amounts through cost loading of the CPM Schedule activities, sufficient detailed breakdown shall be provided to meet this requirement. The Authority shall be the sole judge of acceptable numbers, details and description of values established. If, in the opinion of the Authority, a greater number of Schedule of Values items than proposed is necessary, add the additional items so identified by the Authority.

1. Submit documentation to support the values with data which will substantiate their correctness.

B. Meet with the Authority to jointly review the detailed Schedule of Values within twenty-eight (28) days from the date of Notice to Proceed. The value allocations and extent of detail shall be reviewed to determine any necessary adjustments to the values and to determine if sufficient detail has been proposed to provide cost loading of the CPM Schedule activities. Any adjustments deemed necessary to the value allocation or level of detail shall be made and a revised detailed Schedule of Values shall be submitted within seven (7) days from the joint review.

C. Following acceptance of the detailed Schedule of Values, meet with the Authority to incorporate the values into their respective cost loading portions of the Construction Schedule in accordance with Section 01310 – Progress Schedules. The CPM activities and logic shall have been developed concurrent with development of the detailed Schedule of Values; however, it shall be necessary to adjust the detailed Schedule of Values to correlate to individual Schedule activities. It is anticipated that instances will occur, due to the independent, but simultaneous development of the Schedule of Values and the CPM Schedule activities, where interfacing these two (2) documents will require changes to each document. Schedule activities may need to be added to accommodate the detail of the Schedule of Values. Schedule of Value items may need to be added to accommodate the detail of the CPM Schedule activities. Where such instances arise, propose changes to the Schedule of Values and to the CPM Schedule activities to satisfy the CPM Schedule cost loading requirements.

1.13 CROSS REFERENCE LISTING

A. To assist in the correlation of the Schedule of Values and the CPM Schedule, provide a Cross Reference Listing which shall be furnished in two (2) parts. The first part shall list each Scheduled Activity with the breakdown of the respective valued items making up the total cost of the activity. The second part shall list the valued item with the respective Scheduled Activity or Activities that make up the total cost indicated. In the case where a number of schedule items make up the total cost for a valued item (indicated in the Schedule of Values) the total cost for each scheduled item shall be indicated.

B. These listings shall be updated and submitted in conjunction with the CPM monthly submittals as specified in Specification Section 01310 – Progress Schedules.

C. Approved change orders reflected in the CPM Schedule shall be incorporated into the Schedule of Values as a single unit identified by the change order number.

1.14 CHANGES TO SCHEDULE OF VALUES

A. Changes to the CPM Schedule which add activities not included in the original schedule but included in the original Work (schedule omissions) shall have values assigned as approved by the Authority. Other activity values shall be reduced to provide equal value adjustment increases for added activities as approved by the Authority.

B. In the event that adjustments to the original Schedule of Values are agreed upon with the Authority because of inequities discovered in the original accepted detailed Schedule of Values, increases and equal decreases to values for activities may be made.

1.15 SEQUENCING AND SCHEDULE

A. In addition to other submissions of the Schedule of Values specified herein, submit the Schedule of Values concurrent with the CPM Schedule in accordance with Section 01310 – Progress Schedule.

B. The Authority will not process the first monthly payment requisition until the detailed Schedule of Values has been determined to be complete, and has been accepted, by the Authority.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

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SECTION 01380

CONSTRUCTION VIDEO RECORDING AND PHOTOGRAPHS

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies the requirements for construction documentation using still photography and video.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals.

1.03 CODES AND STANDARDS

A. International Press Telecommunications Council (IPTC) Photo Metadata Standard, latest edition.

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals:

1. Evidence that the construction photographer possesses the experience and qualifications specified herein, including references and certifications.

2. Five (5) different samples of construction photographer's photographs on past construction projects.

3. One (1) sample video in .mp4 format recorded by the construction photographer.

4. Pre-construction and post-construction videos and photographs in hardcopy and on CD/DVD or USB flash drive.

5. Monthly progress photographs in hardcopy and on CD/DVD or USB flash drive.

1.05 QUALITY ASSURANCE

A. The construction photographer shall have a minimum of two (2) years of construction photography experience using IPTC Standards within the most recent four (4) years.

B. Provide all necessary equipment to comply with the requirements specified in this Section.

PART 2 PRODUCTS

2.01 DIGITAL FILE REQUIREMENTS

A. .jpg format only

B. File naming: Do not use duplicate file names

1. File Name: ABCD_####_YYYYMMDD_ CameraImageNo.jpg

a. ABCD: ASFS (4 letter acronym for Alford Street Facility Seawall)

b. ####: Contract number

c. YYYYMMDD: Date taken

d. CameraImageNo.jpg: Number assigned by camera

C. Minimum resolution: 300dpi

D. Image size: 8 Megapixels, ± 1 Megapixel

E. Image Quality: Fine

F. Output size: 8x10-inch

G. Date and time set in camera shall be accurate.

H. Use IPTC (International Press Telecommunications Council) Photo Metadata Standards, fields; description tab; and description. Fill in description writer and keywords fields with: image, site, and all project specific information using Photoshop or equivalent. A list of suggested keywords will be supplied.

2.02 VIDEO REQUIREMENTS

A. Format: MPEG-4 (.mp4) only

B. Store video files on separate media from photographs.

PART 3 EXECUTION

3.01 REQUIREMENTS

A. Notify the Authority five (5) days in advance of any photographic sessions.

B. Coordinate with the Authority on what views are to be taken.

C. Take some shots consecutively from a variety of selected locations at each visit to show progress when images are shown in secession.

D. Contain a general reference in broad views that is easily recognizable to provide scale and position on site (i.e., people, equipment, landmarks).

E. Close shots shall have similar references for scale (i.e., ruler, coin or tool).

F. Take color photographs at site locations chosen by the Authority.

1. Prior to commencement of work on site: one hundred (100) photographs in one (1) submission.

2. During construction: forty (40) photographs submitted monthly with application for, and as a condition of, progress payments.

3. At the completion of project: one hundred (100) photographs in one (1) submission.

G. Record ten (10) minutes minimum of video documentation which demonstrates pre-construction conditions of the proposed work zones, and within 100 feet of each of the work zones. Take video and submit prior to any activity commencing onsite. This video shall be in addition to and may be used as a supplement to the requirements of Section 01390 – Condition Survey.

H. Record ten (10) minutes minimum of post-construction video documentation which demonstrates post-construction conditions of each work zone, and within 100 feet of each of the work zones as practicable. Take video and submit prior to Final Completion being granted. This video shall be in addition to and may be used as a supplement to the requirements of Section 01390 – Condition Survey.

3.02 REVIEW OF SUBMITTALS

A. Submittals will be reviewed by the Authority.

B. Final acceptance of photographer’s products will be determined by the Authority.

**** END OF SECTION ****

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SECTION 01390

CONDITIONS SURVEYS

PART 1 GENERAL

1.01 SUMMARY

A. The work specified in this Section includes furnishing all labor, material and equipment to conduct pre-construction and post-construction inspections and surveys of the conditions of all properties, including all buildings and structures, located within the Limits of Work indicated on the Contract Drawings and within 10 feet as measured in all directions beyond the Limits of Work indicated on the Contract Drawings for all surface occupations, including areas for construction trailers and equipment and materials storage.

B. The work also includes certified field surveys to determine the elevations of all properties, including all buildings and structures, in conjunction with, and within the limits of, the pre-construction and post-construction conditions inspections and surveys.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals

B. Section 01380 – Construction Video Recording and Photographs

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

1. Qualifications of Professional Engineer to perform conditions inspections and surveys.

2. Qualifications of Professional Land Surveyor to perform field surveys.

B. Submit Property Conditions Inspection and Survey Reports in accordance with Section 01300 – Submittals.

C. After addressing the Authority's comments, and following acceptance of the reports by the Authority, prepare four (4) copies of each report: submit two (2) copies, one (1) of which shall be the original, to the Authority; submit one (1) copy to each property owner as directed by the Authority; and one (1) copy shall be retained by the Contractor.

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS

A. Pre-construction and post-construction conditions inspections and surveys shall be performed and narrated by a Professional Engineer licensed in the Commonwealth of Massachusetts, and shall be recorded, in both video and photograph format, under the direction of the Professional Engineer by the Construction Photographer in accordance with Section 01380 – Construction Video Recording and Photographs. The Professional Engineer shall have a minimum of five (5) years' professional experience in structural inspections, evaluations and conditions surveys of similar type and complexity to the Work of this Contract.

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 SCHEDULE

A. Within ten (10) working days of the Notice to Proceed, submit the qualifications of the licensed Professional Engineer(s) that will perform the conditions inspections and surveys.

B. Within ten (10) working days of the Notice to Proceed, submit the qualifications of the licensed Professional Land Surveyor(s) that will perform the field surveys.

C. Within sixty (60) calendar days of the Notice to Proceed, submit one (1) electronic copy of pre-construction "Property Conditions Inspection and Survey" reports and videos of properties, including buildings and structures, to the Authority via the PMIS as required by Section 01300 - Submittals.

D. Within thirty (30) calendar days after completion of construction submit one (1) electronic copy of all post-construction "Property Conditions Inspection and Survey" reports and videos of properties, including buildings and structures to the Authority via the PMIS as required by Section 01300 - Submittals.

1.12 PROJECT/SITE CONDITIONS

A. Existing Conditions:

1. The pre-construction inspection and survey of the conditions of the existing property, shall each include the following:

a. Prepare and submit a detailed written report which shall include the location and description of the site and a record of the visual examination of the property. It shall contain video coverage and color photographs of the exterior of the building and seawall. Points where deterioration has occurred or where deficiencies exist shall be noted in the video coverage, photographed and recorded in the written report. The absence of deficiencies shall also be recorded. The Authority will examine said reports and may indicate that additional information is required.

b. **Fifty (50)** photographs shall be taken by the Construction Photographer. Photographs shall be color prints, 5 x 7 inches, with a glossy finish. Photographs of the exterior of the building and seawall, and of the surface features of properties, shall be included. Photographs of surface features shall be from multiple angles, identifying landscaping and architectural features including, but not limited to, driveways, fences, stone walls, walkways, and storage sheds.

c. Report immediately to the Authority any finding that indicates construction operations will adversely affect any property, building or structure.

d. The Contractor may elect to perform conditions inspections and surveys, and field surveys, on properties, including buildings and structures, beyond the areas specified in Paragraph 1.01.A. Such inspections and surveys will be performed at no additional cost to the Authority.

e. Notify the Authority of the planned date and time of all pre-construction and post-construction inspections and surveys at least one (1) week prior to conducting each. The Authority shall be present during all inspections and surveys.

f. Conditions inspection and survey video shall provide complete video coverage, of the entire property, specifically noting and showing the type and location of any cracks, damage, structural problems, or other defects.

g. Pre-construction and post-construction conditions inspection and survey reports shall be submitted within two (2) working days of completion of each. Omissions in the reports, as determined by the Authority, shall be addressed by the Contractor at no additional cost to the Authority.

h. Post-construction conditions inspections and survey shall be performed on the same property and within the same area included in the pre-construction conditions inspections and survey. Any differences in findings between the pre-construction and post-construction inspections and surveys shall be specifically noted and recorded. Omissions in the reports, as determined by the Authority, shall be addressed by the Contractor at no additional cost to the Authority.

B. Field Measurements

1. Field surveys shall be performed to determine elevations of properties, including elevations of buildings and structures, before construction is started and after construction has been completed. Field surveys shall be performed within the areas specified in Paragraph 1.01.A.

2. At a minimum, the field surveys shall include:

   a. Corners of building and structure foundations on all sides of the building and structure.

   b. Intermediate points within the limits stated in (a) above, including doorways, construction and expansion joints, and other visible features.

   c. The location of each elevation shall be fully described in words and located and recorded on a field survey drawing of existing conditions.

   d. The field survey shall be performed under the supervision of and certified by a Land Surveyor licensed in the Commonwealth of Massachusetts. The results of each field survey shall be included with the submission of each conditions survey.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01400

QUALITY CONTROL TESTING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes furnishing testing services for materials by independent testing companies and independent testing laboratories as specified herein and in other sections of Contract Documents.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals.

B. Section 03600 – Grout.

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals:

1. Qualifications of testing companies and laboratories, and schedule for testing, prior to starting testing services.

2. Written reports of tests and engineering data of materials proposed to be used in the Work within two (2) calendar-days of each test performed.

3. Two (2) copies of a written report within two (2) calendar-days of each test performed by laboratory personnel in field or in laboratory.

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS

A. Independent testing companies shall have been in business of providing quality control testing services of similar scope and complexity as the quality control services to be provided under this contract for the last five (5) consecutive years.

B. Independent commercial testing laboratories, with current certification from the Commonwealth of Massachusetts, shall perform all tests that require services of a laboratory to determine compliance with Contract Documents.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Furnish sample materials, personnel and facilities for testing activities.

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

PART 2 **PRODUCTS (NOT USED)**

PART 3 **EXECUTION**

3.01 APPLICATION

A. General

1. Furnish all testing services of materials proposed to be used in Work and quality control tests made in field, including:

   a. Grout per Section 03600 – Grout.

   b. All other tests and engineering data specified for the Authority's review of materials proposed to be used in the Work.

2. Notify the Authority forty-eight (48) hours prior to inspections and laboratory testing services, so that the Authority may witness testing. All failed test areas shall be reworked and retested, by the Contractor, until passing results are obtained at no additional cost to the Authority.

