

**DOCUMENTS AND SPECIFICATIONS**

**FOR**

**FORT REVERE WATER TOWER  
REHABILITATION**

**HULL, MASSACHUSETTS**

**TOWN OF HULL**

May 10, 2023

**SOCOTEC AE CONSULTING, LLC.**

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**SOCOTEC FILE NUMBER CB191842**



**FORT REVERE WATER TOWER  
REHABILITATION**

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**TOWN OF HULL**

**INVITATION TO BIDDERS**

The Town of Hull is soliciting bids for the following:

**FORT REVERE WATER TOWER REHABILITATION  
60 FARINA ROAD  
HULL, MA 02045**

The scope of work includes but is not limited to, concrete and masonry repairs, replacement of existing concrete observation platform, restoration of existing windows, replacement of existing concrete stairs with new metal stairs, replacement of existing interior and exterior lighting and replacement of existing slate roofing. Other work includes replacement of existing sealants, new high performance coatings at exterior walls (concrete and masonry) and new traffic coating on the observation deck, new exterior ornamental fence around the tower base and replacement of concrete sidewalks.

The estimated cost of the work is \$1,200,000.00.

Bids are subject to M.G.L. c.149 §44A-J and to minimum wage rates as required by M.G.L. c.149 §§26 to 27H inclusive.

General Bidders must be certified by the Division of Capital Asset Management and Maintenance (DCAMM) in the following category of work, **General Building Construction**, and must submit a current DCAMM Certificate of Eligibility and signed DCAMM Prime/General Contractor Update Statement.

Filed Sub-Bidders must be certified by the Division of Capital Asset Management and Maintenance (DCAMM) in the trades listed below and must submit a current DCAMM Certificate of Eligibility and signed DCAMM Sub-bidder's Update Statement.

**Filed Sub-Bid Trades:**

- **Masonry**
- **Miscellaneous and Ornamental Iron**
- **Waterproofing, Damp-proofing, and Caulking**
- **Roofing and Flashing**
- **Electrical**

Bid Forms and Contract Documents are available online after **2:00PM, Wednesday, May 10, 2023** at [www.Projectdog.com](http://www.Projectdog.com). Enter Project Code **855818** in the project locator box and select "Acquire Documents" to download documents. All plan holders must have an active online account on [www.Projectdog.com](http://www.Projectdog.com) to acquire documents and to receive project notifications. Documents may also be viewed, but not removed, from the office of Projectdog Inc., 18 Graf Road - Unit 8, Newburyport, MA 01950, Monday – Friday, 8:30 a.m. to 5:00 p.m.

Addenda, if issued, will be posted to the Projectdog website and shall be accompanied by e-mail notification to every individual or firm on record as having received the Contract Documents.

This project is being Electronically Bid (E-Bid). All bids shall be submitted online at [www.Projectdog.com](http://www.Projectdog.com).

FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

Hard copy bids will not be accepted by the Awarding Authority. Tutorials and Instructions are available online at [www.Projectdog.com](http://www.Projectdog.com). For assistance, contact Projectdog Inc. at 978.499.9014.

Filed Sub-Bids for this project will be accepted from eligible bidders until **2:00PM, Wednesday, May 31, 2023** and will be publicly opened, forthwith online.

General Bids for this project will be accepted from eligible bidders until **2:00PM, Wednesday, June 14, 2023** and will be publicly opened, forthwith online.

Each general bid and filed sub-bid shall be accompanied by a bid deposit in the form of a bid bond, or cash, or a certified check on, or a treasurer's or cashier's check issued by a responsible bank or trust company, payable to the Town of Hull in the amount of five percent (5%) of value of the bid. Bid deposits will be dealt with as provided in Massachusetts General Laws, Chapter 149, Section 44B.

Bids shall be made on the basis of the Minimum Wage Rates as determined by the Commissioner of Labor and Industries, Pursuant to the Provisions of Chapter 149, Sections 26 to 27D inclusive of Massachusetts General Laws, a copy of which is attached to and is made a part of the Contract.

Bidders' selection procedures and contract award shall be in conformity with applicable statutes of the Commonwealth of Massachusetts.

Performance and Labor and Materials payment bonds in the full amount of the contract price will be required from the successful bidder.

The Awarding Authority reserves the right to reject any or all general bids, if it be in the public interest to do so, and to reject any sub-bid on any sub-trade if it determines that such sub-bid does not represent the sub-bid of a person competent to perform the work as specified or that less than three such sub-bids were received and that the prices are not reasonable for acceptance without further competition.

#### PRE-BID CONFERENCE / SITE VISIT:

Date and Time: Wednesday, May 17, 2023, at 10:00 A.M.

Address: Fort Revere Water Tower, 60 Farina Road, Hull, MA 02045. Meet at the main entrance of the tower.

Attendance at this pre-bid conference is strongly recommended for parties submitting a bid.

Chris Dilorio  
Director of Community Development & Planning  
Town of Hull

END OF SECTION



## **SECTION 00 21 13 – INSTRUCTION TO BIDDERS**

### **PART 1 - GENERAL**

#### **1.01 SCHEDULE OF DATES**

- A. Deadline for advertisement for Bid in Central Register – **Thursday, May 4, 2023.**
- B. Advertisement appears in Central Register, **Wednesday, May 10, 2023.**
- C. Plans and Specifications ready for Bidders at [www.projectdog.com](http://www.projectdog.com) on **Wednesday, May 10, 2023, after 2:00 PM using Projectdog code 855818.**
- D. Pre-bid walk-thru **Wednesday, May 17, 2023 at 10:00 AM.** Meet at the Main Entrance of the tower, 60 Farina Road, Hull, MA 02045.
- E. All questions and requests for interpretations must be submitted in writing via e-mail to [gina.naik@socotec.us](mailto:gina.naik@socotec.us) by the Filed Sub-bidders until **Wednesday, May 24, 2023, 5:00 PM** and by the General Bidders until **Wednesday, June 7, 2023, 5:00 PM.**
- F. Addenda will be issued with interpretations as determined by the Architect.
- H. Filed Sub-Bids Deadline: **Wednesday, May 31, 2023 at 2:00 PM** electronically bid (E-Bid). All bids shall be submitted online at [www.projectdog.com](http://www.projectdog.com). Hard copy bids will not be accepted by the Awarding Authority.
- I. General Bids Deadline: **Wednesday, June 14, 2023 at 2:00 PM** electronically bid (E-Bid). All bids shall be submitted online at [www.projectdog.com](http://www.projectdog.com). Hard copy bids will not be accepted by the Awarding Authority.

#### **1.02 BIDDING PROCEDURE**

- A. Bids for the work are subject to the provisions of General Laws, Chapter 149, Sections 44A-44L inclusive, as amended. Regulations governing the bidding procedures as set forth in the above mentioned amended General Laws must be followed.
- B. In the event of any inconsistencies between any of the provisions of these Contract Documents and of the cited statute, anything herein to the contrary notwithstanding, the provisions of the said statute shall control.
- C. No General Bid or Filed Sub-Bid received by the Awarding Authority after the time respectively established herein for the opening of General Bids will be considered, regardless of the cause for the delay in the receipt of any such bid.

#### **1.03 WITHDRAWAL OF BIDS**

- A. Bids may be withdrawn prior to the time respectively established for the opening of General Bids only on written request to the Awarding Authority.

#### **1.04 INTERPRETATION OF CONTRACT DOCUMENTS**

- A. No oral interpretation will be made to any bidder. All questions or requests for interpretations must be made in writing via email to [gina.naik@socotec.us](mailto:gina.naik@socotec.us).
- B. Every interpretation made to a bidder will be in the form of an Addendum, to the drawings and/or specifications, which will be made available to all persons to whom Contract Documents have been issued.
- C. Failure of the Awarding Authority to send, or of any bidder to receive any such addendum shall not relieve any bidder from obligation under his bid as submitted.
- D. All such addenda shall become a part of the Contract Documents.

#### 1.05 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. Each bidder shall visit the site of the proposed work and fully acquaint himself with conditions as they exist and shall also thoroughly examine the Contract Documents. Failure of any bidder to visit the site and acquaint himself with the Contract Documents shall not relieve any bidder from any obligation with respect to his bid.
- B. By submitting a bid, the bidder agrees that the Contract Documents are adequate and that the required result can be produced. The successful bidder shall furnish any and all labor, materials, insurance, permits and all other items needed to produce the required result to the satisfaction of the Awarding Authority.

#### 1.06 BID SECURITY

- A. All bids must be accompanied by bid security in the amount of five percent (5%) of the bid. Bid bonds issued by a surety company must be uploaded with the other required forms. Bidders providing bid bonds in the form of cash or check must complete and upload the bid bond affidavit form.
- B. At the option of the bidder, the security may be bid bond, cash, certified, treasurer's or cashier's check issued by a responsible bank or trust company. No other type of bid security is acceptable.

Bid Bonds shall be issued by a Surety Company qualified to do business under the laws of the Commonwealth of Massachusetts.

- C. Certified, Treasurer's or Cashier's check shall be made payable to the Town of Hull.
- D. The bid security shall secure the execution of the Contract and the furnishing of a Performance and Payment Bond by the successful General Bidder.
- E. Should any General Bidder to whom an award is made fail to enter into a contract therefore within five (5) days, Saturdays, Sundays and Legal Holidays, excluded, after notice of award has been mailed to him or fail within such time to furnish a Performance Bond and also a Labor and Materials or Payment Bond as required, the amount so received from such General Bidder through his Bid Bond, Cash, Certified, Treasurer's or Cashier's check as bid deposit shall become the property of the Town of Hull, Massachusetts as liquidated damages; provided that, the amount of the bid deposit which becomes the property of the Town of Hull, Massachusetts shall not in any event exceed the difference between his bid

price and the bid price of the next lowest responsible and eligible bidder; and provided further that, in case of death, disability, bona fide clerical error or mechanical error of a substantial nature, or other unforeseen circumstances affecting the General Bidder, his deposit shall be returned to him.

#### 1.07 BID FORM & BID PREPARATION

- A. Bids shall be prepared and submitted online at [www.Projectdog.com](http://www.Projectdog.com) with the forms furnished by Projectdog, Inc. The bid forms enclosed in the Project Manual are samples only and shall not be extracted or used.
- B. All required forms must be submitted in PDF format only. The Bidder must complete all required signatures either digitally or manually (print, sign, and scan to a PDF file).
- C. The Bidder must enter their bid price on the electronic Bid Form as a whole dollar value only with no punctuation. Sums shall be expressed in both words and figures on the bid form. Note: The electronic Bid Form will automatically match the word value to the numeric figure entered by the Bidder.
- D. Bidders may save, submit, or modify an E-Bid at any time prior to bid close. Once submitted, a bid cannot be edited. To modify a bid the Bidder must retract the bid, make any necessary changes, and then re-submit the bid. Upon submitting or retracting an E-Bid, the Bidder will receive a convenience email for informational purposes only. Bidders are encouraged to contact Projectdog, Inc. at 978.499.9014 if an email is not received.
- E. If a bid is submitted prior to an Addendum being issued, the Bidder will receive an automated email for informational purposes only. The Bidder must review the addendum, retract the bid, acknowledge all addenda, and re-submit the bid. If a Bidder fails to acknowledge addenda, their bid may be rejected by the Awarding Authority.
- F. Timely submission of an E-Bid shall be the full responsibility of the Bidder. The server clock is the time of record. It is the Bidder's responsibility to review and confirm online that a bid has been submitted and/or retracted and that the bid is 100% true, complete, and accurate. All Bidders are required to review their submitted E-Bid via the "View My Bid Package" link.

#### 1.08 SUBMISSION OF BID SECURITIES

- A. Bid deposits shall be at least five percent (5%) of the greatest possible bid amount, considering all alternates, and should be:
  - i. made payable to the Town of Hull;
  - ii. conditioned upon faithful performance by the principal of the agreements contained in the bid; and
  - iii. in the form of:
    - a. cash, completed and delivered as outlined on the [Cash Bid Bond Affidavit](#) form,
    - b. certified check, treasurer's or cashier's check issued by a responsible bank or trust company, completed and delivered as outlined on the [Cash Bid Bond](#)

- c. [Affidavit](#) form, or
  - c. a bid bond issued by a surety company licensed to do business in the Commonwealth of Massachusetts.
- B. retained until the execution and delivery of the Owner/Contractor Agreement if they represent the bid deposit of one of the three (3) lowest responsible and eligible General Bidders.

#### 1.09 AWARD OF CONTRACT

- A. The Contract shall be awarded to the lowest responsible and eligible General Bidder on the basis of competitive bids in accordance with the procedure set forth in the provision of Section 44B-44L inclusive, as amended or inserted, by Chapter 149 of the General Laws of the Commonwealth of Massachusetts.
- B. If the bidder selected as the General Contractor fails to perform his agreement to execute a contract in accordance with the terms of his General Bid, and furnish a Performance Bond and also a Labor and Materials or Payment Bond, as stated in his General Bid in accordance with Section 44F, an award shall be made to the next lowest responsible and eligible bidder.
- C. The words "lowest responsible and eligible bidder" shall be the bidder whose name is the lowest of those bidders possessing the skill, ability and integrity necessary to the faithful performance of the work and who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed, on the work. Essential information in regard to such qualifications shall be submitted in such form as the Awarding Authority may require.
- D. Action on the award will be taken within thirty (30) days, Saturdays, Sundays and Legal Holidays excluded after the opening of the bids.
- E. The awarding authority reserves the right to reject any or all bids, if it be in the public interest to do so, and to act upon the bids and make its award in any lawful manner.

#### 1.10 SECURITY FOR FAITHFUL PERFORMANCE

- A. The successful bidder must deliver to the Awarding Authority simultaneously with his delivery of the executed contract, an executed Performance Bond, and also a Labor and Materials or Payment Bond, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority and each in the sum of One Hundred Percent (100%) of the Contract Price, as surety for the faithful performance of his contract, and for the payment of all persons performing labor or furnishing materials in connections therewith. Said bonds shall provide that, if the General Contractor fails or refuses to complete the Contract, the Surety Company will be obligated to do so.
- B. Premiums are to be paid by the General Contractor and are to be included in the Contract Price.

#### 1.11 PRE-BID WALK-THRU

- A. Pre-bid walk-thru: Wednesday, May 17, 2023, at 10:00 AM. Meet at the Main Entrance of the tower, 60 Farina Road, Hull, MA 02045.

1.12 SITE VISITS

- A. Site visits are encouraged, and bidders shall make arrangements with the Town for site visits and shall obtain permission to enter existing building for inspection in advance.

1.13 CONTRACT DOCUMENTS

- A. Plans, specifications and other Contract Documents may be seen, examined or obtained online after 2:00 PM, **Wednesday, May 10, 2023** at [www.projectdog.com](http://www.projectdog.com) using Projectdog code **855818**.

1.14 EQUALITY

- A. Except where otherwise specifically provided to the contrary, the words "or equal" are hereby inserted immediately following the name or description of each article, assembly, system, or any component part thereof, in the Contract Documents. It is the contractor's responsibility to provide all the research and documentation that would prove a product or assembly is "equal". Failure to provide research or documentation does not alleviate the contractor's responsibility to meet the schedule.

1.15 TAX FREE NUMBER

- A. The tax-free number of the Town of Hull will be provided to the successful bidder.

1.16 PERMIT FEES

- A. Building permit fees will be waived for this project.
- B. The contractor is still responsible for applying for, procuring, and displaying all applicable building permits for the work.

1.17 SCHEDULE

- A. All work shall be completed by **within 150 calendar days from the issuance of 'Notice to Proceed'**.
- B. No exceptions will be made nor allowed if the contractor fails to properly plan the procurement of all items in advance of the work. Late fees will be imposed if the construction is not done on time.

1.18 LATE FEES

- A. If the work is not Substantially Complete within 150 calendar days from the date of 'Notice to Proceed', then the Contractor shall be charged actual damages to pay for consulting, testing fees, and temporary space for the Senior Center and its premises, and to manage and arrange for the completion of the project at no less than \$500.00 per day. Late fees will be deducted from the Contract via Change Order.

1.19 JOB MEETINGS

- A. There will be regular job meetings at the site on the same agreed upon day and time to

discuss and view the progress of the work and to answer questions. The Contractor's job superintendent and Project Manager shall attend each meeting.

#### 1.20 PROJECT SUPERINTENDENT

- A. The Contractor shall provide the same person as Superintendent for the entire duration of the project. Failure to maintain the same person in this position shall result in a \$1,000 penalty (per incident) which shall cover the Architect's time to re-orient new personnel.

#### 1.21 CONSTRUCTION TRAILER

- A. Field Offices, General: Provide Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading at locations approved by the Owner.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, Owner's Project Manager, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Provide one office for the Owner's Project Manager. Keep office clean and orderly. Furnish and equip offices as follows:
- C. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
- D. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
- E. Drinking water and private toilet.
- F. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
- G. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- H. Wi-Fi service;
- I. Exclusive-use office space with keyed-access lockable door; two (2) keys shall be provided for the On Site Representatives;
- J. One (1) workspace with desk, two (2) rolling office chairs, minimum of two (2) filing cabinets (may be part of the desk or may be standalone);
- K. One (1) Wi-Fi capable desktop printer; printer shall have the ability to print black & white and color, 8 ½" x 11" and 11" x 17", copy and scan.
- L. One (1) box of 8 ½" x 11" and one (1) box of 11" x 17" standard weight white copy paper;
- M. Up to one (1) replacement black ink cartridge per two (2) months; and up to one (1) replacement color ink cartridge per three (3) months;
- N. One (1) box each of blue, black and red pens; one (1) box of multi-colored highlighters; one (1) box each of small, medium and large binder clips; one (1) box each of small and large paperclips;
- O. One (1) stapler and one box of staples;

- P. Two (2) packages each of 3"x3" post-its and 1" x2" post-its.
- Q. One (1) trash can for the office space and one (1) for the meeting space with disposable liners;
- R. One broom and dustpan and one (1) Swiffer Wet Jet.
- S. One plan table within the meeting space and one full sized set of drawings and a complete, bound, Project Manual for the use of the project team.
- T. One full sized set of drawings and a complete, bound, Project Manual shall be provided for the exclusive use of the On-Site Representative (in addition to the set for the project team);
- U. If site space is limited, one trailer may be provided with a meeting space and two (2) offices at either end of the meeting room; one for the Superintendent and one for the On Site Representative; two (2) sets of keys shall be provided to the Owner's On-site representative for the trailer and the Representatives' office.