B. Testing Services Furnished by the Authority:

1. The Authority reserves the right to hire its own testing laboratories for quality control tests made in field or laboratory on materials and equipment during and after their incorporation in Work.

**** END OF SECTION ****

SECTION 01500

TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes furnishing, installing and operating temporary controls during construction for noise, dust, debris and clean up, and air pollution control.

1.02 RELATED SECTIONS

A. Section 01562 – Dust Control.

B. Section 01565 – Noise Control.

1.03 CODES AND STANDARDS

A. United States Environmental Protection Agency (USEPA) Publication:

1. 430/9-73-007 Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity.

B. Chapter 21, Section 42 of the Massachusetts Clean Water Act of the Massachusetts General Laws, as amended.

1.04 SUBMITTALS (NOT USED)

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 APPLICATION

A. Noise Control:

1. All Work, including machinery, shall not exceed applicable noise limits. Comply with Section 01565 – Noise Control.

B. Dust Control:

1. Prevent dust in accordance with Section 01562 – Dust Control.

C. Debris and Clean Up:

1. Keep premises free at all times from accumulation of waste materials and rubbish. Legally dispose of construction debris. Leave the entire site of Work in a neat and orderly condition at the conclusion of Work on site.

D. Air Pollution Control:

1. Comply with applicable air pollution laws. Burning of trees, brush, and other combustible materials will not be permitted.

2. Provide trash receptacles about site, and empty containers daily.

3. Stack construction materials, such as concrete forms and scaffolding, when not in use.

4. Immediately remove splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solution from surfaces.

5. Wastes shall not be buried or burned on site.

3.02 REMOVAL

A. Remove temporary controls when approved by the Authority.

**** END OF SECTION ****

SECTION 01520

MAINTENANCE OF UTILITY OPERATIONS DURING CONSTRUCTION

PART 1 GENERAL

1.01 THE REQUIREMENT

A. The intent of this section is to outline the minimum requirements necessary to allow the Authority to continuously operate and maintain the 60-inch sewer interceptor which runs underneath the Alford Street Facility in order to remain in compliance with all permit requirements. The sewer will be maintained in continuous operation by the Authority during the entire construction period of all Contracts as hereinafter specified.

1.02 GENERAL CONSTRAINTS

A. The Contractor shall schedule the Work so that the existing 60-inch sewer interceptor is maintained in continuous operation.

B. Any temporary work, facilities, roads, walks, protection of existing structures that may be required within the Contractor's work limits to maintain continuous and dependable operation of the sewer interceptor shall be furnished by the Contractor at the direction of the Authority at no extra cost to the Authority.

C. The Authority shall have the authority to order Work stopped or prohibited that would, in its opinion, unreasonably result in interrupting the necessary functions of the sewer interceptor.

D. If the Contractor impairs performance or operation of the sewer interceptor as a result of not complying with specified provisions for maintaining utility operations, then the Contractor shall immediately make all repairs or replacements and do all work necessary to restore the sewer to operation to the satisfaction of the Authority. Such work shall progress continuously to completion on a twenty-four (24) hours per day, seven (7) work days per week basis.

E. The Contractor shall provide the services of emergency repair crews on call twenty-four (24) hours per day to affect repairs to portions of the sewer affected by the Contractor’s operations.

1.03 GENERAL OPERATING REQUIREMENTS, CONSTRAINTS, AND CONSTRUCTION REQUIREMENTS

A. Access to Pump Station Site, Roadways, and Parking Areas

1. An unobstructed traffic route shall be maintained at all times for the Authority's operations personnel and maintenance equipment. Parking for personal vehicles of construction personnel shall not be allowed within the fence of the Alford Street Facility. Construction personnel may park on City property outside the Alford Street Facilityfence in areas approved by the Authority. The Contractor shall be responsible for providing access to and for preparing and maintaining/approved parking areas.

2. An unobstructed traffic route around the Alford Street Facility site shall be maintained at all times for the Authority's operations personnel and maintenance equipment. Vehicular access to the Alford Street Facility for Authority personnel shall be maintained at all times by the Contractor.

3. The Contractor shall repair any damage to existing paved surfaces that occurs during the construction period. Any areas disturbed along the shoulders of the access road and interior roads and elsewhere inside and outside of the Alford Street Facility shall be repaired, graded, seeded, etc. as necessary to match pre-existing conditions.

4. The Contractor shall not undertake the restoration/construction of new roadway (paved, gravel, or asphalt overlay) shown on the Contract Drawings, until all other work has been completed.

B. Personnel Access

1. Authority personnel shall have access to all areas which remain in operation throughout the construction period. The Contractor shall locate stored material, dispose of construction debris and trash, provide temporary walkways, and other such work as directed by the Authority to maintain personnel access to areas in operation.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01541

SAFETY AND PROTECTION OF PROPERTY

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes performing work within rights-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.

B. Provide labor, materials and equipment to maintain in continuous service existing oil and gas pipelines, underground power, telephone and communication cable, water lines, drains, sewers, irrigation lines, poles and overhead power, telephone and communication cables, and other utilities encountered along the line of work, unless other arrangements satisfactory to owners of said utilities have been made.

C. Keep fire hydrants and water control valves free from obstruction and available for use at all times.

D. Notify property owners and utility offices which may be affected by the construction operation at least five (5) work-days in advance.

E. Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to work, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible.

F. Do not impair operation of existing sewer systems. Prevent construction material, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, or other sewer structures. Maintain original site drainage wherever possible.

G. Provide barricades and lights in work areas to:

1. Prevent unauthorized entry to construction areas;

2. Provide for public safety and the safety of Contractor’s employees, other employer’s employees, and others who may be affected by the Work;

3. Protect existing facilities and adjacent properties from potential damage; and

4. Enable access by facility operators and property owners.

1.02 RELATED SECTIONS (NOT USED)

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS (NOT USED)

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 ATTACHMENTS (NOT USED)

**** END OF SECTION ****

SECTION 01561

PEST CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes providing pest (rodent) control services within and adjoining all exterior work areas, including: within the Contractor's staging, laydown and trailer areas indicated on the Contract Drawings; within the area extending 100 feet in each direction beyond the outside perimeter of the Contractor's staging, laydown and trailer areas; at all areas of excavation; and within the area extending 100 feet in each direction beyond the areas of excavation. Pest control measures shall not be installed in wetlands areas or National Heritage and Endangered Species Program (NHESP) Priority Habitat areas.

1. Develop and implement an Integrated Pest Management (IPM) approach. This IPM effort shall consist of an initial program that achieves control of existing pests prior to any work on site followed by a maintenance program.

2. Provide control in the form of tamper-resistant pest stations at all manholes, structures and catch basins.

B. Furnish all labor, equipment, materials and supervision, and maintain and submit records as specified.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals

1.03 CODES AND STANDARDS

A. National Pest Management Association (NPMA):

1. NPMA Guidance

B. Massachusetts Pesticide Board:

1. 333 CMR 10.00 - Certification and Licensing of Pesticide Applicators

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals:

1. Within twenty (20) working days after the Notice to Proceed (NTP), submit a pest control procedure specifying:

a. Pesticide product data with application rates. Provide product labels and Safety Data Sheets and pesticide manufacturer's U.S. Environmental Protection Agency (EPA)-approved pesticide label with application directions for all pesticides proposed for use.

b. Pesticide applicator certifications and licenses.

c. Written description of proposed pest control procedures, indicating materials, quantities, methods, and time schedule, after performing the survey specified in Paragraph 3.02 and before initiating baiting.

d. Map showing, and labeling with a unique ID, bait stations in manholes, structures and catch basins where pest baits are being maintained, after the initial bait installation and weekly thereafter.

e. Method of monitoring program effectiveness based on consumption of bait and visual inspections of site conditions.

f. Weekly - data sheets with locations of sites treated by ID, including date, placement, amounts and type of pesticide used, number and types of traps set, survey and inspection results, changes in pet activity, sanitation conditions, complaint calls investigated (including location, contact person, inspection results and actions taken), and problems.

g. Monthly - written summary that includes determinable results of the IPM program and recommendations.

2. Within ten (10) days after the end of every month, submit a report with the following for the prior month:

a. Work performed.

b. Materials used.

c. Placement procedures.

d. Quantity of pesticides used.

e. All documentation required in this Section.

f. Any additional findings, observations and recommendations.

1.05 QUALITY ASSURANCE

A. Methods shall be in accordance with National Pest Management Association (NPMA) recommended procedures. Pest control shall be performed by a Certified Pesticide

Applicator (CPA), licensed by the Commonwealth of Massachusetts Department of Agricultural Resources Pesticide Program as a Certified Pesticide Applicator in the categories of General Pest Control and Vertebrate Pet Control.

B. CPA personnel shall be identifiable through uniform work clothes and photo identification, as well as pesticide certification/license.

C. Baiting shall be performed according to the rodenticide labeling as approved by the EPA and the Massachusetts Department of Agricultural Resources.

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

PART 2 PRODUCTS

2.01 MATERIALS

A. The CPA shall supply all pesticides and supplies for this program. Only pesticides that do not pose a secondary poisoning risk to birds of prey and non-rodent mammals shall be used.

B. The CPA shall use the following EPA-approved and Massachusetts-registered toxicants or equal:

1. Anticoagulants (Single Dose):

a. Bromadiolane

b. Brodifacoum 0.005%

2. Tracking powders:

a. Zinc Phosphate

b. Calcium Salt of 2-Isovaleryl, 3-Indandione 2.18%

C. Materials shall be used in strict accordance with EPA-approved label directions, applicable state and local regulations, and NPMA-recommended procedures.

D. Post the EPA-approved treatment for exposure to the pesticides being used at the entrance to each baited structure and at each gate leading to the area where pesticide is used.

2.02 EQUIPMENT

A. Bait stations shall be tamper-proof.

PART 3 EXECUTION

3.01 GENERAL

A. Baiting shall include a start-up (pre-construction) baiting program followed by a maintenance-baiting program that lasts until completion of Work on site for the areas identified in this Section.

1. Thirty (30) to forty-five (45) days prior to any work on site:

a. Inspect areas. Investigate signs of pest activity and perform corrective treatment if necessary.

b. Perform baiting treatment. Method of applications shall be consistent with pesticide label directions for use.

2. One (1) week after 1st service (2nd service follow-up):

a. Reinspect areas. Investigate signs of pest activity and perform corrective treatment if necessary.

b. Perform baiting retreatment.

3. Every two (2) weeks after 2nd service (periodic service/maintenance throughout Work):

a. Reinspect areas. Investigate signs of pest activity and perform corrective treatment if necessary.

b. Perform baiting retreatment.

4. Immediately after conclusion of work on site:

a. Retrieve pesticides and pest control equipment in accordance with NPMA recommended procedures.

3.02 START-UP

A. The CPA shall begin pest control baiting within five (5) working days of the completion of the review of the pest control procedure specified in this Section.

B. The start-up of baiting shall include a pre-construction survey of surface pest activity and sanitation deficiencies. The CPA shall locate pest stations where pests:

1. Are active.

2. May frequent, including, but not limited to, dumpsters and trash collection areas.

3. May potentially infest, such as low-lying shrubs, soft soils, areas with debris and rubble.

C. All bait applications shall be made based upon activity levels and distribution of pest control populations.

D. No on-site project activity shall take place until start-up baiting program is complete and a pest-free construction site has been established.

3.03 BAIT STATIONS

A. Control shall include baiting of all active rat burrows and shall include the use of tamper-resistant bait stations.

B. Bait placements and bait stations shall be:

1. Placed to minimize exposure.

2. Identified with the name of the CPA.

3. Dated and individually numbered.

4. Secured to prevent unauthorized removal.

C. Bait stations shall be baited with an uninterrupted supply of pesticide bait or non-toxic monitoring bait unless instructed otherwise by the product label.

D. Traps shall be used where appropriate, using snap traps, glue boards, and/or live catch traps.

3.04 MAINTENANCE

A. In accordance with the schedule of Paragraph 3.01 the CPA shall:

1. Inspect every two (2) weeks bait stations and traps, including subsurface structures, established during start-up as well as additional stations and traps provided during the maintenance phase.

2. Monitor pest activity. Make adjustments to the placement of bait stations, and provide and locate additional bait stations, responding to changes in pest populations and any pest-related complaints.

3. Monitor sanitation conditions. Identify potential harborage and food sources available to pests on the construction site. Identify areas with sanitation conditions or structural deficiencies that violate state or local sanitary codes.

B. Replace or repair any damaged stations.

C. Remove and dispose of carcasses in accordance with Commonwealth of Massachusetts Public Health Regulations and shall refill traps and bait stations.

D. In locations where no pests are present, the place non-toxic monitoring baits to monitor for new pest activity.

E. Where and when pests are present, use an uninterrupted supply of bait unless instructed otherwise by the product label.

F. Continue maintenance until completion of all Work.

3.05 RECORDS

A. Records shall be kept as required by 333 CMR 10.14.

B. The CPA shall maintain copies of records for each of the following items using forms reviewed by the Authority.

1. Bait station and trap locations, updated monthly, with a unique identification number assigned to every trap location including every burrow, bait station, manhole and catch basin.

2. Pest activities and sanitation conditions at the bait stations and traps, including the amount of bait placed and consumed at each baiting location.

3. Reported pest movements and sightings, and all complaints received and investigated. This includes location, contact person, inspection results and actions taken.

4. Recommendations for pest control measures for the upcoming month.

3.06 COMPLAINT CALLS

A. Immediately notify the Authority of pest-related complaints from the adjacent areas. Immediately respond to pest-related complaints received from the Authority, and, with Authority approval, to pest-related complaints received from the adjacent areas. Inspect the particular premises and adjacent areas for sanitation and structural deficiencies and also for signs of historic and recent pest activity. Use pesticides or traps as necessary and appropriate to resolve each complaint.

**** END OF SECTION ****

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SECTION 01562

DUST CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Take necessary measures to control dust.

B. Sprinkle water at locations and in such quantities and at such frequencies as may be required by the Authority to control dust and prevent it from becoming a nuisance.

C. Dust control and cleaning measures shall be provided at no additional cost to the Authority.

1.02 RELATED SECTIONS

A. Section 01567 – General Environmental Controls

1.03 CODES AND STANDARDS

A. United States Environmental Protection Agency Publication (EPA):

1. 430/9-73-007 Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity

B. Massachusetts Department of Environmental Protection (DEP):

1. 310 CMR. 7.00 Air Pollution Control

1.04 SUBMITTALS (NOT USED)

1.05 QUALITY ASSURANCE

A. Control dust generated through the course of the Work or caused by operation and movement of vehicles and equipment in accordance with the latest EPA, DEP and OSHA standards, and all other applicable federal, state and local regulations.

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 DESIGN CRITERIA

A. Provide dust control during normal working hours, and, subject to the Authority's approval, outside of normal working hours. Provide and utilize the application of water, or other methods subject to the Authority's approval, when visible dust is present on site, in accordance with Section 01567 – General Environmental Controls.

1. Water for dust control: Obtain permits, pay fees, and perform work in accordance with the requirements of the utility owner, including installing flow meters and backflow preventers, associated with providing water for dust control.

B. Operations shall include air monitoring and dust minimization measures, consistent with Section 01567 – General Environmental Controls.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 APPLICATION

A. Dust Control:

1. Prevent dust.

a. Keep earth surfaces subject to dusting moist with water. Do not use calcium chloride for dust control. Water utilized for dust control on exposed soil shall be applied with suitable equipment, such as tank trucks, tanks, pipelines or other devices capable of applying a uniform spread of water over the surface receiving treatment. The equipment shall have a suitable device for shut-off and regulating the flow of water to permit positive operator control.

b. Cover materials in piles or in transit to prevent blowing.

c. Maintain as much of the existing vegetation as is practicable in non-paved areas.

d. Portable rock crushers where allowed and utilized shall be equipped with fine water sprays to control dust.

**** END OF SECTION ****

SECTION 01565

NOISE CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes requirements to minimize construction noise in the communities adjacent to the construction site. The Contractor and all subcontractors, suppliers and vendors shall comply with all applicable noise regulations, specification requirements and the noise level limits specified herein. In the event of conflict between the applicable noise regulations and the requirements of this Section, the more restrictive requirements shall apply.

B. This Section specifies requirements for a Noise Control Plan, equipment noise testing and response to public complaints. An Acoustical Engineer, meeting the requirements of this Section, employed by the Contractor shall oversee all requirements of this Section.

C. Compliance with this Section shall require the use of equipment with efficient noise reduction devices or the construction of temporary noise barriers.

1.02 RELATED SECTIONS

A. Section 01060 – Permits and Regulatory Requirements

B. Section 01090 – Reference Standards

C. Section 01100 – Hazardous Material Abatement

D. Section 01300 – Submittals

E. Section 01400 – Quality Control Testing

F. Section 01500 – Construction Facilities and Temporary Controls

G. Section 01600 – Control of Material

1.03 CODES AND STANDARDS

A. Society of Automated Engineering (SAE):

1. Standard J994: Alarm – Backup – Electric Laboratory Performance Testing

B. American Society for Testing and Materials International (ASTM):

1. ASTM E413 - Classification for Rating Sound Insulation

C. American National Standards Institute (ANSI):

1. S1.4: Specifications for Sound Level Meters

D. Massachusetts Department of Environmental Protection (DEP):

1. 310 CMR 7.10

E. City of Boston

1. Boston Municipal Code 16-26 regulations for the control of noise.

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals:

1. Qualifications and work experience of the Acoustical Engineer for review prior to preparing the Noise Control Plan, performing any noise monitoring, or initiating any construction activity.

2. A Noise Control Plan for review and acceptance within sixty (60) days of the Notice to Proceed and prior to initiating any construction activity on site as specified in Paragraph 3.02 of this Section.

3. Working drawings, computations and other data for noise abatement measures identified in the Noise Control Plan.

4. Acoustical evaluations for review prior to construction on site.

5. Design drawings and specifications for any required noise control treatments.

1.05 QUALITY ASSURANCE

A. Provide Quality Control and Testing in accordance with Section 01400 – Quality Control Testing.

1.06 QUALIFICATIONS

A. Acoustical Engineer:

1. Bachelor of Science or higher degree from a program in engineering, physics or architecture offered by an accredited university or college, and at least five (5) years' experience in noise control engineering and construction noise analysis on projects of similar size and complexity as the noise control services to be furnished under this Contract during the past ten (10) years or current enrollment as a full Member or Board-Certified Member of the Institute of Noise Control Engineering (INCE).

2. Five (5) years' experience in preparing and implementing construction noise controls and monitoring plans on construction projects, calculating construction noise levels, and designing and overseeing the implementation of construction noise abatement measures.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Section 01600 – Control of Materials.

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS

A. Noise - Any sound, which has the potential to annoy or disturb humans, or to cause an adverse psychological or physiological effect on humans.

B. Noise-Sensitive Receptors - Shall mean locations where particular sensitivity to noise exists, such as residential areas, institutions, hospitals, parks and other locations so named herein.

C. Nuisance Noise - Refers to sound that annoys or disturbs a reasonable person of normal sensitivity, but that does not exceed the noise limits specified herein.

D. Lot-line - Refers to the line separating a parcel of land from another parcel or from the street.

E. A-Weighted Sound Level - Shall be defined as the sound level as measured using the A-weighting network on a sound level meter complying with the criteria for a Type 1 (Precision) or Type 2 (General Purpose) Sound Level Meter, as defined in the current revision of ANSI Standard S1.4. Unless otherwise specified, the SLOW setting on the sound level meter shall be used to measure the A-weighted sound level.

F. dBA - Shall be defined as the sound level (in decibels referenced to 20 micropascals) as measured using the A-weighting network on a sound level meter.

G. Lmax - Shall be defined as the maximum measured A-weighted sound level.

H. Leg - Shall be defined as the A-weighted equivalent sound level, or the continuous sound level that represents the same sound energy as the varying sound levels over a specified time period.

I. L10 - Shall be defined as the A-weighted sound level exceeded 10% of the time for a specified monitoring period.

1.10 TOLERANCE (NOT USED)

PART 2 PRODUCTS

2.01 NOISE CONTROL MATERIALS AND EQUIPMENT

A. Noise control materials may be new or used. Used materials shall be of a quality and condition sufficient to perform their designed function. Used materials shall be free of physical damage, graffiti and inconsistent surface appearance, including inconsistent color, and shall show minimal wear from prior use.

B. Noise control materials and equipment include:

1. Shields, shrouds, or intake and exhaust mufflers.

2. Noise-deadening material to line hoppers, conveyor transfer points, storage bins or chutes.

3. Noise barriers, and enclosures with insulated panels.

2.02 CONSTRUCTION EQUIPMENT

A. Use only equipment that will meet the noise limits referenced in Paragraph 3.05 of this Section.

B. Vehicles and mobile equipment used on the construction site shall be equipped with audible, self-adjusting backup alarms with a minimum increment above the background noise level (i.e. 5 dBA) and minimum operating range (i.e. 77 dBA to 97 dBA) sufficient to satisfy the performance requirements of the current revisions of SAE Standard J994 and OSHA requirements.

PART 3 EXECUTION

3.01 NOISE LEVEL LIMITATIONS

A. Lot-Line Construction Noise Limits:

1. Construction activities shall be conducted in such a manner that the noise levels from these activities, as measured at the nearest property line, are in compliance with the limits identified in Table 01565-1, attached to this Section.

2. Conduct measurements of sound levels at least weekly at the lot lines closest to the work to verify compliance with the limits specified in Table 01565-1, attached to this Section. The measurements shall be of sufficient duration to be representative of the construction activities of concern.

3. In the event that any measurements indicate that the lot-line noise limits are exceeded, within twenty-four (24) hours, take actions to correct these violations at no additional cost to the Authority.

B. Construction Equipment Noise Limits:

1. Use only equipment that, operating under full load, meets the noise limits specified in Table 01565-2, attached to this Section, when measured according to the test procedures specified in Paragraph 3.05 of this Section.

2. If the existing equipment on site does not meet the noise emission limits specified in Table 01565-2, attached to this Section, or falls out of compliance, remove the equipment from service or take remedial action to comply with these specifications at no additional cost to the Authority.

3.02 NOISE CONTROL PLAN

A. The Noise Control Plan shall describe the procedure for predicting the construction noise levels prior to performing construction activities and shall describe the noise reduction measures required to meet the noise level limits and to minimize nuisance noise conditions. The plan shall be prepared by and bear the signature of the Contractor's Acoustical Engineer and shall be submitted to the Authority as specified in Paragraph 1.04.C of this Section. The Authority's acceptance of the plan is required prior to any construction activity. Noise abatement measures that are specified in the plan shall be implemented prior to any construction activity.

B. The Plan shall include:

1. Construction Activities: A description of the construction activities that will contribute to noise levels at lot lines. Specific activities include grouting, power generation, and ground water pumping.

2. Site Sketch: A sketch of the construction site indicating the following:

a. The Contractor's name and contract number, date, scale, legend of the symbols and direction of North.

b. Noise-Sensitive Receptors near the construction site.

c. Construction equipment locations designated by the code letter used in Column (a) in Part A of the Noise Control Plan Form (Table 01565-1, attached to this Section).

d. Locations of the noise levels calculated for Noise-Sensitive Receptors.

e. Locations and types of noise abatement measures that will be implemented to meet the noise limits based on the calculation procedures that are detailed later in this Section.

3. Equipment Inventory: Prepare an equipment inventory by providing the following information in the provided columns of Noise Control Plan Form, Part A (Table 01565-1, attached to this Section):

   a. Column (a): Code letter in sketch to indicate position of equipment on site.

   b. Column (b): Appropriate equipment category from Table 01565-2, attached to this Section.

   c. Column (c): Equipment manufacturer and model.

   d. Column (d): Unique identifier (ID), such as registration number.

   e. Column (e): Horsepower rating of equipment.

   f. Column (f): Noise emission limit from Table 01565-2, attached to this Section. Noise emission levels lower than those in Table 01565-2, attached to this Section, can be substituted for specialized equipment or for uniquely silenced equipment. For all cases where lower noise emission levels are used, documentation from the equipment manufacturer or measurements using the procedures of Paragraph 3.05 herein and approved by the Authority must be submitted with the Noise Control Plan. These equipment items are subject to the on-site Equipment Noise Testing requirements in Paragraph 3.05 of this Section.

   g. Column (g): Estimated noise level at 50 feet; if greater than the limit, noise reduction measures will be required.

   h. Column (h): Estimated date of first use on site.

   i. Column (i): Estimated date of last use on site.

4. Noise Calculations: The Acoustical Engineer shall prepare calculations of Lmax, Leq and L10 noise levels expected at the nearest Noise-Sensitive Receptor lot lines based on the equipment noise levels given in Part A of the Noise Control Plan Form. The calculations shall be made for locations where the noise emitted by applicable equipment will cause the highest lot-line noise levels. The results shall be provided in Part B of the Noise Control Plan Form (Table 01565-2, attached to this Section) with calculations attached and the locations for the calculations indicated on the site sketch. The calculation procedure shall be as follows:

a. Calculate Lmax:

i. Calculate the maximum construction noise level at each lot-line location for each item of equipment using the following equation.

$$Lmax(equipment) = EL - 20 \log_{10} (D/50) - A_e$$

Where:

EL is the estimated equipment noise level at 50 feet, in dBA.

D is the distance from the equipment to the lot-line location, in feet.

A_e is the site-specific excess attenuation due to barrier effects. The procedure used to estimate excess attenuation shall be identified.

ii. Combine the individual contributions of the two noisiest equipment items to obtain the overall maximum noise level at each location as follows:

$$Lmax(overall) = 10 \log_{10} \{10^{[(Lmax(equip1)(10)]} + 10^{[Lmax(equip2)/10]}\}$$

Where:

Lmax(equip1) is the maximum noise level for the noisiest piece of equipment, in dBA.

Lmas(equip2) is the maximum noise level for the second noisiest piece of equipment, in dbA.

b. Calculate Leg:

i. Calculate the construction Leq at each lot-line location for each equipment item using the following equation:

$$Leg(equipment) = EL - 20 \log_{10}(D/50) + 10 \log_{10}(UF) - A_e$$

Where:

EL is the estimated equipment noise level at 50 feet, in dBA.

D is the distance from the equipment to the lot-line location, in feet.

UF is the "usage factor", expressed as the fraction of time that the equipment is operated at full power while on site. The Contractor and/or the Acoustical Engineer shall estimate this factor. Guidelines for the selection of usage factors are provided by the U.S. Environmental Protection Agency ("Noise

From Construction Equipment and Operations, Building Equipment and Home Appliances", EPA Report NTID 300.1, December 31, 1971).