#### 1.22 WEB-BASE PLATFORM FOR MANAGING PROJECT COMMUNICATION

- A. Contractor shall provide a web-based platform for document management, transfer of large files and file organization.
- B. The platform shall be of sufficient size to store all project documentation including, but not limited to Submittals, Shop Drawings, RFIs, Field Reports, Requisitions, Change Orders, Schedules, and Test Reports.
- C. Access shall be available for all of the project participants.
- D. The following platforms, or approved equal, shall be acceptable:
  - 1. Submittal Exchange
  - 2. OneDrive
  - 3. DropBox for Business (with sufficient capacity)
  - 4. Procore

#### 1.23 MINIMUM WAGE SCHEDULE

- A. Bids shall be made on the basis of the Minimum Wage Schedule, as determined by the Commissioner of Labor and Industries, pursuant to the provision of Chapter 149, Section 26 to 27D inclusive, of the Massachusetts General Laws.
- B. All Bids including Filed Sub-Bids shall be accompanied by the Bidder's Certification regarding payment of prevailing wage rates on the form included with the Form for General Bid and the Sub-Bid Form.

#### 1.24 SITE ACCESS

- A. The General Contractor shall gain access to the site via routes approved by the Owner.
  - 1. The General Contractor as part of the bid price will restore all roads, curbs,

driveways, walks and grassed or landscaped areas damaged during construction.

- B. The General Contractor shall locate all on site stored or staged materials within the enclosed area designated by the Owner.

#### 1.25 STAGING

- A. The General Contractor shall provide all the vertical access (which includes staging, vertical lifts, etc.) and hoisting for all the work of the Contract over 8'-0" above grade. General Contractor will provide complete coverage of all wall areas receiving work and shall provide full decks and complete access for File Sub-Bidders, subcontractors, as well as the Architect.
- B. Access is included in the base contract. Access shall be granted to the Architect at any time.

#### 1.26 CONSTRUCTION BARRICADES

- A. The General Contractor shall provide all barricades to enclose the work area to prevent unauthorized access to the site.
  - 1. The barricades shall provide enough room for all construction activities to be performed while separated from pedestrians and staff on site.
  - 2. Safety is the sole responsibility of the Contractor and any barricades necessary to protect the work and the public shall be provided.
  - 3. Provide entrance tunnel protection.

#### 1.27 INSURANCE

- A. The Contractor shall purchase and maintain, at his expense all insurance required by the Contract. Documents and all insurance required by the applicable laws of Massachusetts, including but not limited to, General Laws, Chapter 146, in connection with all hoisting equipment.
- B. For all the insurance limit requirements, refer to Article 13 in the *Contract of Construction Services and General Conditions*.
- C. The Contractor shall purchase and maintain such insurance as will protect him from claims under workmen's compensation acts and from claims for damages because of bodily injury, including death and all property damage including, without limitation, damage to buildings and adjoining the site of construction which might arise from and during operations under this contract, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them.
- D. Town of Hull and SOCOTEC AE Consulting, LLC shall be listed as Additional Insured with a Waiver of Subrogation on the insurance policy for this project.



1.28 CONFLICT OF INTEREST

- A. A bidder filing a proposal thereby certifies that the proposal is made in good faith, without fraud, collusion, or connection of any kind with any other bidder for the same work, and that the bidder is completing solely on its own behalf without connection with, or obligation to, any undisclosed person or firm.

1.29 PROCEED ORDERS

- A. No bidder is to proceed without a proceed order as set out in the contract.

1.30 COMPLIANCE WITH MASSACHUSETTS GENERAL LAWS

- A. Before a contract may be executed by the City, the successful Bidder will be required, in accordance with the provisions of M.G.L. Chapter 62C, Section 49A, to execute and file with the City the following certificate:
- B. "Pursuant to Massachusetts General Laws, Chapter 62C, Section 49A, I certify under the penalty of perjury that I, to the best of my knowledge and belief have filed all state tax returns and paid all the state taxes required under law.

Signature of Individual or Corporate Name

By:

\_\_\_\_\_  
(Signature of Corporate Officer if applicable)

Title: \_\_\_\_\_

Social Security Number of Federal Identification Number \_\_\_\_\_

END OF SECTION



# Projectdog, Inc

## Supplemental Instructions to Bidders for Electronic Bid Projects (E-Bid)

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## Sign Up

Every user of [Projectdog.com](http://Projectdog.com) has a unique username and password for their account. **MANDATORY: All users must keep usernames and passwords PRIVATE and SECURE. Do not share accounts.**

1. Go to [www.Projectdog.com](http://www.Projectdog.com).
2. Select the “Sign Up” (Fig 1).
3. Complete all required form fields and press Submit.  
An automatic email will be sent to the registered email.
4. Select the confirmation link in the email to complete the registration.

## Login

1. Go to [www.Projectdog.com](http://www.Projectdog.com).
2. Enter a registered email address and password (Fig 1).
3. Press Login.

## Logoff

1. Hover over Home (Fig 2).
2. Select “Logoff”.

## Forgotten Password


1. Select “Forgot your password?” (Fig 3).
2. Enter the e-mail address.
3. Select “Send Info”. An automated e-mail will be sent with the password.

## Account Information

View and edit user contact information. To change an email address, users must register a new account. Call Projectdog to have the old account removed.

1. Hover over Home (Fig 4).
2. Click “My Information”.
3. Edit information as needed.
4. Click “Save” to finalize edits.

Fig 1



Email:

Password:

[Sign Up](#) [Forgot your password?](#) [Login](#)

Customer Support 978-499-9014

Fig 2

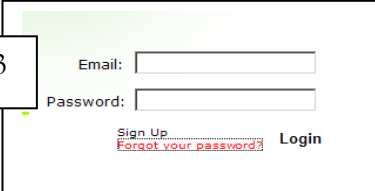


Projectdog

[Home](#) [Project Central](#) [Company](#)

My Information  
[Logout](#)

Fig 3

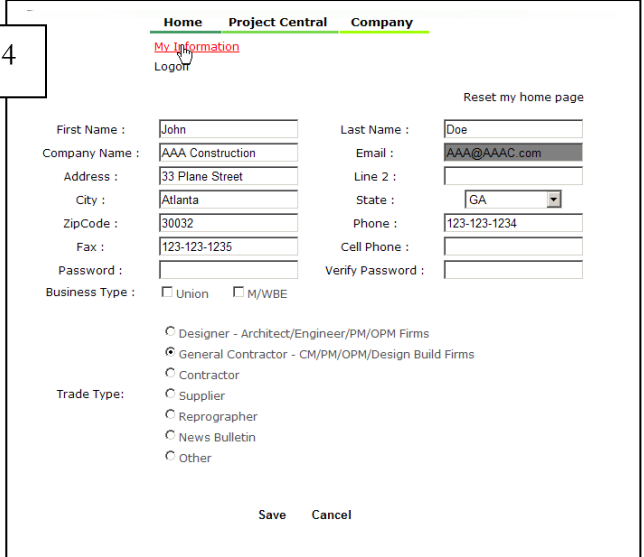


Email:

Password:

[Sign Up](#) [Forgot your password?](#) [Login](#)

Fig 4



[Home](#) [Project Central](#) [Company](#)

[My Information](#)  
Logout

Reset my home page

First Name :  Last Name :

Company Name :  Email :

Address :  Line 2 :

City :  State :

ZipCode :  Phone :

Fax :  Cell Phone :

Password :  Verify Password :

Business Type :  Union  M/WBE

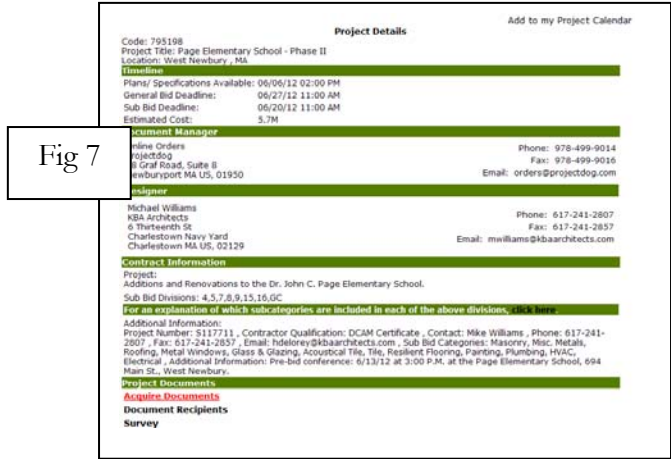
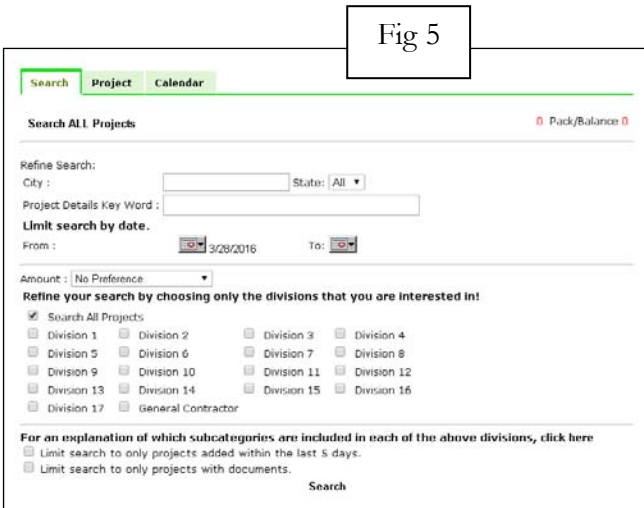
Designer - Architect/Engineer/PM/OPM Firms  
 General Contractor - CM/PM/OPM/Design Build Firms  
 Contractor  
 Supplier  
 Reprographer  
 News Bulletin  
 Other

Trade Type:

Save Cancel

# Project Details

Utilize the search page (Fig 5) or enter a Project Code (Fig 6) to view a project's "Project Details" page (Fig 7).



# Acquire Documents

Download all project documents.

1. Click "Acquire Documents" link found on a project's "Project Details" page (Fig 7).
2. Respond to the Legal Notice after reviewing.
3. Click on any file description to open, review, or save a document (Fig 8).

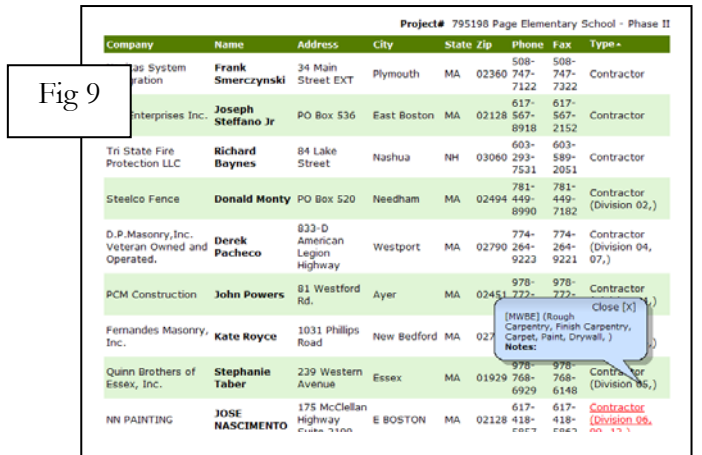
Users are automatically added to the project's "Document Recipients" list to receive update notifications upon viewing any document online.



# Document Recipients

Review all plan holders who have acquired documents.

1. Click "Document Recipients" link found on a project's "Project Details" page (Fig 7).
2. All potential bidders are listed and sorted by company type (Fig 9). Click on a column title to sort alphabetically.



# Electronic Bid (E-Bid)

This project is being **Electronically Bid** at [www.Projectdog.com](http://www.Projectdog.com). Hard copy bids will not be accepted by the Awarding Authority. Go to [www.Projectdog.com](http://www.Projectdog.com) and Login with an existing account or click [Sign Up](#) to register for free. Enter a project code or search by keyword to access the “Project Details” page. Select “Acquire Documents” to download all bidding documents.

**Projectdog**  
 Home Project Central Company  
 Add to my Project Calendar

**Project Details**

Code: 799090  
 Project Title: Ebid  
 Location: Newburyport, MA

**Timeline**  
 Plans/ Specifications Available: 05/22/13 10:00 AM  
 General Bid Deadline: 06/21/13 04:00 PM  
 Sub Bid Deadline: 06/19/13 04:00 PM  
 Estimated Cost: Negotiated

**Project Owner**  
 Sales Department  
 Projectdog  
 18 Graf Road  
 Suite 8  
 Newburyport MA US, 01950  
 Phone: 978-499-9014  
 Fax: 978-499-9014  
 Email: sales@projectdog.com

**Document Manager**  
 Online Orders  
 Projectdog  
 18 Graf Road, Suite 8  
 Newburyport MA US, 01950  
 Phone: 978-499-9014  
 Fax: 978-499-9016  
 Email: orders@projectdog.com

**Contract Information**  
 Project:  
 Ebid Test Demo for Sales Department.  
 Additional Information:  
 THIS PROJECT IS BEING ELECTRONICALLY BID AND HARD COPY BIDS WILL NOT BE ACCEPTED. The bids are to be prepared and submitted at [www.Projectdog.com](http://www.Projectdog.com). Tutorials and instructions on how to complete the electronic bid documents are available online along with all project documentation.

**Project Documents**  
 Acquire Documents  
 Document Recipients  
 GC E-Bid  
 Sub E-Bid

## How to Submit an E-Bid

Complete and save all required forms as PDF files. Please be sure to sign all required signatures either digitally or manually.

1. Select the **GC E-Bid** or **Sub E-Bid** link located on the “Project Details” page.  
 Subcontractors select a bidding trade;
2. Answer / enter / upload all required areas. Enter all dollar value amounts as a whole dollar values only.
3. Select “Submit My E-Bid.” Review the submitted bid package via the “View My Bid Package” link.

**Bidding Trades**  
 Please select trade(s) you are bidding.

Section#	Description	Status	Bidding
220000	Plumbing	Incomplete	GO
230000	HVAC	Incomplete	GO
260000	Electrical	Incomplete	GO

**It's that simple!**

You will not be able to Submit your bid unless all mandatory fields are complete. Please allow yourself sufficient time to upload all information. You will receive an automated email once completed. Please save this for your records.  
 DHCD 016128 Roof Replacement & Vinyl Siding, Project #811541

Acknowledge Addendum 0,  Yes  No

Bid Price (Whole Dollar)

Form for General Bid (Signature page) Add File -  
 Bid Bond Add File -  
 Bidders Reference Form Add File -

Item 2 Sub-bids as follows:  
 There are no Sub bids for this project.

**Bid Closes in:**  
**0 Days 2 Hours 20 Minutes 20 Seconds.**

Save [Submit my E-Bid](#) Close

You will not be able to Submit your bid unless all mandatory fields are complete. Please allow yourself sufficient time to upload all information. You will receive an automated email once completed. Please save this for your records.  
 DHCD 016128 Roof Replacement & Vinyl Siding, Project #811541

Acknowledge Addendum 0,1,  Yes  No 4/6/2016

Bid Price (Whole Dollar)  twenty-five thousand Dollars.

Form for General Bid (Signature page) View File  
 Bid Bond View File  
 Bidders Reference Form View File

Item 2 Sub-bids as follows:  
 There are no Sub bids for this project.

**Bid Closes in:**  
**0 Days 2 Hours 11 Minutes 20 Seconds.**

Retract [View My Bid Package](#) Close

**Add File**

Click “Add File” on the E-Bid page to open the Upload Assistant window. Then click “Browse” or “Choose File” to upload a PDF file.

**Warning**

E-Bids cannot be submitted unless all areas are complete.

Save before adding files or closing the window or E-Bid data may need to be re-entered.

Projectdog.com server time is set to industry standards at time-a.nist.gov. Bidders are encouraged to update their computer clock.

Bidders may save, submit or modify an Electronic Bid (E-Bid) at any time prior to bid close. Once submitted, a bid cannot be edited. To modify a bid the bidder must retract the bid, make any necessary changes, and then submit the bid again. Upon submitting or retracting the bidder will receive a convenience email for informational purposes only. Bidders are encouraged to contact Projectdog if an email is not received.

It is the bidder’s responsibility to review and confirm online that a bid has been submitted and/or retracted and that the bid is 100% true, complete and accurate. All bidders are required to review their submitted E-Bid via the “[View My Bid Package](#)” link.

If a bid is submitted prior to an addendum being issued the bidder will receive an automated email for informational purposes only stating the bidder must review the addendum, retract the bid, acknowledge all addenda, and submit the bid again. If a bidder fails to acknowledge addenda their bid may be rejected by the Awarding Authority.

Once the bid deadline has closed the E-Bid links are no longer available. All E-Bids are compiled in real time upon bid close and published forthwith on the “Project Details” page titled as “List of Bids Received”. Official bid tabulations are posted at the discretion of the Awarding Authority.

For additional assistance, call Projectdog at (978) 499-9014 (M-F, 9AM-5PM).





# Bid Bond Affidavit

This document is an affidavit form that is drafted to serve as a statement wherein the person (Bidder) who signs it swears under penalty of perjury that the facts and information that are identified in this affidavit are true. **This affidavit is in lieu of an insurance Bid Bond certificate.**

Bidders submitting the Bid Bond Affidavit form and the 5% Bid Deposit in the form of cash, certified check, treasurer's or cashier's check issued by a responsible bank or trust company shall ensure that these documents are received by the Awarding Authority prior to the closing of the electronic bid.

Both the completed Bid Bond Affidavit form and the Bid Deposit shall be enclosed in a sealed envelope with the following information plainly marked on the outside:

**DO NOT OPEN BEFORE:** *[indicate DATE and TIME of bid opening]*

**Project Name:** \_\_\_\_\_  
**Project Number:** \_\_\_\_\_  
**Bidder's Name:** \_\_\_\_\_  
**Business Address:** \_\_\_\_\_  
**Phone Number:** \_\_\_\_\_

It is the Bidder's responsibility to ensure that the completed Bid Bond Affidavit form and Bid Deposit are submitted as stated above and received by the Awarding Authority prior to the closing of electronic bids. The completed Bid Bond Affidavit form must also be uploaded via the project E-bid "Bid Bond" link at [www.Projectdog.com](http://www.Projectdog.com).

The Bidder understands and consents that any failure to do so whether his own or other fault may result in the rejection of said bid. The Bidder is solely responsible for the accuracy and value of the Bid Deposit. In the event that the Bid Deposit is less than the required amount as outlined in the project specifications the bid may be rejected.