A_e is the site-specific excess attenuation due to barrier effects. The procedure used to estimate excess attenuation shall be identified.

c. Calculate L10:

L10(overall) = Leq(overall) + 3 dBA

i. Compare the calculated Lmax and L10 values with the limits referenced in Paragraph 3.01.A of this Section.

d. Update and re-submit the Noise Control Plan upon any change in construction methods or equipment from the original Noise Control Plan.

e. Noise Abatement Measures: If the results of the noise calculations prepared in accordance with Paragraph 3.02.B.4 indicate that noise level limits referenced in Paragraph 3.01.A will be exceeded, identify proposed noise abatement measures, their anticipated effects (dBA reductions) and a time schedule for their implementation to ensure noise levels do not exceed the limits. Recalculate the noise levels at the nearest Noise-Sensitive Receptor lot lines, incorporating the anticipated noise reduction effects, and submit the results on Part B of the Noise Control Plan Form. Include, as backup documentation to Part B of the Noise Control Plan Form, drawings, sketches and calculations that demonstrate the anticipated noise reduction benefits and compliance with the noise level limits referenced in Paragraph 3.01.A, and that proposed structures or facilities comply with applicable code requirements.

3.03 NOISE CONTROL MEASURES:

A. Apply noise reduction methods to minimize construction noise emissions and to not exceed the noise limits of Table 01565-1, attached to this Section.

B. Potential noise control measures include, but are not limited to:

1. Installing and maintaining effective intake and exhaust mufflers on all equipment, particularly pneumatic impact tools.

2. Equipping noise-producing equipment with acoustically attenuating shields, shrouds or enclosures.

3. Scheduling truck loading, unloading and hauling operations so as to minimize noise.

3.04 COMPLAINT PROCEDURE

A. The objective of the complaint procedure is to ensure that Authority and public complaints are addressed and resolved consistently and expeditiously.

B. Upon receipt of an external complaint regarding construction noise, immediately notify the Authority.

C. Upon receipt or notification of a noise complaint, perform noise measurements at the complainant's location during activities representative of the offending operation.

D. Take all necessary actions to resolve noise complaints promptly, in accordance with the Contractor's Noise Control Plan and the requirements of this Section at no additional cost to the Authority.

3.05 EQUIPMENT NOISE TESTING

A. General: The test procedures in Paragraph 3.05.B shall be used if at any time the Authority requests that any piece of equipment on the construction site be tested to demonstrate compliance with the equipment noise limits in Table 01565-2, attached to this Section. This procedure shall also be used when the Contractor makes a request to use equipment noise levels other than those in Table 01565-2, attached to this Section, in the calculations for the Noise Control Plan.

B. Test Procedures for Construction Equipment.

1. When noise level testing is requested by the Authority, locate and operate the equipment at the location designated by the Authority.

2. All engine-powered equipment shall be operated at high idle (maximum governed rpm) under full load conditions during the test.

3. The noise measurement shall be for a minimum period of one (1) minute.

4. If possible, measurements shall be made at 50 feet (±2 feet) from the equipment casing, at a height of 5 feet above ground level.

5. Measurements made at less than 50 feet, because of space limitations at the test site, shall be reduced by the values given in Table 01565-3, attached to this Section, to estimate the 50-foot sound level.

C. Non-Compliance: If the noise levels obtained during the tests exceed those specified in Table 01565-2, attached to this Section, modify or alter such equipment, or substitute other equipment, and repeat the test to confirm that the noise requirements are met before placing the equipment back into service at no additional cost to the Authority.

D. Tables 01565-1 through 3 and Figures 01565-1 through 2 follow and are included as part of this Section**.**

Table 01565-1. LOT-LINE CONSTRUCTION NOISE LIMITS (c)

Noise Monitoring Location Land Use	**L10 Limit (dBA)**	**Lmax Limit (dBA)**
Noise-Sensitive Receptors	75 (a)	85 (a); 90 (b)
Commercial Receptors	80 (a)	NA
Industrial Receptors	85 (a)	NA

Notes:

(a) Measured at any point along the lot line, but no closer than 50 feet from any construction equipment, noise from impact devices is exempt from this requirement.

(b) Measured at any point along the lot line; noise from impact devices is not exempt from this requirement.

(c) For continuous operation of equipment reference Paragraph 1.04 D.

Table 01565-2. CONSTRUCTION EQUIPMENT NOISE EMISSION LIMITS

Equipment Category	**Lmax Limit at 50 Feet (dBA)**
Auger Drill Rig	86
Backhoe	80
Bar Bender	80
Chain Saw	86
Compactor	80
Compressor	70
Concrete Mixer	86
Concrete Pump	82
Concrete Saw	90
Conveyor	75
Crane	86
Dozer	86
Excavator	86
Front End Loader	80
Generator	82
Grader	86

Impact Pile Driver	95
Jackhammer	88
Mounted Impact Hammer	95
Paver	86
Pneumatic Tools	86
Pumping Equipment	65
Scraper	86
Tractor	84
Truck	84
Ventilation Fans	65
Vibrator	80
Vibratory Pile Driver	95
All Other Equipment with Engines Larger than 5 HP	86

Table 01565-3. ADJUSTMENTS FOR CLOSE-IN EQUIPMENT MEASUREMENTS

Measurement Distance (Feet)	**Values to be Subtracted From Measured Sound Level to Estimate Sound Level at 50 Feet (dBA)**
19-21	8
22-23	7
24-26	6
27-29	5
30-33	4
34-37	3
38-42	2
43-47	1
48-50	0

Figure 01565-1. NOISE CONTROL PLAN FORM, PART A

NOISE CONTROL PLAN

(Duplicate as Needed)

Contract No.: _____ Contract Name: _____

Contractor:

Site: _____ Date: _____

PART A: EQUIPMENT INVENTORY (Attach Site Sketch)

Code Letter (a)	Equipment Description				Noise Limit (f)	Estimated Noise at 50 ft. (g)	Begin Date (h)	End Date (i)
	Category (b)	Model (c)	ID (d)	HP (e)				

Figure 01565-2. NOISE CONTROL PLAN FORM, PART B

NOISE CONTROL PLAN

(Duplicate as Needed)

Contract No.: _____ Contract Name: _____

Contractor: _____ Site: _____

Date: _____ Land Use: _____

PART B: LOT-LINE NOISE LEVELS

Time Period		Calculated Noise Levels (dBA)		Noise Level Limit (dBA)	
Start	End	L10	Lmax	L10	Lmax

NOISE ABATEMENT MEASURES ANTICIPATED EFFECTS

**** END OF SECTION ****

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SECTION 01567

GENERAL ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes furnishing labor, materials and equipment and performing work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. Furnish physical plant, labor, equipment and materials and perform all operations in connection with the provision of general environmental controls.

C. Comply with all applicable federal, state and local laws and regulations concerning environmental pollution control and abatement.

D. Furnish and comply with permits in accordance with Section 01060 – Permits and Regulatory Requirements.

E. Implement and maintain dust control measures in accordance with Section 01562 – Dust Control.

F. Implement and maintain noise control measures in accordance with Section 01565 – Noise Control.

G. Install, maintain and remove erosion and sedimentation controls in accordance with Section 02276 – Erosion and Sedimentation Control.

1.02 RELATED SECTIONS

A. Section 01060 – Permits and Regulatory Requirements.

B. Section 01562 – Dust Control

C. Section 01565 – Noise Control

D. Section 02276 – Erosion and Sedimentation Control

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS (NOT USED)

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 NOTIFICATIONS

A. The Authority will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. Federal, state or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing directly or through the Authority of any non-compliance with federal, state or local requirements. Inform the Authority immediately of any such notice received directly from federal, state or local agencies. After receipt of such notice from the Authority, or from the regulatory agency through the Authority, or from the regulatory agency directly and after informing and with agreement of the Authority, immediately take corrective action. Such notice, when delivered to the Contractor, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Authority may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

B. Notification to Conservation Commission:

1. Notify the Authority forty-eight (48) hours prior to commencement of work on site. The Authority will notify the Boston Conservation Commission.

1.12 IMPLEMENTATION

A. Prior to commencement of the Work, meet with the Authority to develop mutual understandings relative to compliance with these provisions and administration of the environmental pollution control program.

B. Remove temporary environmental control features when approved by the Authority and incorporate permanent control features into the Project at the earliest practicable time.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 HAZARDOUS MATERIAL AND WASTE CONTROL

A. Disposal of volatile fluid wastes (such as hydraulic fluids, waste oil, gasoline, fuel or paint thinner) onto the ground, in storm or sanitary sewer systems, or into streams or waterways shall not be permitted. In the event that any such waste is spilled, immediately clean up the spillage and all contaminated soil, and dispose of the cleanings as hazardous waste material. If a spill occurs, the clean-up activities shall take precedence over normal construction activities in order that damage to the environment is minimized. Disposal of hazardous wastes shall be at no additional cost to the Authority.

B. All hazardous materials containers shall be marked and their contents identified. All fuel oil, lubricant, gasoline, and hydraulic fluid containers shall be fixed in place on the transport vehicle when the vehicle is in motion.

C. The work shall be in compliance with all federal, state, and local laws with respect to hazardous materials and clean-up and disposal operations shall comply with all applicable federal, state, and local statutes, regulations, ordinances and anti-pollution laws.

**** END OF SECTION ****

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SECTION 01590

TEMPORARY FIELD FACILITIES

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes furnishing all labor, materials and equipment necessary to provide temporary facilities as specified herein.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals.

B. Section 02832 – Temporary Fencing.

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals:

1. Construction Facilities Plan within ten (10) work-days from Notice to Proceed.

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS

A. Temporary Field Facilities shall be maintained and remain at site until completion of punchlist items. Authority's Project Office and contents shall remain the property of the Contractor.

B. Leave premises in a condition equal to pre-construction conditions.

C. Construction will not be allowed to commence until the Authority's Project Office has been established and fully functional with all Contract requirements met.

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 COMMUNICATIONS

A. Any communications given to the Contractor's representative or delivered to the Contractor's project office at site of Work in authorized representative's absence is deemed to have been delivered to the Contractor.

PART 2 PRODUCTS

2.01 MATERIALS

A. Contractor’s Project Office:

1. Provide storage space for drawings, specifications, permits, shop drawings, samples, field/laboratory test data and analyses, and other project related information.

2. Store documents in fire-proof, lockable cabinet.

3. Provide telephone service (cellular is acceptable).

B. Authority’s Project Office:

1. Office to be 20 feet in length and 8 feet in width.

a. Office exterior walls, floor and roof to be insulated.

b. Provide double thick-type constructed insulated floor.

c. Provide an office at each end of the trailer that is the full width of the trailer and 8 feet deep with a door to separate the office from the main section of the trailer. One office shall have a separate exit to the exterior; the other office shall exit to the main area.

d. Provide an insulated skirt around the outside of the trailer from the ground to the bottom of the trailer. Skirt shall be of the same exterior finish as the trailer.

2. Authority’s Project Office and all furniture and equipment to be clean and serviceable. Office to be provided with two (2) exterior exit doors, each with internal and external cylinder locks with two (2) keys. Provide stairs to doors meeting OSHA requirements.

3. Provide following built-in items:

a. One (1) air conditioner capable of maintaining ambient temperature of 72°F during summer.

b. Ten (10) electrical outlets and eight (8) lights.

c. Clothing closet and storage closet.

d. Toilet, in a separately enclosed room, ventilated and complying with applicable sanitary codes.

e. Supply of paper cups, paper towels, liquid soaps, and toilet paper; each with dispenser or holder.

f. Sink, with hot/cold running water. Provide a separate supply of potable water.

g. Two (2) smoke detectors at opposite ends of office in accordance with the State Building Code.

h. Heavy duty commercial type wall to wall brown rug flooring.

4. Provide following moveable items:

a. Three (3) flat-top moveable desks 60 inch by 30 inch with filing and lockable storage drawers.

b. Three (3) office chairs.

c. One (1) drafting stool.

d. Three (3) waste baskets.

e. One (1) four (4) drawer legal size, fire-proof filing cabinet with locks.

f. One (1) photocopying machine that allows reduction and enlargement and 8½ x 11, 8½ x 14, and 11 x 17 inch paper trays service and provide all necessary supplies including toner and paper.

g. Five (5) folding chairs.

h. One (1) table 40 inch by 96 inch.

i. Two (2) folding tables.

j. One (1) vertical filing plan rack with adjustable height and capacity for two (2) sets of 24 inch x 36 inch wide plans.

k. One (1) ten-pound (10 lb.) Class ABC fire extinguisher.

l. One (1) first aid kit, containing adhesive strips, gauze pads, triangular bandages, roll adhesive tape, antiseptic wipes, latex examination gloves, scissors, forceps, eye flush, cold pack, burn ointment, sting relief wipes and ibuprofen tablets.

m. One (1) bookcase, 84 inches high by 30 inches wide.

n. One (1) interior-mounted tack board, 36 inch by 24 inch.

o. One (1) drafting table, no less than 36 inch by 72 inch, with double storage cabinets underneath.

p. One (1) three cubic foot self-defrosting refrigerator with freezer compartment.

q. One (1) counter-top size microwave oven, 1 cubic foot minimum.

r. Potable drinking water and water cooler.

s. Four (4) 17-inch monitors.

t. Two (2) USB-Based Keyboards.

u. Two (2) USB-based optical 3-button mouse.

v. Two (2) docking stations compatible with Microsoft Surface.

w. Furnish, for the duration of the Contract, a reliable broadband Internet connection (High Speed or better) compatible with VPN. The broadband Internet connection shall have current, active, paid maintenance and support agreements for the duration of the Contract.