**Bid Deposit Amount (in figures):** \_\_\_\_\_

**CASH**

*or*

**Certified, Treasurer's, or Cashier's Check**

**Date:** \_\_\_\_\_

**Bidder's Name:** \_\_\_\_\_

**Business Address:** \_\_\_\_\_

**Signature:** \_\_\_\_\_



FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

**SECTION 00 41 00 – FORM FOR GENERAL BID**

**FORT REVERE WATER TOWER REHABILITATION**  
**TOWN OF HULL**

June 14, 2023

Chris Dilorio  
Director of Community Development & Planning  
Town of Hull  
253 Atlantic Ave.,  
Hull, MA 02045

Mr. DiIorio:

**BASIC PRICE**

- A. The undersigned, having visited the site of the above project and having familiarized myself with the local conditions affecting the cost of the work and with the contract documents, including Amendments and Addenda Nos. \_\_\_\_\_, hereby proposes to furnish all labor, materials, tools, equipment, insurance, permits, taxes, and to do and lawfully perform all things as provided in the specifications, all in accordance with the contract documents, for the sum of:

\_\_\_\_\_ Dollars, \$\_\_\_\_\_.

**B. FILED SUB-BIDS**

The subdivision of the proposed contract price is as follows:

Item 1. The work of the General Contractor, being all work other than that covered by Item 2.

\$\_\_\_\_\_.

Item 2. Sub-Bids are included as follows:

Sub-Trade	Name of Sub-Bidder	Amount	Bonds required indicated by "Yes" or "No"
<u>Masonry</u>	_____	_____	_____
<u>Miscellaneous and Ornamental Iron</u>	_____	_____	_____
<u>Waterproofing, Damp-proofing, and Caulking</u>	_____	_____	_____
<u>Roofing and Flashing</u>	_____	_____	_____
<u>Electrical</u>	_____	_____	_____

C. UNIT PRICES

1. The payment shall be as indicated in the Contract Documents.
2. Prior to commencing removal or placement of materials set forth in the Contract Documents, the Contractor shall notify the Architect/Engineer in sufficient time to permit proper measurements to be taken on behalf of the Owner. Only quantities which have been approved in writing by the Architect/Engineer will be considered in the determination of adjustments to the Contract Sum.
3. Performance of Work which is not required under the Contract Documents or which is not authorized by Change Order, whether or not such Work item is set forth hereunder as a Unit Price item, shall not be considered cause for extra payment. The Contractor will be held fully responsible for such unauthorized work, including the performance of all corrective measures required by the Architect/Engineer.
4. The Unit Prices as requested herein shall include their pro rate share of all costs for general conditions, staging, access, demolition, disposal, insurance, permits, taxes, overhead, profit, bond, labor, materials, and equipment of every kind, for the Contractor and Subcontractors.
5. Schedule of Unit Prices

**UNIT PRICE SCHEDULE**

#	Description	Unit	Base Bid Quantities	Reference Detail(s)	Add/Deduct price (Insert Only One Number)
1	Vertical Concrete Repair	SF	280	1,2/S3-02	
2	Top Surface Concrete Repair	SF	95	3,4/S3-01	
3	Underside Concrete Repair	SF	85	2,3/S3-01	
4	Upper Band Concrete Repair	LF	85	3/S3-01	
5	Lower Band and Tower Base Concrete Repair	LF	90	2,5/S3-01	
6	Epoxy Crack Injection at Concrete	LF	40	7/S3-01	
7	Brick Replacement Masonry Filed Sub-Bid	EA	50	6/S3-02	
8	Brick Pointing Masonry Filed Sub-Bid	SF	1300	5/S3-02	
9	Rout & Seal Brick Masonry Sub-Bid	LF	100	3/S3-02	
10	Roof Sheathing/Board Replacement	SF	20	1,2/S3-03	
11	Ceiling Boards Replacement (Observation Deck)	SF	10	6/S3-03	
12	Cementitious 1/4" Skim Coating	SF	625	1,2/S3-02 similar	

\*Indicates that the quantity listed is in addition to all the scope areas noted on the plans.

D. The undersigned agrees that, if s/he is selected as general contractor, he will within five

days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the Awarding Authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price; provided however, that if there is more than 1 surety company, the surety companies shall be jointly and severally liable.

- E. The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employees; and the he will comply with all laws and regulations applicable to awards made subject to section 44A.
- F. The undersigned as Bidder certifies that if this proposal is accepted, she will furnish to the Town of Hull with the invoice for the material or equipment supplied two copies of any and all Material Safety Data Sheets applicable to such material or equipment, as required by M.G.L. Chapter 111F, so called "Right to Know Law".
- G. The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As under in this section, the work "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.
- H. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule of regulation promulgated hereunder.

I. Substantial Completion

Substantial completion to be within 150 calendar days from the date of 'Notice to Proceed'.

Sincerely,

\_\_\_\_\_  
(Bidder)

\_\_\_\_\_  
(Address of Bidder)

By: \_\_\_\_\_  
(Title - Owner\*, Partner\*)

(Seal, if Corporation)

By: \_\_\_\_\_  
(If Corporation - Name and Office)

\* If the business owned by the individual or partnership is conducted under a trade or assumed name, a certified copy of doing business under an assumed name should be annexed.

J. BIDDER'S CERTIFICATION REGARDING PAYMENT OF PREVAILING WAGE RATES

The undersigned bidder hereby certifies, under the pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Industries. The undersigned bidder agrees to indemnify the Awarding Authority for, from and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates or (2) the failure of the bidder, if selected as the contractor, to pay laborers employed on the project the said applicable prevailing wage rates.

DATED: \_\_\_\_\_ NAME OF BIDDER: \_\_\_\_\_

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

Hard Copy Submissions Will Not Be Accepted  
ELECTRONIC BID  
Use form provided on Projecttag.com

Acknowledgment of Principal, if a Corporation

State of \_\_\_\_\_)

:SS:

County of \_\_\_\_\_)

On this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

before me personally came \_\_\_\_\_ to me known, who, being by me duly sworn, did depose and say that he/she resides

at \_\_\_\_\_, that he/she is the \_\_\_\_\_ of \_\_\_\_\_ the corporation described herein and which executed the foregoing instrument; that he/she knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he/she signed his/her name thereto by like order.

(Notary Public)

Acknowledgment of Principal, if a Partnership

State of \_\_\_\_\_)

:SS:

County of \_\_\_\_\_)

On this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

before me personally came \_\_\_\_\_ to me known, and known to me to be one of the members of the firm of

\_\_\_\_\_ who executed the foregoing instrument and he/she acknowledged to me that he/she executed the same as and for the act of said firm.

(Notary Public)

Hard Copy Submissions Will Not Be Accepted  
Use form provided on Projectdog.com



FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

Acknowledgment of Principal, if an Individual

State of \_\_\_\_\_)

:SS:

County of \_\_\_\_\_)

On this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

before me personally came \_\_\_\_\_ to me known, and known to me to be the person described herein and who executed the foregoing instrument and he/she acknowledged to me that he/she executed the same.

(Notary Public)

\_\_\_\_\_  
\_\_\_\_\_  
(If bidder is a partnership, state here the name and residence of each member thereof)

Name of Partners

Residence Address

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
(If bidder is a corporation, state here the title, name, and residence of each member thereof)

Title

Name

Residence Address

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Organized under the laws of the state of \_\_\_\_\_

Date: \_\_\_\_\_

**ELECTRONIC BID**  
**Hard Copy Submissions Will Not Be Accepted**  
**Use form provided on Projectdog.com**



**SPECIAL NOTICE TO AWARDING AUTHORITY**  
**BIDDERS' UPDATE STATEMENTS ARE NOT PUBLIC RECORDS AND**  
**ARE NOT OPEN TO PUBLIC INSPECTION (M.G.L. C.149, §44D)**

EFFECTIVE MARCH 30, 2010

**Commonwealth of Massachusetts**  
**Division of Capital Asset Management**  
**PRIME/GENERAL CONTRACTOR**  
**UPDATE STATEMENT**

**TO ALL BIDDERS AND AWARDING AUTHORITIES**

A COMPLETED AND SIGNED PRIME/GENERAL CONTRACTOR UPDATE STATEMENT MUST BE SUBMITTED WITH EVERY PRIME/GENERAL BID FOR A CONTRACT PURSUANT TO M.G.L. c.149, §44A AND M.G.L. c. 149A. ANY PRIME/GENERAL BID SUBMITTED WITHOUT AN APPROPRIATE UPDATE STATEMENT IS INVALID AND MUST BE REJECTED.

***Caution: This form is to be used for submitting Prime/General Contract bids. It is not to be used for submitting Filed Sub-Bids or Trade Sub-Bids.***

**AWARDING AUTHORITIES**

If the Awarding Authority determines that the bidder does not demonstrably possess the skill, ability, and integrity necessary to perform the work on the project, it must reject the bid.

---

**BIDDER'S AFFIDAVIT**

I swear under the pains and penalties of perjury that I am duly authorized by the bidder named below to sign and submit this Prime/General Contractor Update Statement on behalf of the bidder named below, that I have read this Prime/General Contractor Update Statement, and that all of the information provided by the bidder in this Prime/General Contractor Update Statement is true, accurate, and complete as of the bid date.

\_\_\_\_\_  
Bid Date

\_\_\_\_\_  
Print Name of Prime/General Contractor

\_\_\_\_\_  
Project Number (or  
name if no number)

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
Awarding Authority

\_\_\_\_\_  
Telephone Number

**SIGNATURE ⇨**

\_\_\_\_\_  
**Bidder's Authorized Representative**

# INSTRUCTIONS

## INSTRUCTIONS TO BIDDERS

- This form must be completed and submitted by all Prime/General contractors bidding on projects pursuant to M.G.L. c. 149, §44A and M.G.L. c. 149A.
- You must give complete and accurate answers to all questions and provide all of the information requested. **MAKING A MATERIALLY FALSE STATEMENT IN THIS UPDATE STATEMENT IS GROUNDS FOR REJECTING YOUR BID AND FOR DEBARRING YOU FROM ALL PUBLIC CONTRACTING.**
- **This Update Statement must include all requested information that was not previously reported on the Application used for your firm's most recently issued (not extended or amended) Prime/General Contractor Certificate of Eligibility. The Update Statement must cover the entire period since the date of your Application, NOT since the date of your Certification.**
- You must use this official form of Update Statement. Copies of this form may be obtained from the awarding authority and from the Asset Management Web Site: [www.mass.gov/dcam](http://www.mass.gov/dcam).
- If additional space is needed, please copy the appropriate page of this Update Statement and attach it as an additional sheet.
- See the section entitled "Bidding Limits" in the *Instructions to Awarding Authorities* for important information concerning your bidding limits.

## INSTRUCTIONS TO AWARDING AUTHORITIES

### ***Determination of Bidder Qualifications***

- It is the awarding authority's responsibility to determine who is the lowest eligible and responsible bidder. You must consider all of the information in the low bidder's Update Statement in making this determination. **Remember:** this information was not available to the Division of Capital Asset Management at the time of certification.
- The bidder's performance on the projects listed in Parts 1 and 2 must be part of your review. Contact the project references.
- **AWARDING AUTHORITIES ARE STRONGLY ENCOURAGED TO REVIEW THE LOW BIDDER'S ENTIRE CERTIFICATION FILE AT THE DIVISION OF CAPITAL ASSET MANAGEMENT. Telephone (617) 727-9320 for an appointment.**

### ***Bidding Limits***

**Single Project Limit:** The total amount of the bid, including all alternates, may not exceed the bidder's Single Project Limit.

**Aggregate Work Limit:** The annual value of the work to be performed on the contract for which the bid is submitted,

when added to the annual cost to complete the bidder's other currently held contracts, may not exceed the bidder's Aggregate Work Limit. Use the following procedure to determine whether the low bidder is within its Aggregate Work Limit:

**Step 1** Review Update Statement Question #2 to make sure that all requested information is provided and that the bidder has accurately calculated and totaled the annualized value of all incomplete work on its currently held contracts (column 9).

**Step 2** Determine the annual dollar value of the work to be performed on your project. This is done as follows:

- (i) If the project is to be completed in less than 12 months, the annual dollar value of the work is equal to the full amount of the bid.
- (ii) If the project will take more than 12 months to complete, calculate the number of years given to complete the project by dividing the total number of months in the project schedule by 12 (calculate to 3 decimal places), then divide the amount of the bid by the calculated number of years to find the annual dollar value of the work.

**Step 3** Add the annualized value of all of the bidder's incomplete contract work (the total of column 9 on page 5) to the annual dollar value of the work to be performed on your project. **The total may not exceed the bidder's Aggregate Work Limit.**

### ***Correction of Errors and Omissions in Update Statements***

**Matters of Form:** An awarding authority shall not reject a contractor's bid because there are mistakes or omissions of form in the Update Statement submitted with the bid, provided the contractor promptly corrects those mistakes or omissions upon request of the awarding authority. [810 CMR 8.05(1)].

**Correction of Other Defects:** An awarding authority may, in its discretion, give a contractor notice of defects, other than mistakes or omissions of form, in the contractor's Update Statement, and an opportunity to correct such defects, provided the correction of such defects is not prejudicial to fair competition. An awarding authority may reject a corrected Update Statement if it contains unfavorable information about the contractor that was omitted from the Update Statement filed with the contractor's bid. [810 CMR 8.05(2)].

**PART 1 - COMPLETED PROJECTS**

LIST ALL PUBLIC AND PRIVATE *BUILDING* PROJECTS YOUR FIRM HAS COMPLETED SINCE THE DATE OF APPLICATION FOR YOUR MOST RECENTLY ISSUED (NOT EXTENDED OR AMENDED) DCAM CERTIFICATE OF ELIGIBILITY. YOU MUST REPORT ALL REQUESTED INFORMATION NOT PREVIOUSLY REPORTED ON THAT DCAM APPLICATION\*.

PROJECT TITLE & LOCATION	WORK CATEGORY	CONTRACT PRICE	START DATE	DATE COMPLETED

Attach additional sheets if necessary

\* If your firm has been terminated from a project prior to completion of the work or has failed or refused to complete its work under any contract, full details and an explanation must be provided. See Part 3 of this Update Statement.

PROVIDE THE FOLLOWING REFERENCE INFORMATION FOR EACH COMPLETED PROJECT LISTED ON THE PREVIOUS PAGE.

PROJECT TITLE	COMPANY NAME	CONTACT PERSON	TELEPHONE
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone

Is your company or any individual who owns, manages or controls your company affiliated with any owner, designer or general contractor named above, either through a business or family relationship?  YES  NO

Are any of the contact persons named above affiliated with your company or any individual who owns, manages or control your company, either through a business or family relationship?  YES  NO

If you have answered YES to either question, explain. \_\_\_\_\_

**PART 2 - CURRENTLY HELD CONTRACTS**

LIST ALL PUBLIC AND PRIVATE BUILDING AND NON-BUILDING *CONSTRUCTION* PROJECTS YOUR FIRM HAS UNDER CONTRACT ON THIS DATE REGARDLESS OF WHEN OR WHETHER THE WORK COMMENCED.

1	2	3	4	5	6	7	8	9
PROJECT TITLE & LOCATION	WORK CATEGORY	START AND END DATES	ON SCHEDULE (yes / no)	CONTRACT PRICE	% NOT COMPLETE	\$ VALUE OF WORK NOT COMPLETE (col. 5 X col. 6)	NO. OF YEARS REMAINING (see note below)	ANNUALIZED VALUE OF INCOMPLETE WORK (col. 7 ÷ col. 8) (divided by)

ANNUALIZED VALUE OF ALL INCOMPLETE CONTRACT WORK (Total of Column 9)

\$ \_\_\_\_\_

Column 8

- If less than one year is left in the project schedule, write 1.
- If more than 12 months are left in the project schedule, divide the number of months left in the project schedule by 12 (calculate to three decimal places).

PROVIDE THE FOLLOWING REFERENCE INFORMATION FOR EACH INCOMPLETE PROJECT LISTED ON THE PREVIOUS PAGE.

PROJECT TITLE	COMPANY NAME	CONTACT PERSON	TELEPHONE
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone

Is your company or any individual who owns, manages or controls your company affiliated with any owner, designer or general contractor named above either through a business or family relationship?  YES  NO

Are any of the contact persons named above affiliated with your company or any individual who owns, manages or control your company, either through a business or family relationship?  YES  NO

If you have answered YES to either question, explain. \_\_\_\_\_



### PART 3 - PROJECT PERFORMANCE

For Parts 3 and 4, if you answer YES to any question, please provide on a separate page a complete explanation. Information you provide herein must supplement the Application for your most recently issued (not extended or amended) DCAM Certificate of Eligibility. You must report all requested information not previously reported on that DCAM Application for Prime/General Certificate of Eligibility. Include all details [project name(s) and location(s), names of all parties involved, relevant dates, etc.].

	YES	NO
1. Has your firm been terminated on any contract prior to completing a project or has any officer, partner or principal of your firm been an officer, partner or principal of another firm that was terminated or failed to complete a project?	<input type="checkbox"/>	<input type="checkbox"/>
2. Has your firm failed or refused either to perform or complete any of its work under any contract prior to substantial completion?	<input type="checkbox"/>	<input type="checkbox"/>
3. Has your firm failed or refused to complete any punch list work under any contract?	<input type="checkbox"/>	<input type="checkbox"/>
4. Has your firm filed for bankruptcy, or has any officer, principal or individual with a financial interest in your current firm been an officer, principal or individual with a financial interest in another firm that filed for bankruptcy?	<input type="checkbox"/>	<input type="checkbox"/>
5. Has your surety taken over or been asked to complete any of your work under any contract?	<input type="checkbox"/>	<input type="checkbox"/>
6. Has a payment or performance bond been invoked against your current firm, or has any officer, principal or individual with a financial interest in your current firm been an officer, principal or individual with a financial interest in another firm that had a payment or performance bond invoked?	<input type="checkbox"/>	<input type="checkbox"/>
7. Has your surety made payment to a materials supplier or other party under your payment bond on any contract?	<input type="checkbox"/>	<input type="checkbox"/>
8. Has any subcontractor filed a demand for direct payment with an awarding authority for a public project on any of your contracts?	<input type="checkbox"/>	<input type="checkbox"/>
9. Have any of your subcontractors or suppliers filed litigation to enforce a mechanic's lien against property in connection with work performed or materials supplied under any of your contracts?	<input type="checkbox"/>	<input type="checkbox"/>
10. Have there been any deaths of an employee or others occurring in connection with any of your projects?	<input type="checkbox"/>	<input type="checkbox"/>
11. Has any employee or other person suffered an injury in connection with any of your projects resulting in their inability to return to work for a period in excess of one year?	<input type="checkbox"/>	<input type="checkbox"/>

**PART 4 - Legal or Administrative Proceedings; Compliance with Laws**

**Please answer the following questions. Information must supplement all judicial and administrative proceedings involving bidder’s firm, which were instituted or concluded (adversely or otherwise) since your firm’s Application for your most recently issued (not extended or amended) Certificate of Eligibility. You must report all requested information not previously reported on that DCAM Application for Prime/General Certificate of Eligibility.**

The term “administrative proceeding” as used in this Prime/General Contractor Update Statement includes (i) any action taken or proceeding brought by a governmental agency, department or officer to enforce any law, regulation, code, legal, or contractual requirement, except for those brought in state or federal courts, or (ii) any action taken by a governmental agency, department or officer imposing penalties, fines or other sanctions for failure to comply with any such legal or contractual requirement.

The term “anyone with a financial interest in your firm” as used in this Section “I”, shall mean any person and/or entity with a 5% or greater ownership interest in the applicant’s firm.

**If you answer YES to any question, on a separate page provide a complete explanation of each proceeding or action and any judgment, decision, fine or other sanction or result. Include all details (name of court or administrative agency, title of case or proceeding, case number, date action was commenced, date judgment or decision was entered, fines or penalties imposed, etc.).**

	YES	NO
1. Have any civil, judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to the procurement or performance of any construction contract, including but not limited to actions to obtain payment brought by subcontractors, suppliers or others?	<input type="checkbox"/>	<input type="checkbox"/>
2. Have any criminal proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to the procurement or performance of any construction contract including, but not limited to, any of the following offenses: fraud, graft, embezzlement, forgery, bribery, falsification or destruction of records, or receipt of stolen property?	<input type="checkbox"/>	<input type="checkbox"/>
3. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of any state’s or federal procurement laws arising out of the submission of bids or proposals?	<input type="checkbox"/>	<input type="checkbox"/>
4. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of M.G.L. Chapter 268A, the State Ethics Law?	<input type="checkbox"/>	<input type="checkbox"/>

**PART 4 - Legal or Administrative Proceedings; Compliance with Laws (continued)**

	YES	NO
5. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of any state or federal law regulating hours of labor, unemployment compensation, minimum wages, prevailing wages, overtime pay, equal pay, child labor or worker's compensation?	<input type="checkbox"/>	<input type="checkbox"/>
6. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of any state or federal law prohibiting discrimination in employment?	<input type="checkbox"/>	<input type="checkbox"/>
7. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a claim of repeated or aggravated violation of any state or federal law regulating labor relations?	<input type="checkbox"/>	<input type="checkbox"/>
8. Have any proceedings by a municipal, state, or federal agency been brought, concluded, or settled relating to decertification, debarment, or suspension of your firm or any principal or officer or anyone with a financial interest in your firm from public contracting?	<input type="checkbox"/>	<input type="checkbox"/>
9. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of state or federal law regulating the environment?	<input type="checkbox"/>	<input type="checkbox"/>
10. Has your firm been fined by OSHA or any other state or federal agency for violations of any laws or regulations related to occupational health or safety? Note: this information may be obtained from OSHA's Web Site at <a href="http://www.osha.gov">www.osha.gov</a>	<input type="checkbox"/>	<input type="checkbox"/>
11. Has your firm been sanctioned for failure to achieve DBE/MBE/WBE goals, workforce goals, or failure to file certified payrolls on any public projects?	<input type="checkbox"/>	<input type="checkbox"/>
12. Other than previously reported in the above paragraphs of this Section I, have any administrative proceedings or investigations involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled by any local, state or federal agency relating to the procurement or performance of any construction contract?	<input type="checkbox"/>	<input type="checkbox"/>
13. Are there any other issues that you are aware which may affect your firm's responsibility and integrity as a building contractor?	<input type="checkbox"/>	<input type="checkbox"/>

**PART 5 - SUPERVISORY PERSONNEL**

List all supervisory personnel, such as project managers and superintendents, who will be assigned to the project if your firm is awarded the contract. **Attach the resume of each person listed below.**

NAME	TITLE OR FUNCTION

**PART 6 - CHANGES IN BUSINESS ORGANIZATION OR FINANCIAL CONDITION**

Have there been any changes in your firm’s business organization, financial condition or bonding capacity since the date your current Certificate of Eligibility was issued?  Yes  No  
**If YES, attach a separate page providing complete details.**

**PART 7 – LIST OF COMPLETED CONSTRUCTION PROJECTS SUBMITTED TO THE DIVISION OF CAPITAL ASSET MANAGEMENT.**

**Attach here a copy of the list of completed construction projects which was submitted with your firm’s DCAM Application for your most recently issued (not extended or amended) DCAM Certificate of Eligibility. The Attachment must include a complete copy of the entire Section G – “Completed Projects” and the final page – “Certification” (Section J) containing the signature and date that the Completed Projects list (Section G) was submitted to the Division of Capital Asset Management.**

**SECTION 00 41 01 – FORM FOR FILED SUB-BID**

**FORT REVERE WATER TOWER REHABILITATION**  
**TOWN OF HULL**

May 31, 2023

Chris Dilorio  
Director of Community Development & Planning  
Town of Hull  
253 Atlantic Ave.,  
Hull, MA 02045

Mr. DiIorio:

To all General Bidders except those hereinafter expressly excluded:

- A. The undersigned proposes to furnish all labor and materials required for completing, in accordance with the hereinafter described plans, specifications and addenda, all the work specified in Section Nos. \_\_\_\_\_ of the specifications and in any plans specified in such section, prepared by SOCOTEC AE Consulting, LLC for the **Fort Revere Water Tower Rehabilitation, Hull, Massachusetts**, for the contract sum of

\_\_\_\_\_ dollars (\$\_\_\_\_\_).

- B. This sub-bid includes addenda number \_\_\_\_\_.

- C. This sub-bid

May be used by any general bidder except:

\_\_\_\_\_

May only be used by the following general bidders:

\_\_\_\_\_

(To exclude general bidders, insert "X" in one box only and fill in blank following that box. Do not answer if no general bidders are excluded.)

- D. UNIT PRICES:

1. The following Unit Prices as described in the Specification are designated for items of Work on the basis of additional (or less) Contractor Work above the base quantities listed in the Schedule, below, or in each specification sections and/or drawings for the Work. These Unit Prices shall be used to add the dollar amounts shown for additional Work authorized in writing by the Consultant.

**UNIT PRICE SCHEDULE**

#	Description	Unit	Base Bid Quantities	Reference Detail(s)	Add/Deduct price (Insert Only One Number)
1	Vertical Concrete Repair	SF	280	1,2/S3-02	
2	Top Surface Concrete Repair	SF	95	3,4/S3-01	
3	Underside Concrete Repair	SF	85	2,3/S3-01	
4	Upper Band Concrete Repair	LF	85	3/S3-01	
5	Lower Band and Tower Base Concrete Repair	LF	90	2,5/S3-01	
6	Epoxy Crack Injection at Concrete	LF	20	7/S3-01	
7	Brick Replacement Masonry Filed Sub-Bid	EA	50	5/S3-02	
8	Brick Pointing Masonry Filed Sub-Bid	SF	1300	5/S3-02	
9	Rout & Seal Brick Masonry Sub-Bid	LF	100	3/S3-02	
10	Roof Sheathing/Board Replacement	SF	20	1,2/S3-03	
11	Ceiling Boards Replacement (Observation Deck)	SF	10	6/S3-03	
12	Cementitious 1/4" Skim Coating	SF	625	1,2/S3-02 similar	

- The Unit Prices as requested herein shall include their prorated share of all costs for general conditions, staging, access, demolition, disposal, insurance, permits, taxes, overhead, profit, bond, labor, materials, and equipment of every kind, for the Contractor and Subcontractors.

3. Any Unit Price proposal that contains a unit price which is unduly high or low may be rejected as unbalanced, and thereby affects the total cost proposal of this Contract.
- E. The undersigned agrees that, if he is selected as sub-bidder, he will, within five days, Saturdays, Sundays and legal holidays excluded, after presentation of a subcontract by the general bidder selected as the General Contractor, execute with such general bidder a subcontract in accordance with the terms of this sub-bid and contingent upon the execution of the general contract, and, if requested to do so in the general bid by such general bidder, who shall pay the premiums therefore, furnish a performance and payment bond of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority, in the full sum of the subcontract price.

- F. The names of all persons, firms and corporations performing such class of work or part thereof for which the section of the specifications for the sub-trade require a listing in this paragraph (including the undersigned if customarily furnished by persons on his own payroll and in the absence of a contrary provision in the specifications), the name of each such class of work, or part thereof, and the bid price for each such class of work or part thereof are:

<u>NAME</u>	<u>CLASS OF WORK</u>	<u>BID PRICE</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

(Do not give bid price for any class or part thereof furnished by undersigned.)

- G. The undersigned agrees that the above list of bids to the undersigned represents a bona fide bid based on hereinbefore described plans, specifications, and addenda, and that, if the undersigned is awarded the contract, they will be used for the work indicated at the amounts stated, if satisfactory to the Awarding Authority.
- H. The undersigned further agrees to be bound to the General Contractor by the terms of the hereinbefore described plans, specifications (including all general conditions stated therein), and addenda, and to assume toward him all the obligations and responsibilities that he, by those documents, assumes toward the Owner.
- I. The undersigned offers the following information as evidence for his qualifications to perform the work as bid upon according to all requirements of the plans and specifications:

1. Has been in business under present business name \_\_\_\_\_ years.
2. Have ever failed to complete any work awarded? \_\_\_\_\_
3. List three or more recent buildings with names of General Contractor and Architect on which you served as subcontractor for work of similar character as required for the above named buildings:

<u>BUILDING</u>	<u>ARCHITECT</u>	<u>GENERAL CONTRACTOR</u>	<u>AMOUNT OF CONTRACT</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

4. Bank Reference: \_\_\_\_\_

J. The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that he will comply fully with the laws and regulations applicable to awards of subcontractors subject to section fourth-four F.

K. The undersigned further agrees that, if the undersigned fails to perform his agreement to execute a subcontract with the General Contractor and furnish a performance and payment bond if requested to do so in the general bid by the general bidder, the bid deposit accompanying the copy of this bid filed with the Award Authority shall become and be the property of the Awarding Authority as liquidated damages. The undersigned understands that, if he so executes a subcontract with the General Contractor and furnishes a performance and payment bond, if requested to do so, the bid deposit will be returned within five (5) days after execution of the general contract.

L. The undersigned represents that this proposal is made in good faith without fraud, collusion or connection of any kind with other bidder for the same work, that the undersigned is competing solely in his own behalf without connection with, or obligation to, any undisclosed person or corporation, that no other person or corporation has any interest in the profits of the contract, that the undersigned has read the form of contract attached hereto and is fully informed in regard to all provisions thereof and to the plans and specifications therein referred to, and that the undersigned has visited the premises described in said form of contract and made his own examination of the place where the work is to be done and of all conditions pertaining to the work had has made his own estimates and from such examination and estimate makes this proposal.

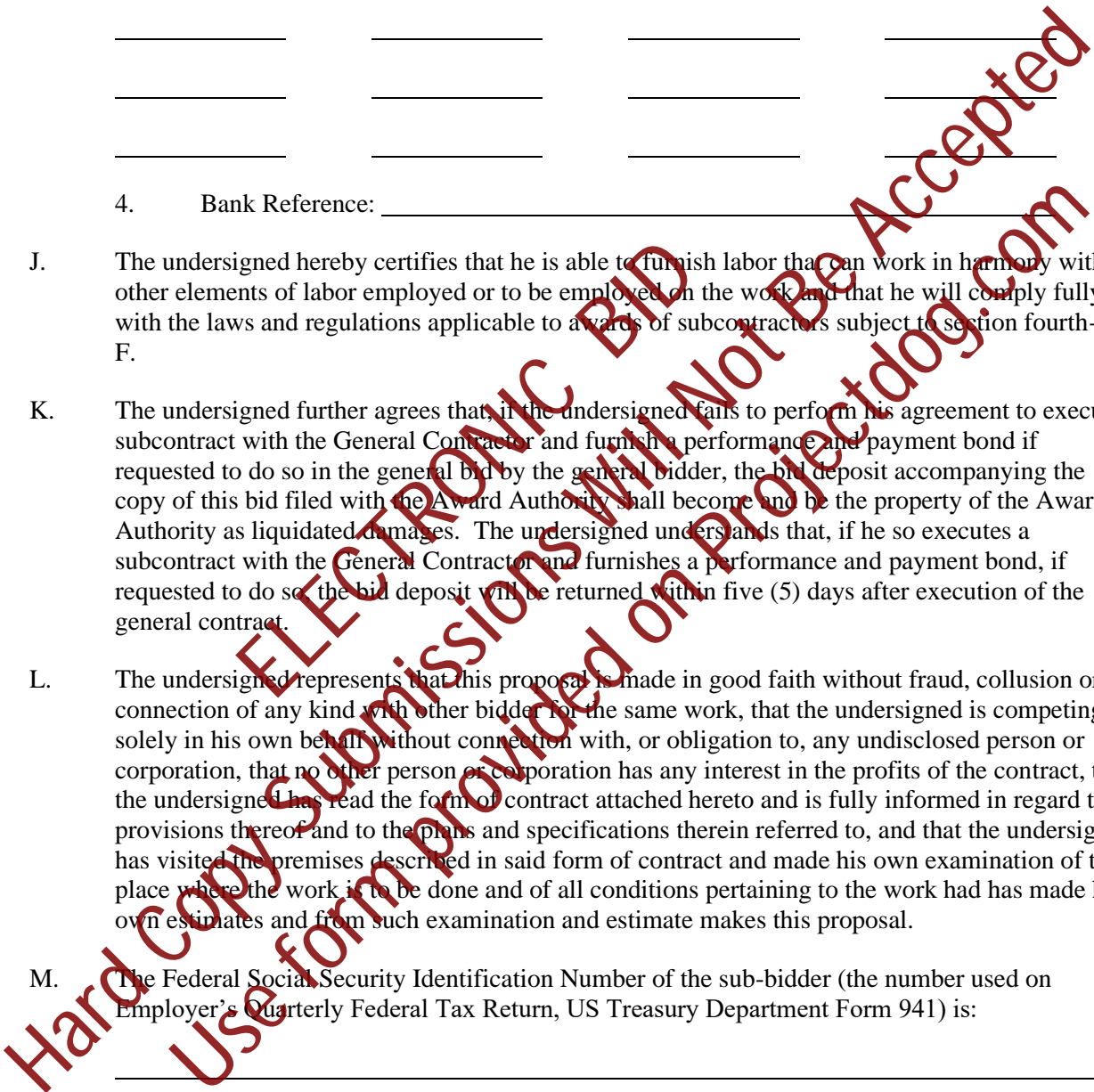
M. The Federal Social Security Identification Number of the sub-bidder (the number used on Employer's Quarterly Federal Tax Return, US Treasury Department Form 941) is:

\_\_\_\_\_

DATE \_\_\_\_\_

Sub Bidder \_\_\_\_\_  
(Company Name)

By: \_\_\_\_\_





FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

Signature of Authorized Representative

Title: \_\_\_\_\_  
(Affix Seal)

Business Address: \_\_\_\_\_

City and State: \_\_\_\_\_

Telephone No. \_\_\_\_\_

N. BIDDER'S CERTIFICATION REGARDING PAYMENT OF PREVAILING WAGES

The undersigned bidder hereby certifies, under the pains and penalties of perjury that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Industries. The undersigned bidder agrees to indemnify the Awarding Authority for, from and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work, arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates or (2) the failure of the bidder, if selected as the Contractor, to pay laborers employed on the project the said applicable prevailing wage rates.

DATED: \_\_\_\_\_ NAME OF BIDDER: \_\_\_\_\_

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

**ELECTRONIC BID NOT BE ACCEPTED**  
**Hard Copy Submissions Will Not Be Accepted**  
**Use form provided on Projectlog.com**



\*

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**SPECIAL NOTICE TO AWARDING AUTHORITY**  
**SUB-BIDDERS' UPDATE STATEMENTS ARE NOT PUBLIC RECORDS AND**  
**ARE NOT OPEN TO PUBLIC INSPECTION (M.G.L. C.149, §44D)**

EFFECTIVE MARCH 30, 2010

**Commonwealth of Massachusetts**  
**Division of Capital Asset Management**



**SUB-BIDDER**  
**UPDATE STATEMENT**

**TO ALL SUB-BIDDERS, TRADE CONTRACTORS AND AWARDING AUTHORITIES**

A COMPLETED AND SIGNED SUB-BIDDER UPDATE STATEMENT MUST BE SUBMITTED WITH EVERY FILED SUB-BID PURSUANT TO M.G.L. c.149, §44F AND EVERY TRADE SUB-BID PURSUANT TO M.G.L. c. 149A. ANY FILED SUB-BID OR TRADE SUB-BID SUBMITTED WITHOUT AN APPROPRIATE SUB-BIDDER UPDATE STATEMENT IS INVALID AND MUST BE REJECTED.

***Caution: This form is to be used for submitting Filed Sub-Bids and Trade Sub-Bids. It is not to be used for submitting Prime/General Contract bids.***

**AWARDING AUTHORITIES**

If the Awarding Authority determines that the sub-bidder is not competent to perform the work as specified on the project, it should reject the bid.

---

**SUB-BIDDER'S AFFIDAVIT**

I swear under the pains and penalties of perjury that I am duly authorized by the bidder named below to sign and submit this Sub-bidder Update Statement on behalf of the bidder named below, that I have read this Sub-bidder Update Statement, and that all of the information provided by the bidder in this Sub-bidder Update Statement is true, accurate, and complete as of the bid date.

\_\_\_\_\_  
Bid Date

\_\_\_\_\_  
Print Name of Sub-bidder or Trade Contractor

\_\_\_\_\_  
Project Number (or  
name if no number)

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
Awarding Authority

\_\_\_\_\_  
Telephone Number

**SIGNATURE⇒**

\_\_\_\_\_  
**Bidder's Authorized Representative**

# INSTRUCTIONS

## INSTRUCTIONS TO SUB-BIDDERS

- This form must be completed and submitted by all Filed Sub-Bidders bidding on projects pursuant to M.G.L. c. 149, §44F and Trade Contractors bidding on projects pursuant to M.G.L. c. 149A.
- You must give complete and accurate answers to all questions and provide all of the information requested. **MAKING A MATERIALLY FALSE STATEMENT IN THIS SUB-BIDDER UPDATE STATEMENT IS GROUNDS FOR REJECTING YOUR BID AND FOR DEBARRING YOU FROM ALL PUBLIC CONTRACTING.**
- **This Sub-Bidder Update Statement must include all requested information that was not previously reported on the Application used for your firm's most recently issued (not extended or amended) Sub-Bidder Certificate of Eligibility. The Sub-Bidder Update Statement must cover the entire period since the date of that Application, NOT since the date of your Certification.**
- You must use this official form of Sub-bidder Update Statement. Copies of this form may be obtained from the awarding authority and from the DCAM Web Site: [www.mass.gov/dcam](http://www.mass.gov/dcam) .
- If additional space is needed, please copy the appropriate page of this Sub-bidder Update Statement and attach it as an additional sheet.