5. The Authority's Project Office shall be fully equipped with all furniture and equipment described above and available for occupancy prior to the first progress payment request.

C. Area for Office Trailers, Storage, Stockpiling and Staging

1. The area allocated for the Contractor's Project Office, parking, storage, stockpiling, and staging is indicated on the Contract Drawings as the Contractor Staging Area and Parking Area.

2. The area allocated for the Authority's Project Office is indicated on the Contract Drawings within the Alford Street Facility property boundary.

3. All site offices and the structures associated therewith shall be of a temporary nature. Confine trailers, equipment and material to the area allocated. The Contractor shall be wholly responsible for the security of all office trailers, storage boxes, and for all materials, equipment and tools at all times.

4. The Contractor is advised that allocation of the Contractor Staging Area is not to be taken as lasting for the period of the Contract and the Contractor may be required at

any time to relocate or reduce the area utilized as directed by the Authority, and at no additional cost to the Authority.

5. Any agreements made by the Contractor with outside parties for additional land for parking, storage, stockpiling, staging and/or other purposes associated with the Work must be made in writing, with a copy of the agreement/contract provided to the Authority.

6. The Contractor shall be responsible for providing access to and for preparing, maintaining and restoring the indicated Contractor Staging Area and any other approved areas.

D. Construction Facilities Plan

1. Submit a construction facilities plan showing the proposed locations of and procedures for providing within, to and for the Contractor Staging Area: travel ways, offices, parking, portable toilets, equipment, storage boxes, stockpiling, laydown, staging, fencing, lighting, electrical and communications lines, boxes, poles and connections, and water and sewer lines and connections.

2. Provide drawings of the Authority's Project office showing layout, furnishings, equipment and utilities.

3. Provide listing of furnishings, equipment and services to be provided in and for the Authority's Project Office.

4. Provide details of exterior security lights.

5. Layout to include minimum of two (2) parking spaces for the Authority.

PART 3 EXECUTION

3.01 ELECTRICITY

A. The Contractor shall provide power to the site for any use at the temporary field facilities. Connect and maintain temporary electrical service for the field offices and construction power in accordance with the Massachusetts Electrical Code, construction safety requirements of Occupational Safety and Health Administration and requirements of the Massachusetts Office of Public Safety and Inspections. Provide lighting to the temporary field trailers, work areas and areas accessible to the public.

B. Electrical equipment or material shall be UL approved for the application for which it will be subjected.

3.02 FIELD TRAILERS

A. Installation of the Authority's Project Office:

1. Install Authority's Project Office as indicated on the Contract Drawings.

B. Cleaning of the Authority's Project Office:

1. Perform at least weekly, and prior to each progress payment request:

a. Clean floors.

b. Clean and disinfect toilet facilities.

c. Checked and replenish supplies.

d. Remove trash when containers are full, and no less than weekly.

C. Installation of the Contractor's field office trailer:

1. Install the Contractor's project office at the same location as the Authority's Project Office.

2. Provide the Contractor's project office with water and sewer service.

3. Maintain copies of Contract Documents, permits, shop drawings, samples, field/laboratory test data and analyses and other project related information in the trailer and make available for use at all times.

D. Protection:

1. The Authority's and Contractor's project offices shall be enclosed by a temporary security fence in accordance with Section 02832 – Temporary Fencing.

2. Provide smoke detectors in accordance with local building codes.

3.03 TEMPORARY SANITARY FACILITIES

A. Furnish and install temporary sanitary facilities within the MWRA Alford Street Facility Site.

1. Sanitary facilities shall be located as indicated on the Contract Drawings.

2. Furnish at least one (1) sanitary facility for each twenty (20) workers if toilets of chemically treated type are used.

3. Service, clean, and maintain facilities and enclosures weekly. The contents shall be removed and legally disposed of in accordance with applicable regulations.

4. Enforce use of such sanitary facilities by personnel at Site.

5. Remove sanitary facilities upon completion of Work on Site.

3.04 MOWING VEGETATION AND REMOVAL OF CLIPPINGS AND DEBRIS

A. Mow vegetation and remove clippings and debris within the Contractor Staging Area until completion of work on Site.

B. Perform mowing such that growth does not exceed 2 inches.

C. Remove clippings immediately upon completion of mowing.

D. Maintain area free of leaves, sticks and other debris at all times.

E. Maintain area free of accumulation of waste materials and rubbish at all times.

3.05 REMOVAL OF TEMPORARY UTILITIES, FACILITIES AND CONTROLS, AND CLEANING

A. Prior to final Application for Payment:

1. Remove temporary utilities, equipment, facilities and materials.

2. Clean and repair damage caused by the installation or use of temporary utilities, facilities and equipment and restore site to original condition.

**** END OF SECTION ****

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SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 THE REQUIREMENT

A. Furnish and Install

1. Where the words "furnish", "provide", "supply", "replace", or "install" are used, whether singularly or in combination, they shall mean to furnish and install, unless specifically stated otherwise.

2. In the interest of brevity, the explicit direction "to furnish and install" has sometimes been omitted in specifying materials and/or equipment herein. Unless specifically noted otherwise, it shall be understood that all equipment and/or materials specified or indicated on the Contract Drawings shall be furnished and installed under the Contract as indicated on the Contract Drawings.

1.02 EQUIPMENT AND MATERIALS

A. All equipment, materials, instruments or devices incorporated in this project shall be new and unused, unless indicated otherwise indicated on the Contract Documents. Equipment and materials to be incorporated into the work shall be delivered sufficiently in advance of their installation and use to prevent delay in the execution of the work, and they shall be delivered as nearly as feasible in the order required for executing the work.

1.03 INSTALLATION OF EQUIPMENT

A. Equipment and materials shall be installed in accordance with the requirements of the General Conditions, Supplemental Conditions and the respective Specification Sections.

1.05 SUBSTITUTIONS

A. Requests for substitutions of equipment or materials shall conform to the requirements of the General Conditions, Supplemental Conditions, and as hereinafter specified.

1. The Contractor shall submit for each proposed substitution sufficient details, complete descriptive literature and performance data together with samples of the materials, where feasible, to enable the Authority to determine if the proposed substitution is equal.

2. The Contractor shall submit certified tests, where applicable, by an independent laboratory attesting that the proposed substitution is equal.

3. A list of installations where the proposed substitution is equal.

4. Requests for substitutions shall include full information concerning differences in cost, and any savings in cost resulting from such substitutions shall be passed on to the Authority.

B. Where the approval of a substitution requires revision or redesign of any part of the work, including that of other contracts, all such revision and redesign, and all new drawings and details therefore, shall be provided by the Contractor at his own cost and expense, and shall be subject to the approval of the Authority.

C. In all cases the Authority shall be the judge as to whether a proposed substitution is to be approved. The Contractor shall abide by their decision when proposed substitute items are judged to be unacceptable and shall in such instances furnish the item specified or indicated. No substitute items shall be used in the work without written approval of the Authority.

D. The Contractor shall have and make no claim for an extension of time or for damages by reason of the time taken by the Authority in considering a substitution proposed by the Contractor or by reason of the failure of the Authority to approve a substitution proposed by the Contractor.

E. Acceptance of any proposed substitution shall in no way release the Contractor from any of the provisions of the Contract Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01620

SIGNS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes furnishing, installing, and maintaining in clean condition project identification signs, informational signs, and portable variable message signs; and removing installed signs at completion of work on site.

B. Do not install or display signs of any kind other than those specified and indicated.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals.

1.03 CODES AND STANDARDS

A. American National Standards Institute (ANSI):

1. ANSI Z535.1 – American National Standard for Safety Colors

B. American Plywood Association (APA):

1. Product Standard PS-1 for Structural Plywood

C. American Wood Protection Association (AWPA):

1. AWPA U1 – User Specification for Treated Wood

D. American Society for Testing and Materials International (ASTM):

1. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

2. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.

3. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

4. ASTM B766 - Standard Specification for Electrodeposited Coatings of Cadmium

5. ASTM D4956 - Standard Specification for Retroreflective Sheeting for Traffic Control

E. Federal Highway Administration (FHWA):

1. Manual on Uniform Traffic Control Devices (MUTCD)

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals:

1. Product data for sign materials.

2. Shop drawings showing:

a. Dimensions and construction of signs.

b. Information to be displayed on project identification signs, informational signs, and portable variable message signs.

c. Locations where signs are to be installed.

1.05 QUALITY ASSURANCE

A. Finishes, painting and printing shall resist weathering and fading until completion of work on site.

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 SYSTEM DESCRIPTION

A. Project Identification Signs

1. At start of Work, furnish, install, and maintain on site where directed by the Authority, one (1) project identification sign:

a. Sign shall be 4 feet by 8 feet on two (2) support posts.

b. Sign information shall include:

i. Name of Project, Contract Number: Alford Street Facility Seawall Repair **Contract No. 8194.**

ii. Name of Owner: Massachusetts Water Resources Authority and emblem. (Authority will provide MWRA emblem.)

iii. Name of Design Consultant: Hazen and Sawyer

iv. Name of Construction Manager:

v. Name of Contractor.

vi. Contact telephone number:

1) Troy Wall, MWRA Public Affairs, 617-305-5762

vii. MA Wetlands Protection Act DEP File Number (as applicable)

viii. NPDES CGP File Number

c. Layout of Project Signs is indicated on the Contract Drawings.

2. Furnish, install and maintain an additional two (2) portable project identification signs 2 feet by 3 feet in size, each sign bearing the following information:

a. Name of Project and Contract Number: Alford Street Facility Seawall Repair **Contract No. 8194.**

b. Name of Owner: Massachusetts Water Resources Authority, and MWRA emblem. (Authority will provide emblem)

c. Name of Contractor.

d. Contact telephone number.

1) Troy Wall, MWRA Public Affairs, 617-305-5762

3. Place signs on site at locations as approved by the Authority.

B. Informational Signs

1. Furnish, install and maintain informational signs consisting of printed signs with printed lettering, or standard products:

a. Size of signs, colors and lettering shall be as required by ANSI Z535.

b. Provide job instruction signs, including "DANGER" and "KEEP OFF".

C. Portable Variable Message Signs:

1. At start of Work, furnish, install, and maintain in the locations indicated on the Contract Drawings.

1.12 MAINTENANCE

A. Maintain signs and supports in neat, clean and legible condition. Promptly repair damage to structures, framing or signs at no additional cost to the Authority.

B. Promptly remove graffiti from signs and display cases.

C. Maintain power to portable variable message signs.

PART 2 PRODUCTS

2.01 MATERIALS

A. Project Identification and Informational Sign Materials.

1. Structure and Framing: Pressure Treated Structural Lumber, pressure treated with waterborne preservative in accordance with AWPA U1.

2. Sign Surfaces: Overlaid plywood, using standard large sizes to minimize joints:

a. Overlaid Plywood: APA PS1, waterproof, resin-bonded, exterior type, medium density cellulose fiber overlay; APA species Group 4 or better, Grade E Ext-MDO-BB; minimum thickness ¾ inch to span framing members, to provide even, smooth surface without waves or buckles.

3. Wrought Hardware: Galvanized steel.

4. Bolts and Nuts: ASTM A307, Thread Type UNS: galvanized ASTM A153, cadmium plated ASTM B766, or zinc plated ASTM B633 Service SC-4.

5. Wood Screws: 18-8 stainless steel or brass.

6. Nails: Galvanized steel or aluminum coated steel.

PART 3 EXECUTION

3.01 PREPARATION

A. Project Identification Signs and Informational Signs

1. Paint exposed surface of supports, framing and surface material: one (1) coat of primer and one (1) coat of exterior white paint.

2. Print graphics in styles, sizes and colors selected.

3.02 GENERAL

A. Project Identification Signs, Informational Signs and Portable Variable Message Signs:

1. Maintain signs in good condition and remove upon completion of work on site.

**** END OF SECTION ****

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SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes requirements for contract closeout, including but not limited to final inspection, punchlisting and final payment.

1.02 RELATED SECTIONS

A. Section 01050 – Field Engineering

B. Section 01300 – Submittals

1.03 CODES AND STANDARDS (NOT USED)

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals:

1. When the Work is complete, submit written certification that:

a. Contract Documents have been reviewed.

b. Work has been inspected for compliance with the Contract Documents.

c. Work has been completed in accordance with Contract Documents.

d. Work is complete and ready for final inspection.