## INSTRUCTIONS TO AWARDING AUTHORITIES

### *Determination of Sub-Bidder Qualifications*

- It is the awarding authority's responsibility to determine each responsible bidder. You must consider all of the information in the bidder's Sub-bidder Update Statement in making this determination. Remember: this information was not available to the Division of Capital Asset Management at the time of certification.
- The sub-bidder's performance on the projects listed in Parts 1 and 2 must be part of your review. Contact the project references.
- **AWARDING AUTHORITIES ARE STRONGLY ENCOURAGED TO REVIEW THE SUB-BIDDER'S ENTIRE CERTIFICATION FILE AT THE DIVISION OF CAPITAL ASSET MANAGEMENT.** Telephone (617) 727-9320 for an appointment.

### *Correction of Errors and Omissions in Sub-bidder Update Statements*

Matters of Form: An awarding authority shall not reject a sub-bidder's bid because there are mistakes or omissions of form in the Sub-bidder Update Statement submitted with the bid pursuant to M.G.L. c.149, §44D, provided the sub-bidder promptly corrects those mistakes or omissions upon request of the awarding authority. [810 CMR 8.13(1)].

Correction of Other Defects: An awarding authority may, in its discretion, give a sub-bidder notice of minor defects and omissions as to form in the Sub-bidder's Update Statement and provide an opportunity to correct its Sub-bidder Update Statement. However, the sub-bidder shall not be allowed to make corrections to a Sub-bidder Update Statement if material information about the sub-bidder was omitted from the Sub-bidder Update Statement filed with the sub-bidder's bid. The Awarding Authority shall advise DCAM of any material omissions in a Sub-bidder's Update Statement.. [810 CMR 8.13(2)].

**PART 1 - COMPLETED PROJECTS**

LIST ALL PUBLIC AND PRIVATE PROJECTS OF \$20,000 OR MORE THAT YOUR FIRM HAS COMPLETED SINCE THE DATE OF APPLICATION FOR YOUR MOST RECENTLY ISSUED (NOT EXTENDED OR AMENDED) SUB-BIDDER CERTIFICATE OF ELIGIBILITY\*.

PROJECT TITLE & LOCATION	WORK CATEGORY	CONTRACT PRICE	START DATE	DATE COMPLETED

Attach additional sheets if necessary

\* If your firm has been terminated from a project prior to completion of the work or has failed or refused to complete its work under any contract, full details and an explanation must be provided. See Part 3 of this Sub-bidder Update Statement.

PROVIDE THE FOLLOWING REFERENCE INFORMATION FOR EACH COMPLETED PROJECT LISTED ON THE PREVIOUS PAGE.

PROJECT TITLE	COMPANY NAME	CONTACT PERSON	TELEPHONE
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
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	GC: GC	Contact Person	Telephone

Is your company or any individual who owns, manages or controls your company affiliated with any owner, designer or general contractor named above, either through a business or family relationship?  YES  NO

Are any of the contact persons named above affiliated with your company or any individual who owns, manages or control your company, either through a business or family relationship?  YES  NO

If you have answered YES to either question, explain. \_\_\_\_\_

**PART 2 - CURRENTLY HELD CONTRACTS**

LIST ALL PUBLIC AND PRIVATE PROJECTS OF \$20,000 OR MORE THAT YOUR FIRM HAS UNDER CONTRACT ON THIS DATE REGARDLESS OF WHEN OR WHETHER THE WORK COMMENCED.

1	2	3	4	5	6	7
PROJECT TITLE & LOCATION	WORK CATEGORY	START AND END DATES	ON SCHEDULE (yes / no)	CONTRACT PRICE	% NOT COMPLETE	\$ VALUE OF WORK NOT COMPLETE (col. 5 X col. 6)

PROVIDE THE FOLLOWING REFERENCE INFORMATION FOR EACH INCOMPLETE PROJECT LISTED ON THE PREVIOUS PAGE.

PROJECT TITLE	COMPANY NAME	CONTACT PERSON	TELEPHONE
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	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone

Is your company or any individual who owns, manages or controls your company affiliated with any owner, designer or general contractor named above either through a business or family relationship?  YES  NO

Are any of the contact persons named above affiliated with your company or any individual who owns, manages or control your company, either through a business or family relationship?  YES  NO

If you have answered YES to either question, explain. \_\_\_\_\_



### PART 3 - PROJECT PERFORMANCE

**For Parts 3 and 4, if you answer YES to any question, please provide on a separate page a complete explanation. Information you provide herein must supplement the Application for your most recently issued (not extended or amended) Sub-Bidder Certificate of Eligibility. You must report all requested information not previously reported on that Application. Include all details [project name(s) and location(s), names of all parties involved, relevant dates, etc.].**

	YES	NO
1. Has your firm been terminated on any contract prior to completing a project or has any officer, partner or principal of your firm been an officer, partner or principal of another firm that was terminated or failed to complete a project?	<input type="checkbox"/>	<input type="checkbox"/>
2. Has your firm failed or refused either to perform or complete any of its work under any contract prior to substantial completion?	<input type="checkbox"/>	<input type="checkbox"/>
3. Has your firm failed or refused to complete any punch list work under any contract?	<input type="checkbox"/>	<input type="checkbox"/>
4. Has your firm filed for bankruptcy, or has any officer, principal or individual with a financial interest in your current firm been an officer, principal or individual with a financial interest in another firm that filed for bankruptcy?	<input type="checkbox"/>	<input type="checkbox"/>
5. Has your surety taken over or been asked to complete any of your work under any contract?	<input type="checkbox"/>	<input type="checkbox"/>
6. Has a payment or performance bond been invoked against your current firm, or has any officer, principal or individual with a financial interest in your current firm been an officer, principal or individual with a financial interest in another firm that had a payment or performance bond invoked?	<input type="checkbox"/>	<input type="checkbox"/>
7. Has your surety made payment to a materials supplier or other party under your payment bond on any contract?	<input type="checkbox"/>	<input type="checkbox"/>
8. Has any subcontractor filed a demand for direct payment with an awarding authority for a public project on any of your contracts?	<input type="checkbox"/>	<input type="checkbox"/>
9. Have any of your subcontractors or suppliers filed litigation to enforce a mechanic's lien against property in connection with work performed or materials supplied under any of your contracts?	<input type="checkbox"/>	<input type="checkbox"/>
10. Have there been any deaths of an employee or others occurring in connection with any of your projects?	<input type="checkbox"/>	<input type="checkbox"/>
11. Has any employee or other person suffered an injury in connection with any of your projects resulting in their inability to return to work for a period in excess of one year?	<input type="checkbox"/>	<input type="checkbox"/>

**PART 4 - Legal or Administrative Proceedings; Compliance with Laws**

**Please answer the following questions. Information must supplement all judicial and administrative proceedings involving bidder’s firm, which were instituted or concluded (adversely or otherwise) since your firm’s Application for your most recently issued (not extended or amended) Sub-Bidder Certificate of Eligibility. You must report all requested information not previously reported on that DCAM Application.**

The term “administrative proceeding” as used in this Sub-Bidder Update Statement includes (i) any action taken or proceeding brought by a governmental agency, department or officer to enforce any law, regulation, code, legal, or contractual requirement, except for those brought in state or federal courts, or (ii) any action taken by a governmental agency, department or officer imposing penalties, fines or other sanctions for failure to comply with any such legal or contractual requirement.

The term “anyone with a financial interest in your firm” as used in this Section “P”, shall mean any person and/or entity with a 5% or greater ownership interest in the applicant’s firm.

**If you answer YES to any question, on a separate page provide a complete explanation of each proceeding or action and any judgment, decision, fine or other sanction or result. Include all details (name of court or administrative agency, title of case or proceeding, case number, date action was commenced, date judgment or decision was entered, fines or penalties imposed, etc.).**

	YES	NO
1. Have any civil, judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to the procurement or performance of any construction contract, including but not limited to actions to obtain payment brought by subcontractors, suppliers or others?	<input type="checkbox"/>	<input type="checkbox"/>
2. Have any criminal proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to the procurement or performance of any construction contract including, but not limited to, any of the following offenses: fraud, graft, embezzlement, forgery, bribery, falsification or destruction of records, or receipt of stolen property?	<input type="checkbox"/>	<input type="checkbox"/>
3. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of any state’s or federal procurement laws arising out of the submission of bids or proposals?	<input type="checkbox"/>	<input type="checkbox"/>
4. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of M.G.L. Chapter 268A, the State Ethics Law?	<input type="checkbox"/>	<input type="checkbox"/>

**PART 4 - Legal or Administrative Proceedings; Compliance with Laws (continued)**

	YES	NO
5. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of any state or federal law regulating hours of labor, unemployment compensation, minimum wages, prevailing wages, overtime pay, equal pay, child labor or worker's compensation?	<input type="checkbox"/>	<input type="checkbox"/>
6. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of any state or federal law prohibiting discrimination in employment?	<input type="checkbox"/>	<input type="checkbox"/>
7. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a claim of repeated or aggravated violation of any state or federal law regulating labor relations?	<input type="checkbox"/>	<input type="checkbox"/>
8. Have any proceedings by a municipal, state, or federal agency been brought, concluded, or settled relating to decertification, debarment, or suspension of your firm or any principal or officer or anyone with a financial interest in your firm from public contracting?	<input type="checkbox"/>	<input type="checkbox"/>
9. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of state or federal law regulating the environment?	<input type="checkbox"/>	<input type="checkbox"/>
10. Has your firm been fined by OSHA or any other state or federal agency for violations of any laws or regulations related to occupational health or safety? Note: this information may be obtained from OSHA's Web Site at <a href="http://www.osha.gov">www.osha.gov</a>	<input type="checkbox"/>	<input type="checkbox"/>
11. Has your firm been sanctioned for failure to achieve DBE/MBE/WBE goals, workforce goals, or failure to file certified payrolls on any public projects?	<input type="checkbox"/>	<input type="checkbox"/>
12. Other than previously reported in the above paragraphs of this Section I, have any administrative proceedings or investigations involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled by any local, state or federal agency relating to the procurement or performance of any construction contract?	<input type="checkbox"/>	<input type="checkbox"/>
13. Are there any other issues that you are aware which may affect your firm's responsibility and integrity as a building contractor?	<input type="checkbox"/>	<input type="checkbox"/>

**PART 5 - SUPERVISORY PERSONNEL**

List all supervisory personnel who will be assigned to the project if your firm is awarded the contract. **Attach the resume of each person listed below.**

NAME	TITLE OR FUNCTION

**PART 6 - CHANGES IN BUSINESS ORGANIZATION OR FINANCIAL CONDITION**

Have there been any changes in your firm’s business organization, financial condition or bonding capacity since the date your current Certificate of Eligibility was issued?  Yes  No  
**If YES, attach a separate page providing complete details.**

**PART 7 – LIST OF COMPLETED CONSTRUCTION PROJECTS SUBMITTED TO THE DIVISION OF CAPITAL ASSET MANAGEMENT ALONG WITH CERTIFICATION PAGE.**

Attach here a copy of the list of completed construction projects which was submitted with your firm’s Application for your most recently issued (not extended or amended) Sub-Bidder Certificate of Eligibility. The Attachment must include a complete copy of the entire Section F – “Completed Projects” (Section G – “Completed Projects” for firms certified based upon their Prime/General Application), and the final page – “Certification Page”, (Section I in the Sub-bidder Application or Section J in Prime/General Application) containing the signature and date that the Completed Projects list (Section F or G) was submitted to the Division of Capital Asset Management.

FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

**CERIFICATE OF NON-COLLUSION**

*Must be completed and submitted with bid.*

***Certificate of Non-Collusion***

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

\_\_\_\_\_  
Signature of person submitting contract/bid

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Business



FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

**CERTIFICATE OF TAX COMPLIANCE**

*Must be completed and submitted with bid.*

***Certificate of Tax Compliance***

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

\_\_\_\_\_  
*Social Security Number or  
Federal Identification Number*

\_\_\_\_\_  
*Signature of Individual or  
Corporate Name*

\_\_\_\_\_  
*Corporate Officer  
(if applicable)*





FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
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Fax: (617) 464-2971

**W9 FORM**

*Follows this page & must be submitted with your bid*





By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting*, later, for further information.

**Note:** If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

**Definition of a U.S. person.** For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

**Special rules for partnerships.** Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

**Foreign person.** If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515, *Withholding of Tax on Nonresident Aliens and Foreign Entities*).

**Nonresident alien who becomes a resident alien.** Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

**Example.** Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

## Backup Withholding

**What is backup withholding?** Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

**Payments you receive will be subject to backup withholding if:**

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the instructions for Part II for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships*, earlier.

## What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the Instructions for the Requester of Form W-9 for more information.

## Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

## Penalties

**Failure to furnish TIN.** If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

**Civil penalty for false information with respect to withholding.** If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

**Criminal penalty for falsifying information.** Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

**Misuse of TINs.** If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

## Specific Instructions

### Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

**Note: ITIN applicant:** Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or “doing business as” (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity’s name as shown on the entity’s tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a “disregarded entity.” See Regulations section 301.7701-2(c)(2)(iii). Enter the owner’s name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner’s name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity’s name on line 2, “Business name/disregarded entity name.” If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

### Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

### Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

### Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

#### Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys’ fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a)
- 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 <sup>1</sup>	Generally, exempt payees 1 through 5 <sup>2</sup>
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

<sup>1</sup> See Form 1099-MISC, Miscellaneous Income, and its instructions.

<sup>2</sup> However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

**Exemption from FATCA reporting code.** The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

**Note:** You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

### Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

### Line 6

Enter your city, state, and ZIP code.

## Part I. Taxpayer Identification Number (TIN)

**Enter your TIN in the appropriate box.** If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

**Note:** See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

**How to get a TIN.** If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at [www.SSA.gov](http://www.SSA.gov). You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at [www.irs.gov/Businesses](http://www.irs.gov/Businesses) and clicking on Employer Identification Number (EIN) under Starting a Business. Go to [www.irs.gov/Forms](http://www.irs.gov/Forms) to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to [www.irs.gov/OrderForms](http://www.irs.gov/OrderForms) to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

**Note:** Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

**Caution:** A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

## Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

**Signature requirements.** Complete the certification as indicated in items 1 through 5 below.

**1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983.**

You must give your correct TIN, but you do not have to sign the certification.

**2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983.**

You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

**3. Real estate transactions.** You must sign the certification. You may cross out item 2 of the certification.

**4. Other payments.** You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

**5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions.** You must give your correct TIN, but you do not have to sign the certification.

**What Name and Number To Give the Requester**

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account <sup>1</sup>
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor <sup>2</sup>
5. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee <sup>1</sup>
b. So-called trust account that is not a legal or valid trust under state law	The actual owner <sup>1</sup>
6. Sole proprietorship or disregarded entity owned by an individual	The owner <sup>3</sup>
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	Give name and EIN of:
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity <sup>4</sup>
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee

For this type of account:	Give name and EIN of:
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

<sup>1</sup> List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

<sup>2</sup> Circle the minor's name and furnish the minor's SSN.

<sup>3</sup> You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

<sup>4</sup> List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships*, earlier.

\*Note: The grantor also must provide a Form W-9 to trustee of trust.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

**Secure Your Tax Records From Identity Theft**

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

**Protect yourself from suspicious emails or phishing schemes.**

Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.





FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

**SECTION 00 43 43 – PREVAILING WAGE STATEMENT**

Prevailing wage statement follows this page.





MAURA HEALEY  
Governor

KIM DRISCOLL  
Lt. Governor

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

Prevailing Wage Rates

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

LAUREN JONES  
Secretary

MICHAEL FLANAGAN  
Director

**Awarding Authority:** Town of Hull  
**Contract Number:** **City/Town:** HULL  
**Description of Work:** The scope of work includes renovations and upgrades at the Restoration of the Historic Fort Revere Water Tower in the Town of Hull.  
**Job Location:** 25 Highland Terrace, Plymouth, MA 02360

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Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$35.95	\$13.41	\$16.01	\$0.00	\$65.37
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.02	\$13.41	\$16.01	\$0.00	\$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.14	\$13.41	\$16.01	\$0.00	\$65.56
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$37.31	\$9.35	\$16.89	\$0.00	\$63.55
	06/01/2023	\$38.21	\$9.35	\$16.89	\$0.00	\$64.45
	12/01/2023	\$39.11	\$9.35	\$16.89	\$0.00	\$65.35
	06/01/2024	\$40.44	\$9.35	\$16.89	\$0.00	\$66.68
	12/01/2024	\$41.77	\$9.35	\$16.89	\$0.00	\$68.01
	06/01/2025	\$43.16	\$9.35	\$16.89	\$0.00	\$69.40
	12/01/2025	\$44.54	\$9.35	\$16.89	\$0.00	\$70.78
	06/01/2026	\$45.98	\$9.35	\$16.89	\$0.00	\$72.22
	12/01/2026	\$47.42	\$9.35	\$16.89	\$0.00	\$73.66
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2020	\$38.10	\$12.80	\$9.45	\$0.00	\$60.35
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$36.81	\$9.35	\$16.89	\$0.00	\$63.05
	06/01/2023	\$37.71	\$9.35	\$16.89	\$0.00	\$63.95
	12/01/2023	\$38.61	\$9.35	\$16.89	\$0.00	\$64.85
	06/01/2024	\$39.94	\$9.35	\$16.89	\$0.00	\$66.18
	12/01/2024	\$41.27	\$9.35	\$16.89	\$0.00	\$67.51
	06/01/2025	\$42.66	\$9.35	\$16.89	\$0.00	\$68.90
	12/01/2025	\$44.04	\$9.35	\$16.89	\$0.00	\$70.28
	06/01/2026	\$45.48	\$9.35	\$16.89	\$0.00	\$71.72
	12/01/2026	\$46.92	\$9.35	\$16.89	\$0.00	\$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.63	\$14.25	\$16.05	\$0.00	\$83.93
	06/01/2023	\$54.88	\$14.25	\$16.05	\$0.00	\$85.18
	12/01/2023	\$56.13	\$14.25	\$16.05	\$0.00	\$86.43
	06/01/2024	\$57.43	\$14.25	\$16.05	\$0.00	\$87.73
	12/01/2024	\$58.88	\$14.25	\$16.05	\$0.00	\$89.18
	06/01/2025	\$60.18	\$14.25	\$16.05	\$0.00	\$90.48
	12/01/2025	\$61.63	\$14.25	\$16.05	\$0.00	\$91.93
	06/01/2026	\$62.93	\$14.25	\$16.05	\$0.00	\$93.23
	12/01/2026	\$64.38	\$14.25	\$16.05	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.63	\$14.25	\$16.05	\$0.00	\$83.93
	06/01/2023	\$54.88	\$14.25	\$16.05	\$0.00	\$85.18
	12/01/2023	\$56.13	\$14.25	\$16.05	\$0.00	\$86.43
	06/01/2024	\$57.43	\$14.25	\$16.05	\$0.00	\$87.73
	12/01/2024	\$58.88	\$14.25	\$16.05	\$0.00	\$89.18
	06/01/2025	\$60.18	\$14.25	\$16.05	\$0.00	\$90.48
	12/01/2025	\$61.63	\$14.25	\$16.05	\$0.00	\$91.93
	06/01/2026	\$62.93	\$14.25	\$16.05	\$0.00	\$93.23
	12/01/2026	\$64.38	\$14.25	\$16.05	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$37.31	\$9.35	\$16.89	\$0.00	\$63.55
	06/01/2023	\$38.21	\$9.35	\$16.89	\$0.00	\$64.45
	12/01/2023	\$39.11	\$9.35	\$16.89	\$0.00	\$65.35
	06/01/2024	\$40.44	\$9.35	\$16.89	\$0.00	\$66.68
	12/01/2024	\$41.77	\$9.35	\$16.89	\$0.00	\$68.01
	06/01/2025	\$43.16	\$9.35	\$16.89	\$0.00	\$69.40
	12/01/2025	\$44.54	\$9.35	\$16.89	\$0.00	\$70.78
	06/01/2026	\$45.98	\$9.35	\$16.89	\$0.00	\$72.22
	12/01/2026	\$47.42	\$9.35	\$16.89	\$0.00	\$73.66
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2023	\$47.37	\$7.07	\$20.31	\$0.00	\$74.75
	01/01/2024	\$48.12	\$7.07	\$20.60	\$0.00	\$75.79

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - BOILERMAKER - Local 29**

**Effective Date - 01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$30.79	\$7.07	\$13.22	\$0.00	\$51.08
2	65	\$30.79	\$7.07	\$13.22	\$0.00	\$51.08
3	70	\$33.16	\$7.07	\$14.23	\$0.00	\$54.46
4	75	\$35.53	\$7.07	\$15.24	\$0.00	\$57.84
5	80	\$37.90	\$7.07	\$16.25	\$0.00	\$61.22
6	85	\$40.26	\$7.07	\$17.28	\$0.00	\$64.61
7	90	\$42.63	\$7.07	\$18.28	\$0.00	\$67.98
8	95	\$45.00	\$7.07	\$19.32	\$0.00	\$71.39

**Effective Date - 01/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$31.28	\$7.07	\$13.22	\$0.00	\$51.57
2	65	\$31.28	\$7.07	\$13.22	\$0.00	\$51.57
3	70	\$33.68	\$7.07	\$14.23	\$0.00	\$54.98
4	75	\$36.09	\$7.07	\$15.24	\$0.00	\$58.40
5	80	\$38.50	\$7.07	\$16.25	\$0.00	\$61.82
6	85	\$40.90	\$7.07	\$17.28	\$0.00	\$65.25
7	90	\$43.31	\$7.07	\$18.28	\$0.00	\$68.66
8	95	\$45.71	\$7.07	\$19.32	\$0.00	\$72.10

**Notes:**

**Apprentice to Journeyworker Ratio:1:4**

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	02/01/2023	\$60.35	\$11.49	\$22.34	\$0.00	\$94.18
BRICKLAYERS LOCAL 3 (QUINCY)	08/01/2023	\$62.40	\$11.49	\$22.34	\$0.00	\$96.23
	02/01/2024	\$63.65	\$11.49	\$22.34	\$0.00	\$97.48
	08/01/2024	\$65.75	\$11.49	\$22.34	\$0.00	\$99.58
	02/01/2025	\$67.05	\$11.49	\$22.34	\$0.00	\$100.88
	08/01/2025	\$69.20	\$11.49	\$22.34	\$0.00	\$103.03
	02/01/2026	\$70.55	\$11.49	\$22.34	\$0.00	\$104.38
	08/01/2026	\$72.75	\$11.49	\$22.34	\$0.00	\$106.58
	02/01/2027	\$74.15	\$11.49	\$22.34	\$0.00	\$107.98

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Quincy**

**Effective Date - 02/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.18	\$11.49	\$22.34	\$0.00	\$64.01
2	60	\$36.21	\$11.49	\$22.34	\$0.00	\$70.04
3	70	\$42.25	\$11.49	\$22.34	\$0.00	\$76.08
4	80	\$48.28	\$11.49	\$22.34	\$0.00	\$82.11
5	90	\$54.32	\$11.49	\$22.34	\$0.00	\$88.15

**Effective Date - 08/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.20	\$11.49	\$22.34	\$0.00	\$65.03
2	60	\$37.44	\$11.49	\$22.34	\$0.00	\$71.27
3	70	\$43.68	\$11.49	\$22.34	\$0.00	\$77.51
4	80	\$49.92	\$11.49	\$22.34	\$0.00	\$83.75
5	90	\$56.16	\$11.49	\$22.34	\$0.00	\$89.99

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

<b>BULLDOZER/GRADER/SCRAPER</b>	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
<i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>CAISSON &amp; UNDERPINNING BOTTOM MAN</b>	12/01/2022	\$43.73	\$9.35	\$17.97	\$0.00	\$71.05
<i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2023	\$44.73	\$9.35	\$17.97	\$0.00	\$72.05
	12/01/2023	\$45.98	\$9.35	\$17.97	\$0.00	\$73.30
	06/01/2024	\$47.46	\$9.35	\$17.97	\$0.00	\$74.78
	12/01/2024	\$48.93	\$9.35	\$17.97	\$0.00	\$76.25
	06/01/2025	\$50.43	\$9.35	\$17.97	\$0.00	\$77.75
	12/01/2025	\$51.93	\$9.35	\$17.97	\$0.00	\$79.25
	06/01/2026	\$53.48	\$9.35	\$17.97	\$0.00	\$80.80
	12/01/2026	\$54.98	\$9.35	\$17.97	\$0.00	\$82.30

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2022	\$42.58	\$9.35	\$17.97	\$0.00	\$69.90
	06/01/2023	\$43.58	\$9.35	\$17.97	\$0.00	\$70.90
	12/01/2023	\$44.83	\$9.35	\$17.97	\$0.00	\$72.15
	06/01/2024	\$46.31	\$9.35	\$17.97	\$0.00	\$73.63
	12/01/2024	\$47.78	\$9.35	\$17.97	\$0.00	\$75.10
	06/01/2025	\$49.28	\$9.35	\$17.97	\$0.00	\$76.60
	12/01/2025	\$50.78	\$9.35	\$17.97	\$0.00	\$78.10
	06/01/2026	\$52.33	\$9.35	\$17.97	\$0.00	\$79.65
	12/01/2026	\$53.83	\$9.35	\$17.97	\$0.00	\$81.15
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2022	\$42.58	\$9.35	\$17.97	\$0.00	\$69.90
	06/01/2023	\$43.58	\$9.35	\$17.97	\$0.00	\$70.90
	12/01/2023	\$44.83	\$9.35	\$17.97	\$0.00	\$72.15
	06/01/2024	\$46.31	\$9.35	\$17.97	\$0.00	\$73.63
	12/01/2024	\$47.78	\$9.35	\$17.97	\$0.00	\$75.10
	06/01/2025	\$49.28	\$9.35	\$17.97	\$0.00	\$76.60
	12/01/2025	\$50.78	\$9.35	\$17.97	\$0.00	\$78.10
	06/01/2026	\$52.33	\$9.35	\$17.97	\$0.00	\$79.65
	12/01/2026	\$53.83	\$9.35	\$17.97	\$0.00	\$81.15
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2023	\$45.12	\$9.33	\$19.97	\$0.00	\$74.42

**Apprentice - CARPENTER - Zone 2 Eastern MA**

**Effective Date - 03/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.56	\$9.33	\$1.73	\$0.00	\$33.62
2	60	\$27.07	\$9.33	\$1.73	\$0.00	\$38.13
3	70	\$31.58	\$9.33	\$14.78	\$0.00	\$55.69
4	75	\$33.84	\$9.33	\$14.78	\$0.00	\$57.95
5	80	\$36.10	\$9.33	\$16.51	\$0.00	\$61.94
6	80	\$36.10	\$9.33	\$16.51	\$0.00	\$61.94
7	90	\$40.61	\$9.33	\$18.24	\$0.00	\$68.18
8	90	\$40.61	\$9.33	\$18.24	\$0.00	\$68.18

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
Step 1&2 \$30.71/ 3&4 \$36.93/ 5&6 \$56.82/ 7&8 \$63.06

**Apprentice to Journeyworker Ratio:1:5**

CARPENTER WOOD FRAME <i>CARPENTERS-ZONE 3 (Wood Frame)</i>	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17
All Aspects of New Wood Frame Work						



**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - CARPENTER (Wood Frame) - Zone 3**

**Effective Date - 04/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71
2	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71
3	65	\$15.70	\$7.21	\$0.00	\$0.00	\$22.91
4	70	\$16.91	\$7.21	\$0.00	\$0.00	\$24.12
5	75	\$18.12	\$7.21	\$3.80	\$0.00	\$29.13
6	80	\$19.33	\$7.21	\$3.80	\$0.00	\$30.34
7	85	\$20.54	\$7.21	\$3.80	\$0.00	\$31.55
8	90	\$21.74	\$7.21	\$3.80	\$0.00	\$32.75

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
 Step 1&2 \$17.86/ 3&4 \$20.22/ 5&6 \$27.57/ 7&8 \$29.94

**Apprentice to Journeyworker Ratio:1:5**

CEMENT MASONRY/PLASTERING	01/01/2023	\$49.45	\$12.75	\$22.74	\$0.87	\$85.81
BRICKLAYERS LOCAL 3 (QUINCY)	07/01/2023	\$50.59	\$12.75	\$22.74	\$0.87	\$86.95
	01/01/2024	\$51.73	\$12.75	\$22.74	\$0.87	\$88.09

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Quincy)**

**Effective Date - 01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.73	\$12.75	\$15.49	\$0.00	\$52.97
2	60	\$29.67	\$12.75	\$17.99	\$0.87	\$61.28
3	65	\$32.14	\$12.75	\$18.99	\$0.87	\$64.75
4	70	\$34.62	\$12.75	\$19.99	\$0.87	\$68.23
5	75	\$37.09	\$12.75	\$20.99	\$0.87	\$71.70
6	80	\$39.56	\$12.75	\$21.99	\$0.87	\$75.17
7	90	\$44.51	\$12.75	\$22.99	\$0.87	\$81.12

**Effective Date - 07/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.30	\$12.75	\$15.49	\$0.00	\$53.54
2	60	\$30.35	\$12.75	\$17.99	\$0.87	\$61.96
3	65	\$32.88	\$12.75	\$18.99	\$0.87	\$65.49
4	70	\$35.41	\$12.75	\$19.99	\$0.87	\$69.02
5	75	\$37.94	\$12.75	\$20.99	\$0.87	\$72.55
6	80	\$40.47	\$12.75	\$21.99	\$0.87	\$76.08
7	90	\$45.53	\$12.75	\$22.99	\$0.87	\$82.14

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

**Apprentice to Journeyworker Ratio:1:3**

CHAIN SAW OPERATOR LABORERS - ZONE 2	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4	12/01/2022	\$54.68	\$14.25	\$16.05	\$0.00	\$84.98
	06/01/2023	\$55.95	\$14.25	\$16.05	\$0.00	\$86.25
	12/01/2023	\$57.23	\$14.25	\$16.05	\$0.00	\$87.53
	06/01/2024	\$58.55	\$14.25	\$16.05	\$0.00	\$88.85
	12/01/2024	\$60.03	\$14.25	\$16.05	\$0.00	\$90.33
	06/01/2025	\$61.36	\$14.25	\$16.05	\$0.00	\$91.66
	12/01/2025	\$62.83	\$14.25	\$16.05	\$0.00	\$93.13
	06/01/2026	\$64.16	\$14.25	\$16.05	\$0.00	\$94.46
	12/01/2026	\$65.64	\$14.25	\$16.05	\$0.00	\$95.94

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$35.08	\$14.25	\$16.05	\$0.00	\$65.38
	06/01/2023	\$35.90	\$14.25	\$16.05	\$0.00	\$66.20
	12/01/2023	\$36.72	\$14.25	\$16.05	\$0.00	\$67.02
	06/01/2024	\$37.57	\$14.25	\$16.05	\$0.00	\$67.87
	12/01/2024	\$38.52	\$14.25	\$16.05	\$0.00	\$68.82
	06/01/2025	\$39.37	\$14.25	\$16.05	\$0.00	\$69.67
	12/01/2025	\$40.32	\$14.25	\$16.05	\$0.00	\$70.62
	06/01/2026	\$41.18	\$14.25	\$16.05	\$0.00	\$71.48
	12/01/2026	\$42.13	\$14.25	\$16.05	\$0.00	\$72.43

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$8.65	\$0.00	\$0.00	\$36.68
2	55	\$30.83	\$8.65	\$6.27	\$0.00	\$45.75
3	60	\$33.64	\$8.65	\$6.84	\$0.00	\$49.13
4	65	\$36.44	\$8.65	\$7.41	\$0.00	\$52.50
5	70	\$39.24	\$8.65	\$19.63	\$0.00	\$67.52
6	75	\$42.05	\$8.65	\$20.20	\$0.00	\$70.90
7	80	\$44.85	\$8.65	\$20.77	\$0.00	\$74.27
8	90	\$50.45	\$8.65	\$21.91	\$0.00	\$81.01

**Effective Date - 07/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$8.65	\$0.00	\$0.00	\$37.28
2	55	\$31.49	\$8.65	\$6.27	\$0.00	\$46.41
3	60	\$34.36	\$8.65	\$6.84	\$0.00	\$49.85
4	65	\$37.22	\$8.65	\$7.41	\$0.00	\$53.28
5	70	\$40.08	\$8.65	\$19.63	\$0.00	\$68.36
6	75	\$42.95	\$8.65	\$20.20	\$0.00	\$71.80
7	80	\$45.81	\$8.65	\$20.77	\$0.00	\$75.23
8	90	\$51.53	\$8.65	\$21.91	\$0.00	\$82.09

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

DEMO: ADZEMAN <i>LABORERS - ZONE 2</i>	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS <i>LABORERS - ZONE 2</i>	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2023	\$59.23	\$13.00	\$21.63	\$0.00	\$93.86

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - ELECTRICIAN - Local 103**

**Effective Date - 03/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$23.69	\$13.00	\$0.71	\$0.00	\$37.40
2	40	\$23.69	\$13.00	\$0.71	\$0.00	\$37.40
3	45	\$26.65	\$13.00	\$16.13	\$0.00	\$55.78
4	45	\$26.65	\$13.00	\$16.13	\$0.00	\$55.78
5	50	\$29.62	\$13.00	\$16.63	\$0.00	\$59.25
6	55	\$32.58	\$13.00	\$17.13	\$0.00	\$62.71
7	60	\$35.54	\$13.00	\$17.63	\$0.00	\$66.17
8	65	\$38.50	\$13.00	\$18.13	\$0.00	\$69.63
9	70	\$41.46	\$13.00	\$18.62	\$0.00	\$73.08
10	75	\$44.42	\$13.00	\$19.13	\$0.00	\$76.55

**Notes:**  
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

**Apprentice to Journeyworker Ratio:2:3\*\*\***

ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86
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**Apprentice - ELEVATOR CONSTRUCTOR - Local 4**

**Effective Date - 01/01/2022**

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

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

**Apprentice to Journeyworker Ratio:1:1**

ELEVATOR CONSTRUCTOR HELPER ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
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For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$36.81	\$9.35	\$16.89	\$0.00	\$63.05
	06/01/2023	\$37.71	\$9.35	\$16.89	\$0.00	\$63.95
	12/01/2023	\$38.61	\$9.35	\$16.89	\$0.00	\$64.85
	06/01/2024	\$39.94	\$9.35	\$16.89	\$0.00	\$66.18
	12/01/2024	\$41.27	\$9.35	\$16.89	\$0.00	\$67.51
	06/01/2025	\$42.66	\$9.35	\$16.89	\$0.00	\$68.90
	12/01/2025	\$44.04	\$9.35	\$16.89	\$0.00	\$70.28
	06/01/2026	\$45.48	\$9.35	\$16.89	\$0.00	\$71.72
	12/01/2026	\$46.92	\$9.35	\$16.89	\$0.00	\$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2023	\$49.91	\$14.25	\$16.05	\$0.00	\$80.21
	11/01/2023	\$51.15	\$14.25	\$16.05	\$0.00	\$81.45
	05/01/2024	\$52.39	\$14.25	\$16.05	\$0.00	\$82.69
	11/01/2024	\$53.68	\$14.25	\$16.05	\$0.00	\$83.98
	05/01/2025	\$55.12	\$14.25	\$16.05	\$0.00	\$85.42
	11/01/2025	\$56.41	\$14.25	\$16.05	\$0.00	\$86.71
	05/01/2026	\$57.85	\$14.25	\$16.05	\$0.00	\$88.15
	11/01/2026	\$59.14	\$14.25	\$16.05	\$0.00	\$89.44
	05/01/2027	\$60.57	\$14.25	\$16.05	\$0.00	\$90.87
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2023	\$51.47	\$14.25	\$16.05	\$0.00	\$81.77
	11/01/2023	\$52.72	\$14.25	\$16.05	\$0.00	\$83.02
	05/01/2024	\$53.97	\$14.25	\$16.05	\$0.00	\$84.27
	11/01/2024	\$55.27	\$14.25	\$16.05	\$0.00	\$85.57
	05/01/2025	\$56.72	\$14.25	\$16.05	\$0.00	\$87.02
	11/01/2025	\$58.02	\$14.25	\$16.05	\$0.00	\$88.32
	05/01/2026	\$59.47	\$14.25	\$16.05	\$0.00	\$89.77
	11/01/2026	\$60.77	\$14.25	\$16.05	\$0.00	\$91.07
	05/01/2027	\$62.22	\$14.25	\$16.05	\$0.00	\$92.52
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2023	\$25.05	\$14.25	\$16.05	\$0.00	\$55.35
	11/01/2023	\$25.78	\$14.25	\$16.05	\$0.00	\$56.08
	05/01/2024	\$26.51	\$14.25	\$16.05	\$0.00	\$56.81
	11/01/2024	\$27.27	\$14.25	\$16.05	\$0.00	\$57.57
	05/01/2025	\$28.12	\$14.25	\$16.05	\$0.00	\$58.42
	11/01/2025	\$28.88	\$14.25	\$16.05	\$0.00	\$59.18
	05/01/2026	\$29.73	\$14.25	\$16.05	\$0.00	\$60.03
	11/01/2026	\$30.49	\$14.25	\$16.05	\$0.00	\$60.79
	05/01/2027	\$31.34	\$14.25	\$16.05	\$0.00	\$61.64
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2023	\$59.23	\$13.00	\$21.63	\$0.00	\$93.86
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	03/01/2023	\$48.34	\$13.00	\$19.01	\$0.00	\$80.35
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$43.54	\$14.25	\$16.05	\$0.00	\$73.84
	06/01/2023	\$44.56	\$14.25	\$16.05	\$0.00	\$74.86
	12/01/2023	\$45.57	\$14.25	\$16.05	\$0.00	\$75.87
	06/01/2024	\$46.63	\$14.25	\$16.05	\$0.00	\$76.93
	12/01/2024	\$47.81	\$14.25	\$16.05	\$0.00	\$78.11
	06/01/2025	\$48.87	\$14.25	\$16.05	\$0.00	\$79.17
	12/01/2025	\$50.04	\$14.25	\$16.05	\$0.00	\$80.34
	06/01/2026	\$51.10	\$14.25	\$16.05	\$0.00	\$81.40
	12/01/2026	\$52.28	\$14.25	\$16.05	\$0.00	\$82.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$25.23	\$9.35	\$16.89	\$0.00	\$51.47
	06/01/2023	\$25.98	\$9.35	\$16.89	\$0.00	\$52.22
	12/01/2023	\$25.98	\$9.35	\$16.89	\$0.00	\$52.22
	06/01/2024	\$27.01	\$9.35	\$16.89	\$0.00	\$53.25
	12/01/2024	\$27.01	\$9.35	\$16.89	\$0.00	\$53.25
	06/01/2025	\$28.09	\$9.35	\$16.89	\$0.00	\$54.33
	12/01/2025	\$28.09	\$9.35	\$16.89	\$0.00	\$54.33
	06/01/2026	\$29.21	\$9.35	\$16.89	\$0.00	\$55.45
	12/01/2026	\$29.21	\$9.35	\$16.89	\$0.00	\$55.45
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2022	\$51.77	\$9.33	\$20.27	\$0.00	\$81.37