2. At contract close-out, deliver the following to the Authority:

a. Project Record Documents:

i. Project Redline Drawings as defined in Section 01050 – Field Engineering

ii. Specifications

iii. Addenda

iv. Change Orders and other modifications to the Contract

v. Field Orders and/or written instructions

vi. Approved Shop Drawings, product data, test records, and miscellaneous requested submittal data

vii. Field test records and certifications

viii. Key Documents

ix. Additional Documents

x. Construction Photographs and Videos in accordance with Section 01380 – Construction Video Recording and Photographs

b. Final Inspection Package

c. Evidence of Payment and Release of Liens

d. Two (2) copies of each warranty and consent of surety for payment as specified

3. Submit a Final Statement of Accounting, reflecting all adjustments to the contract sum, stating:

a. Original contract sum

b. Additions and deletions resulting from:

i. Change orders

ii. Deductions for uncorrected work

iii. Deductions for liquidated damages

iv. Deductions for re-inspection payments

v. Other adjustments

c. Total contract sum, as adjusted

d. Previous payments

e. Amount remaining due

4. Submit final application for payment.

5. Final payment will not be made until all requirements contained in this Section have been met.

6. Accompany submittal with transmittal letter in duplicate containing:

    a. Date

    b. Contract name and number

    c. Contractor's name and address

    d. Title and number of each document

    e. Signature of Contractor or authorized representative

1.05 QUALITY ASSURANCE (NOT USED)

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING

A. At or prior to time of inspection for Substantial Completion, deliver all required items to the Authority at the Authority's Construction Field Office.

1. The Contractor and Authority shall inspect and inventory all items delivered.

2. Submit to the Authority a detailed invoice of all items delivered.

    a. Organize invoice by specification sections.

    b. Indicate on invoice any items delivered which were damaged or unsatisfactory.

    c. The Contractor and the Authority shall sign the invoice certifying that all items listed were delivered, and that unless otherwise noted on invoice, all items were in good condition at the time of delivery to the Authority.

3. The Authority will review the invoice for completeness and inform the Contractor promptly of any deficiencies therein.

4. Deliver all additional items identified by the Authority and replace, at no additional cost to the Authority, all damaged and unsatisfactory items noted on original invoice before requesting final inspection.

5. Invoices for additional and replacement items, signed by the Contractor and the Authority, shall be submitted.

6. Store items in a clean, dry, heated, storage shed or bonded warehouse.

7. Protect all items from damage during storage.

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 REQUIREMENTS

A. Final Cleaning

1. At the completion of the Work, remove all rubbish from and about the Site of the Work, and all temporary structures, construction signs, tools, scaffolding, materials, supplies and equipment which the Contractor or any subcontractors may have used in the performance of the Work. Broom clean paved surfaces and rake clean other surfaces of grounds.

2. Thoroughly clean all materials, equipment and structures.

3. Maintain cleaning until project, or portion thereof, is occupied by the Authority.

B. Final Cleanup – Site Rehabilitation:

1. Before finally leaving the site, wash and clean all exposed surfaces which have become soiled or marked, and remove from the site of work accumulated debris and surplus materials of any kind which result from the work, including construction equipment, tools, sheds, sanitary enclosures, etc. Leave all equipment, fixtures, and work installed, in a clean condition. The completed project shall be turned over to the Authority in a neat and orderly condition.

2. The site of the work shall be rehabilitated or developed in accordance with other Specifications and the Contract Drawings. In the absence of other contract requirements, completely rehabilitate the site to a condition and appearance equal or superior to that which existed just prior to construction, except for those items whose permanent removal or relocation was required in the Contract Documents or ordered by the Authority.

C. Final Inspection

1. Final cleaning and repairing shall be so arranged as to be finished upon completion of the construction work. Any portion of the work inspected and finally accepted by the Authority shall be kept clean, until the final acceptance of the entire Work.

2. When the whole or any portion of the work is finally cleaned and repaired, notify the Authority that the work is ready for final inspection, and the Authority will thereupon inspect the work. If the work is not found satisfactory, the Authority will order further cleaning, repairs, or replacement.

3. When such further cleaning or repairing is completed, the Authority, upon further notice, will again inspect the work. The "Final Payment" will not be processed until the requirements set forth are complied with, and the Authority has made its final inspection of the entire Work and is satisfied that the entire Work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

D. Contract Close Out

1. As construction of the project enters the final stages of completion, in concert with completing all other requirements set forth in the Contract Documents, attend to or complete the following items:

   a. Performing required testing of project components.

   b. Correcting or replacing defective work, including completion of items previously overlooked or work which remains incomplete, all as evidenced by the Authority's "Punch" Lists.

   c. Attend to any other items listed herein or brought to attention by the Authority.

2. In addition, and before the Certificate of Substantial Completion is issued, submit to the Authority records, certifications, etc., specified elsewhere in the Contract Documents in accordance with the specified submission schedule for each item. A partial list of such items appears below, but it is the Contractor's responsibility to submit any other items which are required by the Contract Documents:

   a. Test results of project components.

   b. Certification of equipment or materials in compliance with the Contract Documents.

   c. One (1) complete set of electronic Redline Drawings showing as-built changes and additions to the Work under the Contract. Where Contract Drawings are provided in Revit 2024 format, Redline Drawings shall be provided to the Authority in Revit 2024 format. Where Contract Drawings are provided in AutoCAD 2024 format, Redline Drawings shall be provided in AutoCAD 2014 format. The Authority shall refer to these Redline Drawings to develop the Record Drawings.

   d. Any special guarantees or bonds.

1.12 PUNCHLISTING

A. Punchlisting is a survey of the Contractor's and subcontractor's work by the Authority, performed prior to Substantial Completion in order to create a list of incomplete or unsatisfactory items of work.

B. The punchlist will include all items of work found to be unsatisfactory, missing, incomplete, damaged, incorrect, or improperly installed or constructed. Prior to Final Payment, correct the punchlist items by, at the option of the Authority, re-work, modification, or replacement, and at no additional cost to the Authority. The Authority will re-inspect punchlist items upon notice that they are complete.

C. Prior to Substantial Completion, the punchlist will include items of work such as the Contractor's responsibilities during performance testing and post startup vendor training to be completed during and/or after the starting of systems.

1.13 FINAL PAYMENT

A. In addition to other requirements of this Section, the following items shall be submitted and completed prior to Final Payment:

1. Completion of the punchlist items developed as described in Paragraph 1.12 of this Section.

2. Application for Final Payment.

3. All manufacturer's warranties.

4. Submit the following documents with Application for Final Payment: Consent of Surety to Final Payment, Affidavit of Release of Liens and Claims, Affidavit of Payment of Debts and Claims, and remaining releases, waivers, and all submittals and documentation required by the Contract Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 02276

EROSION AND SEDIMENTATION CONTROL

PART 1 – GENERAL

1.01 REQUIREMENTS

A. Control soil erosion resulting from construction operations, prevent flow of sediment from construction site, and contain construction materials within protected working area to prevent damage to any roadway, river, or wetlands.

B. The Contractor is responsible for implementing Best Management Practices (BMPs) to prevent and minimize erosion and resultant sedimentation in all cleared and grubbed areas during and after construction. This item covers the work necessary for the installation of structures and measures for the prevention of soil erosion and control of sedimentation. The Contractor shall furnish all materials, labor and equipment necessary for the proper installation, maintenance, inspection, monitoring, reporting, and removal (where applicable) of erosion prevention and sediment control measures.

C. Any land disturbance as the result of modifications to the site's drainage features or topography requires protection from erosion and sedimentation.

D. It is the intent of this Section that the Contractor conduct the construction activities in such a manner that erosion of disturbed areas and offsite sedimentation be absolutely minimized.

E. Erosion and sedimentation controls applicable to this project shall be as indicated on the Contract Drawings, as specified herein, as indicated by the Authority and as detailed in the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas Manual.

F. Erosion and sedimentation controls shall not penetrate the ground at the DeLauri Pump Station.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01300 – Submittals

B. Section 02498 – Restoration of Disturbed Areas, Seeding and Mulching

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. All Work herein shall conform to the applicable requirements of the following documents. All referenced Specifications, codes, and standards refer to the most current issue available at the time of Bid Opening.

1. Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas Manual, latest edition.

2. Massachusetts Department of Transportation (MassDOT) Standard Specifications for Highways and Bridges and the Supplemental Specifications to the Standard Specifications for Highways and Bridges.

3. American Society for Testing and Materials (ASTM):

i. ASTM D 3776 Standard Test Methods for Mass per Unit Area (Weight) of Fabric

ii. ASTM D 3786 Standard Test Method for Bursting Strength of Textile Fabrics – Diaphragm Bursting Tester Method

iii. ASTM D 4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus

iv. ASTM D 4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity

v. ASTM D 4632 Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

vi. ASTM D 4751 Standard test Method for Determining Opening Size of a Geotextile

vii. ASTM D 4833 Standard Test Method for Index Puncture Resistance of Geomembranes and related Products

1.04 REGULATORY COMPLIANCE

A. Violations and Fines

1. The Contractor shall be responsible for reimbursing the Authority for any fines incurred as a result of violations to the Massachusetts Clean Waters

Act and any applicable delegated local program's sediment control regulations until construction activities are complete and the Project is accepted by the Authority.

2. If a violation results in the issuance of a Notice of Violation, the Contractor shall comply with the requirements of the Notice within the specified time period for compliance. Failure to comply could result in the assessment of a penalty for each day of the continuing violation, beginning with the date of the violation.

3. Violations may result in civil and/or criminal penalties which include fines and imprisonment. The Contractor shall be responsible for all penalties resulting from any violations.

1.05 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals:

1. Prior to the start of the Work, the Contractor shall prepare and submit a plan for implementing the temporary and permanent erosion and sedimentation control measures as shown on the Contract Drawings and approved by the Authority. Construction work shall not commence until the plan for implementing the temporary and permanent erosion and sedimentation control measures has been reviewed and approved by the Authority.

2. The Contractor shall perform inspections of erosion and sedimentation control measures and stormwater discharge outfalls and prepare inspection reports as described in Part 3 of this Section. Copies of the inspection reports shall be submitted to the Authority on a monthly basis.

3. Name and location of all material suppliers.

4. Certificate of compliance with the standards specified above for each source of each material.

5. List of disposal sites for waste and unsuitable materials and evidence of all required permits for use of those sites.

6. Sedimentation barriers and accessories.

7. Straw Wattles.

1.06 QUALITY ASSURANCE

A. Operations are restricted to areas of work indicated on the Contract Drawings and areas which must be entered for construction of temporary or permanent facilities.

B. If construction materials are washed away during construction, remove materials from fouled areas.

C. Limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct immediate permanent or temporary pollution control measures to prevent contamination of any stream or wetlands, including construction of temporary berms, dikes, dams, sediment basins, sediment traps, slope drains, and use of portable filtration system, temporary mulches, mats, or other control devices or methods as necessary to control erosion.

D. Prior to initiating construction work, the Contractor shall visually inspect and clean all catch basins adjacent to work areas. Any basins containing silt and debris shall be noted by the Contractor prior to construction work. A written notice shall be provided to the Authority listing location of filled basins.

E. All restoration and re-vegetation work shall be subject to the one-year guarantee period of the Contract as specified in the General Conditions.

PART 2 – PRODUCTS

2.01 STRAW WATTLES

A. Wattles shall be a straw-filled tube of flexible netting material, machine-produced tube of compacted rice straw that is Certified Weed Free Forage, by a manufacturer whose principle business is wattle manufacturing. The netting shall consist of seamless, high-density polyethylene and ethyl vinyl acetate and contain ultraviolet inhibitors.

B. Light weight rolled erosion control straw or wood fiber blankets (RECB) rolled up to create a wattle type device shall not be used.

C. The wattle shall meet the minimum performance requirements listed below:

Property	**Test Method**	**Units**	**Min. Value**
Mass per Unit Weight	Field Measured	(lbs/ft)	1.6
Dimension	Field Measured	(Dia/Inches)	8.0 - 9.0

Property	Test Method	Units	Min. Value
Net Strand Thickness	Field Measured	(Inches)	0.030
Net Knot Thickness	Field Measured	(Inches)	0.055
Netting Unit Weight	Certified	(Ounces/ft)	0.35
Sediment Retention Capacity	Rainfall Sim.	(lbs/ft)	30
Installed Free-Board Ht.	Field Measured	(Height/Inches)	6.0 - 7.0
Straw Fiber	Field Measured	Avg. Length (in)	3.0
Soil Loss	Rainfall Sim.	% Effectiveness	58
De-Stabilizing Moisture	Rainfall Sim.	% Retained (Max.)	11
Fiber Content	Certified	% Rice Straw	100

D. Straw wattles shall be manufactured by:

1. The Wattle Guys;

2. Valencia Pipe Company, Inc.;

3. California Straw Works;

4. Or equal.

E. Straw wattles shall be utilized for erosion and sedimentation control in accordance with the Contract Drawings.

PART 3 – EXECUTION

3.01 INSTALLATION AND MAINTENANCE

A. All installation and maintenance shall be conducted in accordance with this Section and the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas. In the event of a discrepancy between this Section, manufacturer's recommendations and the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, the more stringent requirements shall take precedence.

B. If possible, erosion and sedimentation control devices shall be established prior to clearing operations in a given area. Where such practice is not feasible, the erosion and sedimentation control device(s) shall be established concurrent with the clearing operations or immediately following completion of the clearing operations.

C. The Contractor shall furnish the labor, materials and equipment required for routine maintenance of all erosion and sedimentation control devices. At a minimum, maintenance shall be scheduled as required for a particular device to maintain the removal efficiency and intent of the device. Note that specific maintenance intervals for various measures and practices are specified within the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas. Of the maintenance requirements specified herein and in the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, the more stringent shall take precedence for each and every sediment and erosion control measure utilized on the site. Maintenance shall include but not be limited to 1) the removal and satisfactory, legal disposal of accumulated sediment from traps or silt barriers and 2) replacement of filter fabrics used for sediment fences and stone impaired by sediment in stone filters, gravel construction entrances, etc. Maintenance as noted in items 1) and 2) above shall be performed as required, and at least once every three (3) months for the duration of construction activities. Sediment removed from erosion and sedimentation control devices shall be disposed of in locations that will not result in off-site sedimentation as acceptable to the Authority, at no additional cost to the Authority. If no suitable on-site locations are available, all such sediment will be legally disposed of off site, at no additional cost to the Authority.