**Apprentice - FLOORCOVERER - Local 2168 Zone 1**

**Effective Date - 03/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.89	\$9.33	\$1.79	\$0.00	\$37.01
2	55	\$28.47	\$9.33	\$1.79	\$0.00	\$39.59
3	60	\$31.06	\$9.33	\$14.90	\$0.00	\$55.29
4	65	\$33.65	\$9.33	\$14.90	\$0.00	\$57.88
5	70	\$36.24	\$9.33	\$16.69	\$0.00	\$62.26
6	75	\$38.83	\$9.33	\$16.69	\$0.00	\$64.85
7	80	\$41.42	\$9.33	\$18.48	\$0.00	\$69.23
8	85	\$44.00	\$9.33	\$18.48	\$0.00	\$71.81

**Notes:** Steps are 750 hrs.  
 % After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)  
 Step 1&2 \$32.94/ 3&4 \$39.66/ 5&6 \$60.32/ 7&8 \$67.10

**Apprentice to Journeyworker Ratio:1:1**

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
<b>FORK LIFT/CHERRY PICKER</b> <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.63	\$14.25	\$16.05	\$0.00	\$83.93
	06/01/2023	\$54.88	\$14.25	\$16.05	\$0.00	\$85.18
	12/01/2023	\$56.13	\$14.25	\$16.05	\$0.00	\$86.43
	06/01/2024	\$57.43	\$14.25	\$16.05	\$0.00	\$87.73
	12/01/2024	\$58.88	\$14.25	\$16.05	\$0.00	\$89.18
	06/01/2025	\$60.18	\$14.25	\$16.05	\$0.00	\$90.48
	12/01/2025	\$61.63	\$14.25	\$16.05	\$0.00	\$91.93
	06/01/2026	\$62.93	\$14.25	\$16.05	\$0.00	\$93.23
	12/01/2026	\$64.38	\$14.25	\$16.05	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>GENERATOR/LIGHTING PLANT/HEATERS</b> <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$35.08	\$14.25	\$16.05	\$0.00	\$65.38
	06/01/2023	\$35.90	\$14.25	\$16.05	\$0.00	\$66.20
	12/01/2023	\$36.72	\$14.25	\$16.05	\$0.00	\$67.02
	06/01/2024	\$37.57	\$14.25	\$16.05	\$0.00	\$67.87
	12/01/2024	\$38.52	\$14.25	\$16.05	\$0.00	\$68.82
	06/01/2025	\$39.37	\$14.25	\$16.05	\$0.00	\$69.67
	12/01/2025	\$40.32	\$14.25	\$16.05	\$0.00	\$70.62
	06/01/2026	\$41.18	\$14.25	\$16.05	\$0.00	\$71.48
	12/01/2026	\$42.13	\$14.25	\$16.05	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)</b> <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
	07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
	01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
	07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
	01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06



**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - GLAZIER - Local 35 Zone 2**

**Effective Date - 01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.78	\$8.65	\$0.00	\$0.00	\$31.43
2	55	\$25.06	\$8.65	\$6.27	\$0.00	\$39.98
3	60	\$27.34	\$8.65	\$6.84	\$0.00	\$42.83
4	65	\$29.61	\$8.65	\$7.41	\$0.00	\$45.67
5	70	\$31.89	\$8.65	\$19.63	\$0.00	\$60.17
6	75	\$34.17	\$8.65	\$20.20	\$0.00	\$63.02
7	80	\$36.45	\$8.65	\$20.77	\$0.00	\$65.87
8	90	\$41.00	\$8.65	\$21.91	\$0.00	\$71.56

**Effective Date - 07/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$8.65	\$0.00	\$0.00	\$32.03
2	55	\$25.72	\$8.65	\$6.27	\$0.00	\$40.64
3	60	\$28.06	\$8.65	\$6.84	\$0.00	\$43.55
4	65	\$30.39	\$8.65	\$7.41	\$0.00	\$46.45
5	70	\$32.73	\$8.65	\$19.63	\$0.00	\$61.01
6	75	\$35.07	\$8.65	\$20.20	\$0.00	\$63.92
7	80	\$37.41	\$8.65	\$20.77	\$0.00	\$66.83
8	90	\$42.08	\$8.65	\$21.91	\$0.00	\$72.64

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

HOISTING ENGINEER/CRANES/GRADALLS	12/01/2022	\$53.63	\$14.25	\$16.05	\$0.00	\$83.93
OPERATING ENGINEERS LOCAL 4	06/01/2023	\$54.88	\$14.25	\$16.05	\$0.00	\$85.18
	12/01/2023	\$56.13	\$14.25	\$16.05	\$0.00	\$86.43
	06/01/2024	\$57.43	\$14.25	\$16.05	\$0.00	\$87.73
	12/01/2024	\$58.88	\$14.25	\$16.05	\$0.00	\$89.18
	06/01/2025	\$60.18	\$14.25	\$16.05	\$0.00	\$90.48
	12/01/2025	\$61.63	\$14.25	\$16.05	\$0.00	\$91.93
	06/01/2026	\$62.93	\$14.25	\$16.05	\$0.00	\$93.23
	12/01/2026	\$64.38	\$14.25	\$16.05	\$0.00	\$94.68

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date - 12/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$29.50	\$14.25	\$0.00	\$0.00	\$43.75
2	60	\$32.18	\$14.25	\$16.05	\$0.00	\$62.48
3	65	\$34.86	\$14.25	\$16.05	\$0.00	\$65.16
4	70	\$37.54	\$14.25	\$16.05	\$0.00	\$67.84
5	75	\$40.22	\$14.25	\$16.05	\$0.00	\$70.52
6	80	\$42.90	\$14.25	\$16.05	\$0.00	\$73.20
7	85	\$45.59	\$14.25	\$16.05	\$0.00	\$75.89
8	90	\$48.27	\$14.25	\$16.05	\$0.00	\$78.57

**Effective Date - 06/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$30.18	\$14.25	\$0.00	\$0.00	\$44.43
2	60	\$32.93	\$14.25	\$16.05	\$0.00	\$63.23
3	65	\$35.67	\$14.25	\$16.05	\$0.00	\$65.97
4	70	\$38.42	\$14.25	\$16.05	\$0.00	\$68.72
5	75	\$41.16	\$14.25	\$16.05	\$0.00	\$71.46
6	80	\$43.90	\$14.25	\$16.05	\$0.00	\$74.20
7	85	\$46.65	\$14.25	\$16.05	\$0.00	\$76.95
8	90	\$49.39	\$14.25	\$16.05	\$0.00	\$79.69

**Notes:**

**Apprentice to Journeyworker Ratio:1:6**

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2023	\$55.31	\$14.11	\$26.64	\$2.83	\$98.89
	08/01/2023	\$57.01	\$14.11	\$26.64	\$2.83	\$100.59
	02/01/2024	\$58.71	\$14.11	\$26.64	\$2.83	\$102.29
	08/01/2024	\$60.46	\$14.11	\$26.64	\$2.83	\$104.04
	02/01/2025	\$62.21	\$14.11	\$26.64	\$2.83	\$105.79
	08/01/2025	\$64.06	\$14.11	\$26.64	\$2.83	\$107.64
	02/01/2026	\$66.01	\$14.11	\$26.64	\$2.83	\$109.59

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2023	\$59.23	\$13.00	\$21.63	\$0.00	\$93.86
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For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2023	\$55.31	\$14.11	\$26.64	\$2.83	\$98.89
	08/01/2023	\$57.01	\$14.11	\$26.64	\$2.83	\$100.59
	02/01/2024	\$58.71	\$14.11	\$26.64	\$2.83	\$102.29
	08/01/2024	\$60.46	\$14.11	\$26.64	\$2.83	\$104.04
	02/01/2025	\$62.21	\$14.11	\$26.64	\$2.83	\$105.79
	08/01/2025	\$64.06	\$14.11	\$26.64	\$2.83	\$107.64
	02/01/2026	\$66.01	\$14.11	\$26.64	\$2.83	\$109.59

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	03/01/2023	\$63.43	\$12.50	\$20.80	\$0.00	\$96.73
	09/01/2023	\$65.18	\$12.50	\$20.80	\$0.00	\$98.48
	03/01/2024	\$66.98	\$12.50	\$20.80	\$0.00	\$100.28
	09/01/2024	\$68.78	\$12.50	\$20.80	\$0.00	\$102.08
	03/01/2025	\$70.58	\$12.50	\$20.80	\$0.00	\$103.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2023	\$63.43	\$12.25	\$20.80	\$0.00	\$96.48
	09/01/2023	\$65.18	\$12.25	\$20.80	\$0.00	\$98.23
	03/01/2024	\$66.98	\$12.25	\$20.80	\$0.00	\$100.03
	09/01/2024	\$68.78	\$12.25	\$20.80	\$0.00	\$101.83
	03/01/2025	\$70.58	\$12.25	\$20.80	\$0.00	\$103.63
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$37.31	\$9.35	\$16.89	\$0.00	\$63.55
	06/01/2023	\$38.21	\$9.35	\$16.89	\$0.00	\$64.45
	12/01/2023	\$39.11	\$9.35	\$16.89	\$0.00	\$65.35
	06/01/2024	\$40.44	\$9.35	\$16.89	\$0.00	\$66.68
	12/01/2024	\$41.77	\$9.35	\$16.89	\$0.00	\$68.01
	06/01/2025	\$43.16	\$9.35	\$16.89	\$0.00	\$69.40
	12/01/2025	\$44.54	\$9.35	\$16.89	\$0.00	\$70.78
	06/01/2026	\$45.98	\$9.35	\$16.89	\$0.00	\$72.22
	12/01/2026	\$47.42	\$9.35	\$16.89	\$0.00	\$73.66
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2022	\$53.85	\$13.80	\$17.14	\$0.00	\$84.79

**Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston**

**Effective Date - 09/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.93	\$13.80	\$12.42	\$0.00	\$53.15
2	60	\$32.31	\$13.80	\$13.36	\$0.00	\$59.47
3	70	\$37.70	\$13.80	\$14.31	\$0.00	\$65.81
4	80	\$43.08	\$13.80	\$15.25	\$0.00	\$72.13

**Notes:**

Steps are 1 year

**Apprentice to Journeyworker Ratio:1:4**

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (BOSTON AREA)</i>	03/16/2023	\$52.72	\$8.35	\$26.70	\$0.00	\$87.77
	03/16/2024	\$53.97	\$8.35	\$26.70	\$0.00	\$89.02

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - IRONWORKER - Local 7 Boston**

**Effective Date - 03/16/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$31.63	\$8.35	\$26.70	\$0.00	\$66.68
2	70	\$36.90	\$8.35	\$26.70	\$0.00	\$71.95
3	75	\$39.54	\$8.35	\$26.70	\$0.00	\$74.59
4	80	\$42.18	\$8.35	\$26.70	\$0.00	\$77.23
5	85	\$44.81	\$8.35	\$26.70	\$0.00	\$79.86
6	90	\$47.45	\$8.35	\$26.70	\$0.00	\$82.50

**Effective Date - 03/16/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$32.38	\$8.35	\$26.70	\$0.00	\$67.43
2	70	\$37.78	\$8.35	\$26.70	\$0.00	\$72.83
3	75	\$40.48	\$8.35	\$26.70	\$0.00	\$75.53
4	80	\$43.18	\$8.35	\$26.70	\$0.00	\$78.23
5	85	\$45.87	\$8.35	\$26.70	\$0.00	\$80.92
6	90	\$48.57	\$8.35	\$26.70	\$0.00	\$83.62

**Notes:**

**Apprentice to Journeyworker Ratio:1:4**

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
LABORER LABORERS - ZONE 2	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - LABORER - Zone 2**

**Effective Date - 12/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.30	\$9.10	\$16.64	\$0.00	\$48.04
2	70	\$26.01	\$9.10	\$16.64	\$0.00	\$51.75
3	80	\$29.73	\$9.10	\$16.64	\$0.00	\$55.47
4	90	\$33.44	\$9.10	\$16.64	\$0.00	\$59.18

**Effective Date - 06/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.84	\$9.10	\$16.64	\$0.00	\$48.58
2	70	\$26.64	\$9.10	\$16.64	\$0.00	\$52.38
3	80	\$30.45	\$9.10	\$16.64	\$0.00	\$56.19
4	90	\$34.25	\$9.10	\$16.64	\$0.00	\$59.99

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

LABORER (HEAVY & HIGHWAY)	12/01/2022	\$36.56	\$9.35	\$16.89	\$0.00	\$62.80
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	06/01/2023	\$37.46	\$9.35	\$16.89	\$0.00	\$63.70
	12/01/2023	\$38.36	\$9.35	\$16.89	\$0.00	\$64.60
	06/01/2024	\$39.69	\$9.35	\$16.89	\$0.00	\$65.93
	12/01/2024	\$41.02	\$9.35	\$16.89	\$0.00	\$67.26
	06/01/2025	\$42.41	\$9.35	\$16.89	\$0.00	\$68.65
	12/01/2025	\$43.79	\$9.35	\$16.89	\$0.00	\$70.03
	06/01/2026	\$45.23	\$9.35	\$16.89	\$0.00	\$71.47
	12/01/2026	\$46.67	\$9.35	\$16.89	\$0.00	\$72.91

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - LABORER (Heavy & Highway) - Zone 2**

**Effective Date - 12/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.94	\$9.35	\$16.89	\$0.00	\$48.18
2	70	\$25.59	\$9.35	\$16.89	\$0.00	\$51.83
3	80	\$29.25	\$9.35	\$16.89	\$0.00	\$55.49
4	90	\$32.90	\$9.35	\$16.89	\$0.00	\$59.14

**Effective Date - 06/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.48	\$9.35	\$16.89	\$0.00	\$48.72
2	70	\$26.22	\$9.35	\$16.89	\$0.00	\$52.46
3	80	\$29.97	\$9.35	\$16.89	\$0.00	\$56.21
4	90	\$33.71	\$9.35	\$16.89	\$0.00	\$59.95

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

LABORER: CARPENTER TENDER  
LABORERS - ZONE 2

12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER  
LABORERS - ZONE 2

12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER  
LABORERS - ZONE 2

12/01/2022	\$37.25	\$9.10	\$16.70	\$0.00	\$63.05
06/01/2023	\$38.15	\$9.10	\$16.70	\$0.00	\$63.95
12/01/2023	\$39.05	\$9.10	\$16.70	\$0.00	\$64.85

For apprentice rates see "Apprentice- LABORER"

LABORER: MASON TENDER  
LABORERS - ZONE 2

12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

LABORER: MASON TENDER (HEAVY & HIGHWAY)  
LABORERS - ZONE 2 (HEAVY & HIGHWAY)

12/01/2022	\$36.81	\$9.35	\$16.89	\$0.00	\$63.05
06/01/2023	\$37.71	\$9.35	\$16.89	\$0.00	\$63.95
12/01/2023	\$38.61	\$9.35	\$16.89	\$0.00	\$64.85
06/01/2024	\$39.94	\$9.35	\$16.89	\$0.00	\$66.18
12/01/2024	\$41.27	\$9.35	\$16.89	\$0.00	\$67.51
06/01/2025	\$42.66	\$9.35	\$16.89	\$0.00	\$68.90
12/01/2025	\$44.04	\$9.35	\$16.89	\$0.00	\$70.28
06/01/2026	\$45.48	\$9.35	\$16.89	\$0.00	\$71.72
12/01/2026	\$46.92	\$9.35	\$16.89	\$0.00	\$73.16

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
<b>LABORER: MULTI-TRADE TENDER</b> <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
<b>LABORER: TREE REMOVER</b> <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
<b>LASER BEAM OPERATOR</b> <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
<b>LASER BEAM OPERATOR (HEAVY &amp; HIGHWAY)</b> <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$36.81	\$9.35	\$16.89	\$0.00	\$63.05
	06/01/2023	\$37.71	\$9.35	\$16.89	\$0.00	\$63.95
	12/01/2023	\$38.61	\$9.35	\$16.89	\$0.00	\$64.85
	06/01/2024	\$39.94	\$9.35	\$16.89	\$0.00	\$66.18
	12/01/2024	\$41.27	\$9.35	\$16.89	\$0.00	\$67.51
	06/01/2025	\$42.66	\$9.35	\$16.89	\$0.00	\$68.90
	12/01/2025	\$44.04	\$9.35	\$16.89	\$0.00	\$70.28
	06/01/2026	\$45.48	\$9.35	\$16.89	\$0.00	\$71.72
	12/01/2026	\$46.92	\$9.35	\$16.89	\$0.00	\$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
<b>MARBLE &amp; TILE FINISHERS</b> <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2023	\$46.25	\$11.49	\$20.37	\$0.00	\$78.11
	08/01/2023	\$47.89	\$11.49	\$20.37	\$0.00	\$79.75
	02/01/2024	\$48.89	\$11.49	\$20.37	\$0.00	\$80.75
	08/01/2024	\$50.57	\$11.49	\$20.37	\$0.00	\$82.43
	02/01/2025	\$51.61	\$11.49	\$20.37	\$0.00	\$83.47
	08/01/2025	\$53.33	\$11.49	\$20.37	\$0.00	\$85.19
	02/01/2026	\$54.41	\$11.49	\$20.37	\$0.00	\$86.27
	08/01/2026	\$56.17	\$11.49	\$20.37	\$0.00	\$88.03
	02/01/2027	\$57.29	\$11.49	\$20.37	\$0.00	\$89.15