3.02 PROTECTION OF STREAMS, WETLANDS, AND SURFACE WATER

A. Care shall be taken to prevent or reduce to a minimum any damage to any stream, ocean, drainage ditch, storm drain or sewer from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials in or near such streams or ocean. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the stream or ocean, shall not be directly returned to the stream or ocean. Such water shall be diverted through a settling basin or filter before being directed into the streams or ocean. Water containing oils shall be directed through an oil/water separator prior to discharge.

B. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken.

C. All erosion controls shall remain in place, or all exposed soils shall be stabilized by jute netting or other means in the event that the Project is completed outside of the standard growing season noted within these Specifications.

3.03 ADDITIONAL REQUIREMENTS

A. All streets around the construction area shall be scraped and/or swept as necessary to prevent accumulation of dirt and debris.

B. The Contractor shall provide adequate means to prevent any sediment from entering any storm drains, curb inlets (curb inlet filter box), ditches, streams, or bodies of water downstream of any area disturbed by construction. Excavation materials shall be placed upstream of any trench or other excavation to prevent sedimentation of offsite areas. In areas where a natural buffer area exists between the work area and the closest stream or water course, this area shall not be disturbed.

C. The Authority may direct the Contractor to place any additional sediment and erosion control devices at other locations not indicated on the Contract Drawings, at no additional cost to the Authority.

3.04 INSPECTIONS AND MAINTENANCE

A. The Contractor shall designate an Authorized Representative to perform inspections and maintenance as described herein. The Contractor shall perform regular inspections and maintain records as follows:

1. Inspections shall be performed, at a minimum, once every seven (7) calendar days and within twenty-four (24) hours after any storm event of greater than ½-inch of rain per twenty-four (24) hour period.

2. A rain gauge shall be maintained in good working order on the Site and all rainfall amounts shall be recorded throughout the duration of construction activities.

3. Inspection reports shall be available on-site during business hours unless a site-specific exemption is approved.

4. Inspection records shall be kept for three (3) years following completion of construction and be available upon request.

5. Electronically available records may be substituted under certain conditions.

B. During inspections, the following will be observed, and appropriate maintenance activities shall be performed:

1. The conformance to Specifications and current condition of all erosion and sediment control structures.

2. The effectiveness and operational success of all erosion and sediment control measures.

3. The presence of sediments or other pollutants in stormwater runoff at all runoff discharge points.

4. The presence of sediments or other pollutants in receiving waters.

5. Evidence of off-site tracking at all locations where vehicles enter or exit the site.

6. Evidence of impacts to water quality due to site activities pertaining to equipment operation and maintenance, material handling, and material storage and construction laydown areas exposed to precipitation.

C. Immediate action shall be taken to repair/maintain erosion and sediment control measures that are not performing as designed. The Authority reserves the right to stop all construction activities not related to these measures until such deficiencies are repaired.

3.05 MONITORING AND REPORTING

A. Monitoring: The Contractor shall be responsible for the implementation of the Inspections and Maintenance Procedures as included in the approved erosion and sediment control plan. Minimum monitoring requirements are as follows:

1. A rain gauge shall be maintained in good working order on the Site.

2. A written record of the daily rainfall amounts shall be retained. (Note: if no rainfall occurred the Contractor shall record “zero”).

3. The control measures shall be inspected to ensure that they are operating correctly. Inspection records shall be maintained for each inspection event and for each measure. All erosion and sedimentation control measures shall be inspected by the Contractor at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event of greater than ½

inch of rain per twenty-four (24) hour period unless otherwise noted herein. Some measures require inspection following each rainfall event.

4. Once land disturbance has begun on the Site, stormwater runoff discharge outfalls shall be inspected by observation for erosion, sedimentation and other stormwater discharge characteristics such as clarity, floating solids, and oil sheens. Inspections of the outfalls shall be made at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event of greater than ½-inch of rain per twenty-four (24) hour period. Inspection records shall be maintained for each inspection event and for each discharge location.

5. If any visible sedimentation is leaving the Site or entering waters of the Commonwealth, corrective action shall be taken immediately to control the discharge of sediments. Where visible deposition of sediment has occurred in surface waters or wetlands, the Contractor shall verbally contact the Authority and the Division of Water Quality within twenty-four (24) hours of becoming aware of the deposition. Written notification shall be made to the Authority and the Division of Water Quality within five (5) days of becoming aware of the deposition.

B. Reporting: The Contractor shall keep a record of inspections onsite with a copy of the approved erosion and sediment control plan. Inspection records shall be made available to authorized agent upon request. Copies of inspection records shall be sent to the Authority on a monthly basis. The records shall provide the details of each inspection including observations and corrective actions taken as described below.

1. Control Measure Inspections: Inspection records shall include, at a minimum: 1) identification of the measures inspected, 2) date and time of the inspection, 3) name of the person performing the inspection, 4) indication of whether the measures were operating properly, 5) description of maintenance needs for the measure, 6) corrective actions taken, and 7) date of corrective actions taken.

2. Stormwater Discharge Inspections: Inspection records shall include, at a minimum: 1) identification of the discharge outfall inspected, 2) date and time of the inspection, 3) name of the person performing the inspection, 4) evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5) indication of visible sediment leaving the site, 6) actions taken to correct/prevent sedimentation, and 7) date of corrective/preventative actions taken.

3. Visible Sedimentation Found Outside the Site Limits: Inspection records shall include, at a minimum: 1) an explanation as to the actions taken to control future releases, 2) actions taken to clean up or stabilize the sediment that has left the site limits and 3) the date of actions taken.

4. Visible Sedimentation Found in Streams or Wetlands: All inspections should include evaluation of streams or wetlands onsite or offsite (where accessible) to determine if visible sedimentation has occurred.

5. Visible Stream Turbidity – If the discharge from a site results in visible stream turbidity, inspection records shall record that evidence and actions taken to reduce sediment contributions.

3.06 REMOVAL OF TEMPORARY SEDIMENT CONTROL STRUCTURES

A. At such time that temporary erosion and sediment control structures are no longer required under this Contract, the Contractor shall notify the Authority of its intent and schedule for the removal of the temporary structures. The Contractor shall obtain Authority approval, in writing, prior to removal. Once the Contractor has received such written approval from the Authority, the Contractor shall remove, as approved, the temporary structures and all sediments accumulated at the removed structure shall be returned upgrade and stabilized, so they do not re-erode. In areas where temporary control structures are removed, the Site shall be left in a condition that will restore original drainage. Such areas shall be evenly graded and seeded as specified in Section 02498 – Restoration of Disturbed Areas, Seeding and Mulching.

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SECTION 02498

RESTORATION OF DISTURBED AREAS, SEEDING AND MULCHING

PART 1 – GENERAL

1.01 WORK INCLUDED

A. The work covered under this Section includes furnishing all labor, equipment, appliances and materials, and performing all operations in connection with restoration to pre-construction conditions of all areas affected by Work under this Contract, complete in accordance with the Contract Documents.

B. This Section has been included for furnishing of labor, equipment, and materials necessary to establish grass in lawn areas damaged by the Contractor during construction. The work includes, but is not limited to, the following items:

1. Seeding, fertilization and mulching.

2. Maintenance of the seeded areas.

1.02 GENERAL

A. Remove and reset or replace all fencing, guardrails, trees, shrubs, lawns, posts, curbing, signs, and other items which interfere with the progress of the Work.

B. The Contractor shall restore all bounds disturbed during the Work using a registered Massachusetts Land Surveyor prior to completion of the Contract.

C. Existing vegetated areas adjacent to worksite which are impacted by construction activities shall be re-established.

D. Any damage to adjacent areas as a result of the Contractor's activities shall be restored to original conditions by the Contractor, at no additional cost to the Authority.

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

1. Submit complete description of all materials proposed to be used, giving sources and details of each, including environmental limitations and safeguards, to be used for each product provided.

2. Submit product tags for each type of fill, seed, fertilizer, or lime (as applicable).

3. Submit topsoil test report including chemical, mechanical, pH value analysis of both on-site and off-site topsoil sources.

4. Submit proposed seed mix design.

1.04 PERFORMANCE AND ACCEPTANCE OF WORK

A. Appropriate seeding, surface material, and planting as required to restore the project limits to pre-construction conditions. Qualifications of the landscaper must have at least five (5) years of similar experience and shall be submitted and approved by the Authority.

B. Finish areas to be smooth, free of weeds, insects and disease at the time of substantial completion. Re-seed all areas which do not meet these criteria until lawn is established and approved. Failure on the part of the Authority to disapprove work in the course of operations or during inspection of the work will not be interpreted as acceptance of work not in conformance with the specifications. Improper work and /or materials are to be corrected whenever discovered.

1.05 CONTRACT LIMITS

A. The Contract Limits for seeding include all areas disturbed by the Contractor, including areas damaged by construction and areas affected by construction equipment, parking or staging. All disturbed grassed areas shall be restored by the Contractor to the Authority's satisfaction.

1.06 PERMITTED SEEDING PERIOD

A. Permanent seeding is to be accomplished during the periods of April 1 - May 31 or September 1 - October 15, unless authorized by the Authority.

1. If permanent seeding cannot be placed during the permitted seeding period, the Contractor shall place temporary seeding, stabilize exposed slopes, and maintain temporary seeding and slope stabilization until permanent seeding can be placed within the permitted seeding period.

1.07 ENVIRONMENTAL SAFEGUARDS

A. Due to proximity to water resources, the use of pesticides, herbicides or other chemicals related to this Contract are not to be used without prior written approval of the Authority.

PART 2 – PRODUCTS

2.01 SEED MIXES

A. Permanent grass seed to be delivered in sealed bags marked with the name of the project and seed analysis. Seed mixes for lawns with well drained soils shall be as follows:

Seed Mixture	**lb/Acre**	**lb/1000 sf**
Kentucky Bluegrass	20	.45
Red Fescue (Pennlawn, Wintergreen)	20	.45
Perennial Ryegrass (Norlea, Manhatten)	5	.11

B. Seed mixes for areas other than lawns shall be moist-wet coastal plain/flood plain mixes as recommended in the Massachusetts Erosion Control Guidelines.

2.02 FERTILIZER

A. Commercial fertilizer with a composition by weight of 12% nitrogen, 15% phosphoric acid and 12% potash shall be used. (12-15-12) lawn starter fertilizer.

PART 3 – EXECUTION

3.01 GENERAL

A. Flag areas to be seeded with survey marking tape. Use different color tape to designate seed type.

3.02 SOIL PREPARATION

A. The Contractor shall collect one (1) topsoil sample for each discrete area to be seeded and analyzed for soil pH by an outside laboratory. Laboratory is to make recommendations regarding need for pH adjustment.

B. Rough grade to be reviewed and approved by the Authority prior to beginning soil preparation.

C. Furnish and spread ground limestone at the rates as recommended by the soil testing laboratory, thoroughly incorporate into the top 3-inches of topsoil.

D. Rake topsoil to provide smooth draining grades as indicated. Remove stones, roots, rubbish, etc. 1-inch in size and over. Finish surface to be a smooth, friable, uniform texture.

E. Furnish and spread fertilizer at rate as recommended by the fertilizer manufacturer and work lightly into the top layer of topsoil.

3.03 HYDROSEEDING PROCEDURE

A. No seeding is permitted until the site preparation has been reviewed and approved by the Authority.

B. Sow seed during the permitted seeding season, when the weather is favorable, and the wind velocity is less than five (5) miles per hour.

C. Hydroseeding to be performed by an experienced applicator (having been in business performing similar work to this project, for the past five (5) years or more) using approved hydroseeding equipment.

D. Apply seed at rates as recommended by the seed supplier.

E. Incorporate mulch tackifier with seed at the rates as recommended by the mulch supplier.

3.04 HAND SEEDING

A. No seeding is permitted until the site preparation has been reviewed and approved by the Authority.

B. Sow seed during the permitted seeding season, when the weather is favorable, and the wind velocity is less than fifteen (15) miles per hour.

C. Sow seed at rate as recommended by the seed supplier.

D. Mulch seeded areas with salt hay or hydromulch immediately after seeding, then water.

3.05 MAINTENANCE

A. Begin maintenance immediately after seeding.

B. Maintain seeded until final acceptance, but in no case, less than sixty (60) days after completion of seeding.

C. Seeded areas shall be suitably watered three (3) times per week or as needed to maintain vegetation in a healthy condition. The Contractor shall supply all water necessary.

D. The Contractor shall spot-reseed and establish vegetation in areas that remain barren or thinly vegetated (as judged by the Authority) after fourteen (14) days of initial seeding.

**** END OF SECTION ****

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SECTION 02832

TEMPORARY FENCING

PART 1 – GENERAL

1.01 REQUIREMENTS

A. The Contractor shall furnish and install temporary steel fencing, posts, gates, etc., where indicated on the Contract Drawings and as specified.

B. Temporary fencing shall be of the chain link type.

C. The Contractor is responsible for the design and installation of all temporary chain link fence included in the Project.

D. Dimensions indicated on the Contract Drawings are for reference only. Post sizes, footing dimensions and other structural dimensions shall be as designed by the manufacturer and submitted for review prior to installation.

E. Temporary fencing shall be anchored as required to withstand wind loading per state and federal codes and regulations.

1.02 RELATED SECTIONS

A. Section 01300 – Submittals

1.03 REFERENCES

A. All Work herein shall conform to the applicable requirements of the following documents. All referenced Specifications, codes, and standards refer to the most current issue available at the time of Bid Opening.

1. ASTM A491- Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric

2. ASTM F1083-16 – Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

3. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

4. ASTM B26 – Standard Specification for Aluminum-Alloy Sand Castings

5. ASTM B108 – Standard Specification for Aluminum Alloy Permanent Mold Castings

1.04 SUBMITTALS

A. Shop Drawings shall be furnished in accordance with Section 01300 - Submittals.

1. Shop Drawings shall include, but not be limited to:

i. Manufacturer's cut sheets, fence samples, product information and specifications, test reports, instructions for installation and care instructions.

PART 2 – PRODUCTS

2.01 GENERAL

A. Temporary fences shall conform to requirements as indicated on the Contract Drawings.

B. Temporary chain link fences shall be continuous and surround the entire Work Site. When practical, the Contractor shall tie temporary fences into existing fences.

C. Temporary chain link fences with multiple sections shall have no more than 4-inches between each section. Adjacent sections (to temporary or permanent fencing) shall be securely fastened to each other.

D. Temporary chain link fences and their access/roadway gates shall not be less than 8 feet in height, and openings between the ground and the bottom rail or bottom of fence fabric shall be elevated at least 8-inches from the ground in order to allow unimpeded travel by wildlife.

E. Temporary chain link fences and their access/roadway gates shall have strong, stable supports.

F. Temporary chain link fences and their access/roadway gates shall be a sufficient distance from the active work zone at the surface of the chamber structures to be unaffected by the changing conditions of the site.

G. Temporary chain link fences and their access/roadway gates shall be clearly marked on all sides with signs indicating "Danger-Do Not Enter," "Authorized Personnel Only" or equivalent warning.

2.02 CHAIN LINK FABRIC

A. Fence fabric shall be 9-gauge aluminum coated wire woven in a 1-inch or 2-inch diamond mesh conforming to ASTM A491. Minimum weight of coating shall be 0.40 ounce per square foot of wire surface. The coated wire shall have a minimum tensile strength of 80,000 lbs. per square inch. Coating and mesh size shall match the color of fence to be replaced or connected to (1-inch, and either black or forest green).

B. Install fence fabric a maximum of 8-inches above ground level. Fence fabric shall be stretched tight and securely fastened to posts at points spaced 12-inches apart maximum.

2.03 POSTS

A. Posts and rails shall be coated to match the fence fabric.

1. Line Posts: Line posts shall be Schedule 40, 2-3/8-inch O.D. galvanized pipe with minimum bending strength of 201 pounds under a 6-foot cantilever load. Line posts shall be spaced at a maximum 10-foot O.C.

2. Terminal Posts: All end, corner, intermediate, and pull posts and gate leaves 6'-0" wide and less shall be 2-7/8-inch O.D. galvanized Schedule 40 pipe with minimum bending strength of 381 pounds on 6-foot cantilever load. Gate posts for gate leaves shall be Schedule 40 pipe complying with ASTM F1083-16 of diameters as follows:

Gate Leaf Width	Pipe O.D.	Weight per Ft.
0' to 6'	2-7/8"	5.79 lbs.
Over 6' to 13'	4"	9.1 lbs.
Over 13' to 18'	6-5/8"	18.97 lbs.
Over 18'	8-5/8"	24.7lbs.

2.04 TENSION WIRE

A. Top and bottom tension wire shall be No. 7 gauge aluminum coated steel wire. Fence fabric shall be securely tied to tension wire at intervals not to exceed 24-inches.

2.05 POST TOPS SUPPORTS

A. Gate, end, corner and line post tops shall be malleable iron or pressed steel and shall be hot dipped galvanized conforming to ASTM A153.

2.06 BRACES AND TOP RAILS

A. Braces and top rails (where indicated on the Contract Drawings) shall be 1.66-inch O.D., Schedule 40 galvanized pipe with minimum vertical bending strength of 202 pounds on 10-foot span.

B. Top rails shall be continuous and shall pass through the post tops. The coupling used to join the top rail lengths shall allow for expansion. Brace rails shall be provided at all terminal posts, located between the top and grade lines and extend from the terminal post to the first adjacent post. Braces shall be securely fastened at both ends. Brace ends for receiving brace rails shall be malleable iron or castings of 356.0 (formerly SG70A) alloy, or equivalent of ASTM B26 or B108.

C. Truss and stretcher bands shall be 1/8-inch x 7/8-inch pressed steel, supplied with carriage bolts and nuts. Bolts shall be 5/16-inch by 1 1/4-inch. Truss rods shall be 3/8-inch nominal diameter.

2.07 FENCE FABRIC TIES

A. Wire ties shall be pre-formed 0.148-inch diameter (9 gauge) aluminum. Flat band type ties shall be 1100-H18 or 3003-H14, .064-inch thick by 1/2-inch wide.

B. Hog rings for attaching tension wire to fence fabric shall be 0.105-inch diameter, Alloy 1100-H14.

2.08 GATES

A. Gate frames shall be made of 2-inch O.D. ASTM F1083-16 pipe, 2.72 lbs. per foot hot dipped galvanized. Fence fabric shall match fence. Gate frames shall be welded or assembled with riveted corner castings. Gate frames shall be equipped with 3/8-inch diameter adjustable truss bars. Hinges shall be ball and socket.

B. Gate shall be equipped with positive latching device with provision for padlocking. Personnel gates shall be minimum 36-inch clear opening.

2.09 SWING GATE

A. Swing gates shall be cantilever type of the same height as adjacent fence. Gate shall be constructed of 2-1/2-inch O.D. Schedule 40 pipe 2-inch O.D. braces.

PART 3 – EXECUTION

3.01 INSTALLATION

A. All line posts shall be spaced equidistant in the fence line on a maximum of 10-foot centers.

B. End, corner, pull or intermediate posts shall be placed in the following locations: corners; changes in direction; abrupt changes in grade; intervals no greater than 500 feet in the fence line. Each end or gate post shall have one (1) brace assembly and each corner or intermediate post shall have two (2) brace assemblies.

C. Horizontal braces shall be provided at all terminal posts, corner posts, and intermediate posts between top rail and ground and shall extend from the above-mentioned posts to the first adjacent line posts. Braces shall be securely fastened to the line posts by brace ends and brace bands and to the terminal posts by approved rail end connectors. Diagonal brace rods shall be trussed from the brace end on the line post back to the terminal post, corner post or intermediate post and fastened to it by an approved connector.

3.02 PADLOCK AND KEYS

A. One (1) solid brass padlock shall be furnished with each gate.

B. The Contractor shall provide a minimum of four (4) copies of temporary padlock keys to the Authority.

C. All site access gates shall be locked with a Contractor lock and Authority lock in such a way that each party can gain access to the site, independent of the other.

3.03 TEMPORARY FENCING

A. The Contractor shall furnish and install all temporary fencing and appurtenances as indicated on the Contract Drawings or as required during construction to adequately secure the Site.

**** END OF SECTION ****

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SECTION 03600

GROUT

PART 1 – GENERAL

1.01 REQUIREMENTS

A. Furnish all materials, labor, and equipment required to provide all grout to be used to fill voids between existing granite blocks and new granite wedge rocks to locally stabilize the exterior granite blocks of the seawall as indicated on the Contract Drawings.

1.02 RELATED WORK

A. Division 1 and Division 2 of these Specifications.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid Open Date.

1. ACI 301 – Specifications for Structural Concrete

2. ACI 304 – Guide for Measuring, Mixing, Transporting, and Placing Concrete

3. ACI 305 – Specification for Hot Weather Concreting

4. ACI 306 – Standard Specification for Cold Weather Concreting

5. ACI 309R – Guide for Consolidation of Concrete

6. ACI 318 – Building Requirements for Structural Concrete and Commentary

7. ACI 350 – Code Requirements for Environmental Concrete Structures

8. ASTM C33 Standard Specification for Concrete Aggregates

9. ASTM C 109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 inch or 50 mm cube Specimens)

10. ASTM C150 Standard Specification for Portland Cement

11. ASTM C 531 Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts and Monolithic Surfacings

12. ASTM C 579 Test Method for Compressive Strength of Chemical-Resistant Mortars and Monolithic Surfacings

13. ASTM C595 Standard Specification for Blended Hydraulic Cements

14. ASTM C 827 Standard Test Method for Early Volume Change of Cementitious Mixtures

15. ASTM C1157 Standard Performance Specification for Hydraulic Cement

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

1. Certified test results verifying the compressive strength and shrinkage and expansion requirements specified herein.

2. Manufacturer's literature containing instructions and recommendations on the mixing, handling, placement and appropriate uses for the grout used in the work.

3. Wedge rock source information and ASTM 615 requirements for wedge rocks used to fill voids and assist in stabilizing the existing granite blocks.

4. Proposed means for Mixing, Transporting, Placing, Finishing, and Curing Grout in accordance with applicable requirements of ACI 301, ACI 304, ACI 305, ACI 306, ACI 309R, ACI 318, and ACI 350.

5. If needed, proposed means and materials for forming areas to receive stabilizing grout between granite blocks and wedge rocks.

1.05 QUALITY ASSURANCE

A. Field Tests

1. Compression test specimens will be taken during construction from the first placement of grout and at intervals thereafter as selected by the Authority to ensure continued compliance with these Specifications. Testing shall occur a minimum of once for each day’s placement and for every cubic yard batch of

grout produced. The specimens will be made by the Authority or its representative. Compression tests and fabrication of specimens for cement grout will be performed as specified in ASTM C 109 at intervals during construction as selected by the Authority. A set of three (3) specimens will be made for testing atseven (7) days, twenty-eight (28) days from initial placement and any additional periods as appropriate.

2. The cost of all laboratory tests on grout will be borne by the Authority, but the Contractor shall assist the Authority in obtaining specimens for testing. The Contractor shall be charged for the cost of any additional tests and investigation on work performed which does not meet the specifications. The Contractor shall supply all materials necessary for fabricating the test specimens, at no additional cost to the Authority.

3. All grout, already placed, which fails to meet the requirements of these Specifications, is subject to removal and replacement at no additional cost to the Authority.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Cement Grout

1. Cement grout shall be composed of Portland Cement and sand in the proportions needed to meet the strength and service requirements stipulated herein and the minimum amount of water necessary to obtain the desired consistency to allow adequate consolidation and placement. At a minimum, the portion of Portland cement in the proposed grout shall consist of one (1) part Portland Cement to three (3) parts sand. Water amount shall be as required to achieve desired consistency without compromising strength requirements.

2. The minimum compressive strength at twenty-eight (28) days shall be 4000 psi.

3. Sand shall conform to the requirements of ASTM C144.

4. Proportions shall be adjusted, as needed, for grout to be placed below the low tide elevation installed underwater as tremie grout. Proportions for tremie grout shall be as needed to ensure grout can be adequately placed and is able to displace water from area of placement.

5. No admixtures shall be used in the grout, including admixtures for use in tremie grout, unless specifically approved by the Authority.

B. Portland Cement

1. Portland Cement used for cement grout shall be Type II conforming to ASTM C150.

2. The proposed Portland Cement shall not contain more than 8% tricalcium aluminate and more than 12% tetracalcium aluminoferrite.

3. Portland Cement shall also meet performance requirements of ASTM C1157.

4. Portland Limestone Cement (Type IL) cement may also be used for cement grout and shall meet the requirements of ASTM C595.

5. Limestone used for Type IL cement shall be naturally occurring and meet the requirements of ASTM C33.

2.02 CURING MATERIALS

A. Curing materials for cement grout shall be as required by the manufacturer to ensure wet cure for a minimum of three (3) days after placement.

B. Protect grout from excessive drying caused by wind or direct sunlight during exposed periods until grout is fully cured.

PART 3 – EXECUTION

3.01 GENERAL

A. The grout shall be used for filling the voids between the existing granite blocks and the new granite wedge rocks used to fill large voids within the joints comprising the exterior of the seawall over the areas indicated on the Contract Drawings. The grout, along with the granite wedge rocks used for stabilizing the existing granite blocks shall totally fill the voids to provide a continuous surface between the existing granite blocks as well as the concrete substrate behind the existing granite blocks.

B. All mixing, surface preparation, handling, placing, consolidation, and other means of execution for cement grouts shall be done according to the instructions and recommendations of the grout supplier/ manufacturer. Hand mixing of grout will not be allowed. All grout shall be machine mixed.

3.02 CONSISTENCY

A. The consistency of the grout shall be as necessary to completely fill the space to be grouted for the application.

3.03 MEASUREMENT OF INGREDIENTS

A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurement shall not be allowed.

3.04 GROUT INSTALLATION

A. Grout shall be placed quickly and continuously, shall completely fill the space to be grouted and be thoroughly compacted and free of air pockets. The grout may be cast in place, pressure grouted by gravity, or pumped. The use of pneumatic pressure or dry-packed grouting requires approval of the Authority.

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