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

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

**Effective Date - 02/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.13	\$11.49	\$20.37	\$0.00	\$54.99
2	60	\$27.75	\$11.49	\$20.37	\$0.00	\$59.61
3	70	\$32.38	\$11.49	\$20.37	\$0.00	\$64.24
4	80	\$37.00	\$11.49	\$20.37	\$0.00	\$68.86
5	90	\$41.63	\$11.49	\$20.37	\$0.00	\$73.49

**Effective Date - 08/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.95	\$11.49	\$20.37	\$0.00	\$55.81
2	60	\$28.73	\$11.49	\$20.37	\$0.00	\$60.59
3	70	\$33.52	\$11.49	\$20.37	\$0.00	\$65.38
4	80	\$38.31	\$11.49	\$20.37	\$0.00	\$70.17
5	90	\$43.10	\$11.49	\$20.37	\$0.00	\$74.96

**Notes:**

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**Apprentice to Journeyworker Ratio:1:3**

MARBLE MASONS, TILELAYERS & TERRAZZO MECH	02/01/2023	\$60.37	\$11.49	\$22.31	\$0.00	\$94.17
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2023	\$62.42	\$11.49	\$22.31	\$0.00	\$96.22
	02/01/2024	\$63.67	\$11.49	\$22.31	\$0.00	\$97.47
	08/01/2024	\$65.77	\$11.49	\$22.31	\$0.00	\$99.57
	02/01/2025	\$67.07	\$11.49	\$22.31	\$0.00	\$100.87
	08/01/2025	\$69.22	\$11.49	\$22.31	\$0.00	\$103.02
	02/01/2026	\$70.57	\$11.49	\$22.31	\$0.00	\$104.37
	08/01/2026	\$72.77	\$11.49	\$22.31	\$0.00	\$106.57
	02/01/2027	\$74.17	\$11.49	\$22.31	\$0.00	\$107.97



**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

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

**Effective Date - 02/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.19	\$11.49	\$22.31	\$0.00	\$63.99
2	60	\$36.22	\$11.49	\$22.31	\$0.00	\$70.02
3	70	\$42.26	\$11.49	\$22.31	\$0.00	\$76.06
4	80	\$48.30	\$11.49	\$22.31	\$0.00	\$82.10
5	90	\$54.33	\$11.49	\$22.31	\$0.00	\$88.13

**Effective Date - 08/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.21	\$11.49	\$22.31	\$0.00	\$65.01
2	60	\$37.45	\$11.49	\$22.31	\$0.00	\$71.25
3	70	\$43.69	\$11.49	\$22.31	\$0.00	\$77.49
4	80	\$49.94	\$11.49	\$22.31	\$0.00	\$83.74
5	90	\$56.18	\$11.49	\$22.31	\$0.00	\$89.98

**Notes:**

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**Apprentice to Journeyworker Ratio:1:5**

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 1) <i>MILLWRIGHTS LOCAL 1121 - Zone 1</i>	01/02/2023	\$47.27	\$8.58	\$21.57	\$0.00	\$77.42
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**Apprentice - MILLWRIGHT - Local 1121 Zone 1**

**Effective Date - 01/02/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$26.00	\$8.58	\$5.72	\$0.00	\$40.30
2	65	\$30.73	\$8.58	\$17.93	\$0.00	\$57.24
3	75	\$35.45	\$8.58	\$18.98	\$0.00	\$63.01
4	85	\$40.18	\$8.58	\$20.01	\$0.00	\$68.77

**Notes:** Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66)  
Steps are 2,000 hours

**Apprentice to Journeyworker Ratio:1:4**

<b>MORTAR MIXER</b> <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

<b>OILER (OTHER THAN TRUCK CRANES,GRADALLS)</b> <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$24.37	\$14.25	\$16.05	\$0.00	\$54.67
	06/01/2023	\$24.94	\$14.25	\$16.05	\$0.00	\$55.24
	12/01/2023	\$25.51	\$14.25	\$16.05	\$0.00	\$55.81
	06/01/2024	\$26.11	\$14.25	\$16.05	\$0.00	\$56.41
	12/01/2024	\$26.77	\$14.25	\$16.05	\$0.00	\$57.07
	06/01/2025	\$27.37	\$14.25	\$16.05	\$0.00	\$57.67
	12/01/2025	\$28.03	\$14.25	\$16.05	\$0.00	\$58.33
	06/01/2026	\$28.62	\$14.25	\$16.05	\$0.00	\$58.92
	12/01/2026	\$29.29	\$14.25	\$16.05	\$0.00	\$59.59

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>OILER (TRUCK CRANES, GRADALLS)</b> <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$29.57	\$14.25	\$16.05	\$0.00	\$59.87
	06/01/2023	\$30.27	\$14.25	\$16.05	\$0.00	\$60.57
	12/01/2023	\$30.96	\$14.25	\$16.05	\$0.00	\$61.26
	06/01/2024	\$31.68	\$14.25	\$16.05	\$0.00	\$61.98
	12/01/2024	\$32.48	\$14.25	\$16.05	\$0.00	\$62.78
	06/01/2025	\$33.20	\$14.25	\$16.05	\$0.00	\$63.50
	12/01/2025	\$34.00	\$14.25	\$16.05	\$0.00	\$64.30
	06/01/2026	\$34.72	\$14.25	\$16.05	\$0.00	\$65.02
	12/01/2026	\$35.52	\$14.25	\$16.05	\$0.00	\$65.82

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>OTHER POWER DRIVEN EQUIPMENT - CLASS II</b> <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$8.65	\$0.00	\$0.00	\$36.68
2	55	\$30.83	\$8.65	\$6.27	\$0.00	\$45.75
3	60	\$33.64	\$8.65	\$6.84	\$0.00	\$49.13
4	65	\$36.44	\$8.65	\$7.41	\$0.00	\$52.50
5	70	\$39.24	\$8.65	\$19.63	\$0.00	\$67.52
6	75	\$42.05	\$8.65	\$20.20	\$0.00	\$70.90
7	80	\$44.85	\$8.65	\$20.77	\$0.00	\$74.27
8	90	\$50.45	\$8.65	\$21.91	\$0.00	\$81.01

**Effective Date - 07/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$8.65	\$0.00	\$0.00	\$37.28
2	55	\$31.49	\$8.65	\$6.27	\$0.00	\$46.41
3	60	\$34.36	\$8.65	\$6.84	\$0.00	\$49.85
4	65	\$37.22	\$8.65	\$7.41	\$0.00	\$53.28
5	70	\$40.08	\$8.65	\$19.63	\$0.00	\$68.36
6	75	\$42.95	\$8.65	\$20.20	\$0.00	\$71.80
7	80	\$45.81	\$8.65	\$20.77	\$0.00	\$75.23
8	90	\$51.53	\$8.65	\$21.91	\$0.00	\$82.09

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2023	\$46.96	\$8.65	\$23.05	\$0.00	\$78.66
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2023	\$48.16	\$8.65	\$23.05	\$0.00	\$79.86
	01/01/2024	\$49.36	\$8.65	\$23.05	\$0.00	\$81.06
	07/01/2024	\$50.56	\$8.65	\$23.05	\$0.00	\$82.26
	01/01/2025	\$51.76	\$8.65	\$23.05	\$0.00	\$83.46

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New**

**Effective Date - 01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.48	\$8.65	\$0.00	\$0.00	\$32.13
2	55	\$25.83	\$8.65	\$6.27	\$0.00	\$40.75
3	60	\$28.18	\$8.65	\$6.84	\$0.00	\$43.67
4	65	\$30.52	\$8.65	\$7.41	\$0.00	\$46.58
5	70	\$32.87	\$8.65	\$19.63	\$0.00	\$61.15
6	75	\$35.22	\$8.65	\$20.20	\$0.00	\$64.07
7	80	\$37.57	\$8.65	\$20.77	\$0.00	\$66.99
8	90	\$42.26	\$8.65	\$21.91	\$0.00	\$72.82

**Effective Date - 07/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.08	\$8.65	\$0.00	\$0.00	\$32.73
2	55	\$26.49	\$8.65	\$6.27	\$0.00	\$41.41
3	60	\$28.90	\$8.65	\$6.84	\$0.00	\$44.39
4	65	\$31.30	\$8.65	\$7.41	\$0.00	\$47.36
5	70	\$33.71	\$8.65	\$19.63	\$0.00	\$61.99
6	75	\$36.12	\$8.65	\$20.20	\$0.00	\$64.97
7	80	\$38.53	\$8.65	\$20.77	\$0.00	\$67.95
8	90	\$43.34	\$8.65	\$21.91	\$0.00	\$73.90

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2023	\$45.02	\$8.65	\$23.05	\$0.00	\$76.72
PAINTERS LOCAL 35 - ZONE 2	07/01/2023	\$46.22	\$8.65	\$23.05	\$0.00	\$77.92
	01/01/2024	\$47.42	\$8.65	\$23.05	\$0.00	\$79.12
	07/01/2024	\$48.62	\$8.65	\$23.05	\$0.00	\$80.32
	01/01/2025	\$49.82	\$8.65	\$23.05	\$0.00	\$81.52

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint**

**Effective Date - 01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.51	\$8.65	\$0.00	\$0.00	\$31.16
2	55	\$24.76	\$8.65	\$6.27	\$0.00	\$39.68
3	60	\$27.01	\$8.65	\$6.84	\$0.00	\$42.50
4	65	\$29.26	\$8.65	\$7.41	\$0.00	\$45.32
5	70	\$31.51	\$8.65	\$19.63	\$0.00	\$59.79
6	75	\$33.77	\$8.65	\$20.20	\$0.00	\$62.62
7	80	\$36.02	\$8.65	\$20.77	\$0.00	\$65.44
8	90	\$40.52	\$8.65	\$21.91	\$0.00	\$71.08

**Effective Date - 07/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.11	\$8.65	\$0.00	\$0.00	\$31.76
2	55	\$25.42	\$8.65	\$6.27	\$0.00	\$40.34
3	60	\$27.73	\$8.65	\$6.84	\$0.00	\$43.22
4	65	\$30.04	\$8.65	\$19.06	\$0.00	\$57.75
5	70	\$32.35	\$8.65	\$19.63	\$0.00	\$60.63
6	75	\$34.67	\$8.65	\$20.20	\$0.00	\$63.52
7	80	\$36.98	\$8.65	\$20.77	\$0.00	\$66.40
8	90	\$41.60	\$8.65	\$21.91	\$0.00	\$72.16

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER / TAPER (BRUSH, NEW) *	01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
	01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
	07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
	01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06

**Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW**

**Effective Date - 01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.78	\$8.65	\$0.00	\$0.00	\$31.43
2	55	\$25.06	\$8.65	\$6.27	\$0.00	\$39.98
3	60	\$27.34	\$8.65	\$6.84	\$0.00	\$42.83
4	65	\$29.61	\$8.65	\$7.41	\$0.00	\$45.67
5	70	\$31.89	\$8.65	\$19.63	\$0.00	\$60.17
6	75	\$34.17	\$8.65	\$20.20	\$0.00	\$63.02
7	80	\$36.45	\$8.65	\$20.77	\$0.00	\$65.87
8	90	\$41.00	\$8.65	\$21.91	\$0.00	\$71.56

**Effective Date - 07/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$8.65	\$0.00	\$0.00	\$32.03
2	55	\$25.72	\$8.65	\$6.27	\$0.00	\$40.64
3	60	\$28.06	\$8.65	\$6.84	\$0.00	\$43.55
4	65	\$30.39	\$8.65	\$7.41	\$0.00	\$46.45
5	70	\$32.73	\$8.65	\$19.63	\$0.00	\$61.01
6	75	\$35.07	\$8.65	\$20.20	\$0.00	\$63.92
7	80	\$37.41	\$8.65	\$20.77	\$0.00	\$66.83
8	90	\$42.08	\$8.65	\$21.91	\$0.00	\$72.64

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2023	\$43.62	\$8.65	\$23.05	\$0.00	\$75.32
PAINTERS LOCAL 35 - ZONE 2	07/01/2023	\$44.82	\$8.65	\$23.05	\$0.00	\$76.52
	01/01/2024	\$46.02	\$8.65	\$23.05	\$0.00	\$77.72
	07/01/2024	\$47.22	\$8.65	\$23.05	\$0.00	\$78.92
	01/01/2025	\$48.42	\$8.65	\$23.05	\$0.00	\$80.12

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT**

**Effective Date - 01/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.81	\$8.65	\$0.00	\$0.00	\$30.46
2	55	\$23.99	\$8.65	\$6.27	\$0.00	\$38.91
3	60	\$26.17	\$8.65	\$6.84	\$0.00	\$41.66
4	65	\$28.35	\$8.65	\$7.41	\$0.00	\$44.41
5	70	\$30.53	\$8.65	\$19.63	\$0.00	\$58.81
6	75	\$32.72	\$8.65	\$20.20	\$0.00	\$61.57
7	80	\$34.90	\$8.65	\$20.77	\$0.00	\$64.32
8	90	\$39.26	\$8.65	\$21.91	\$0.00	\$69.82

**Effective Date - 07/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.41	\$8.65	\$0.00	\$0.00	\$31.06
2	55	\$24.65	\$8.65	\$6.27	\$0.00	\$39.57
3	60	\$26.89	\$8.65	\$6.84	\$0.00	\$42.38
4	65	\$29.13	\$8.65	\$7.41	\$0.00	\$45.19
5	70	\$31.37	\$8.65	\$19.63	\$0.00	\$59.65
6	75	\$33.62	\$8.65	\$20.20	\$0.00	\$62.47
7	80	\$35.86	\$8.65	\$20.77	\$0.00	\$65.28
8	90	\$40.34	\$8.65	\$21.91	\$0.00	\$70.90

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	12/01/2022	\$36.56	\$9.35	\$16.89	\$0.00	\$62.80
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	06/01/2023	\$37.46	\$9.35	\$16.89	\$0.00	\$63.70
	12/01/2023	\$38.36	\$9.35	\$16.89	\$0.00	\$64.60
	06/01/2024	\$39.69	\$9.35	\$16.89	\$0.00	\$65.93
	12/01/2024	\$41.02	\$9.35	\$16.89	\$0.00	\$67.26
	06/01/2025	\$42.41	\$9.35	\$16.89	\$0.00	\$68.65
	12/01/2025	\$43.79	\$9.35	\$16.89	\$0.00	\$70.03
	06/01/2026	\$45.23	\$9.35	\$16.89	\$0.00	\$71.47
	12/01/2026	\$46.67	\$9.35	\$16.89	\$0.00	\$72.91

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

PANEL & PICKUP TRUCKS DRIVER	12/01/2021	\$35.78	\$13.41	\$16.01	\$0.00	\$65.20
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B						

PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER LOCAL 56 (ZONE 1)						

For apprentice rates see "Apprentice- PILE DRIVER"

PILE DRIVER	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER LOCAL 56 (ZONE 1)						

**Apprentice - PILE DRIVER - Local 56 Zone 1**

**Effective Date - 08/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$9.40	\$23.12	\$0.00	\$57.06
2	60	\$29.44	\$9.40	\$23.12	\$0.00	\$61.96
3	70	\$34.35	\$9.40	\$23.12	\$0.00	\$66.87
4	75	\$36.80	\$9.40	\$23.12	\$0.00	\$69.32
5	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
6	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
7	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68
8	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
 Step 1&2 \$34.01/ 3&4 \$41.46/ 5&6 \$62.80/ 7&8 \$69.25

**Apprentice to Journeyworker Ratio:1:5**

**PIPEFITTER & STEAMFITTER**  
*PIPEFITTERS LOCAL 537*

03/01/2023	\$63.43	\$12.25	\$20.80	\$0.00	\$96.48
09/01/2023	\$65.18	\$12.25	\$20.80	\$0.00	\$98.23
03/01/2024	\$66.98	\$12.25	\$20.80	\$0.00	\$100.03
09/01/2024	\$68.78	\$12.25	\$20.80	\$0.00	\$101.83
03/01/2025	\$70.58	\$12.25	\$20.80	\$0.00	\$103.63

**Apprentice - PIPEFITTER - Local 537**

**Effective Date - 03/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$25.37	\$12.25	\$8.55	\$0.00	\$46.17
2	45	\$28.54	\$12.25	\$20.80	\$0.00	\$61.59
3	60	\$38.06	\$12.25	\$20.80	\$0.00	\$71.11
4	70	\$44.40	\$12.25	\$20.80	\$0.00	\$77.45
5	80	\$50.74	\$12.25	\$20.80	\$0.00	\$83.79

**Effective Date - 09/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$26.07	\$12.25	\$8.55	\$0.00	\$46.87
2	45	\$29.33	\$12.25	\$20.80	\$0.00	\$62.38
3	60	\$39.11	\$12.25	\$20.80	\$0.00	\$72.16
4	70	\$45.63	\$12.25	\$20.80	\$0.00	\$78.68
5	80	\$52.14	\$12.25	\$20.80	\$0.00	\$85.19

**Notes:**

\*\* 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.  
 Refrig/AC Mechanic \*\*1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

**Apprentice to Journeyworker Ratio:\*\***



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$36.81	\$9.35	\$16.89	\$0.00	\$63.05
	06/01/2023	\$37.71	\$9.35	\$16.89	\$0.00	\$63.95
	12/01/2023	\$38.61	\$9.35	\$16.89	\$0.00	\$64.85
	06/01/2024	\$39.94	\$9.35	\$16.89	\$0.00	\$66.18
	12/01/2024	\$41.27	\$9.35	\$16.89	\$0.00	\$67.51
	06/01/2025	\$42.66	\$9.35	\$16.89	\$0.00	\$68.90
	12/01/2025	\$44.04	\$9.35	\$16.89	\$0.00	\$70.28
	06/01/2026	\$45.48	\$9.35	\$16.89	\$0.00	\$71.72
	12/01/2026	\$46.92	\$9.35	\$16.89	\$0.00	\$73.16
	For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"					
PLUMBERS & GASFITTERS <i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>	02/26/2023	\$65.19	\$14.07	\$18.36	\$0.00	\$97.62
	09/03/2023	\$66.94	\$14.07	\$18.36	\$0.00	\$99.37
	03/03/2024	\$68.74	\$14.07	\$18.36	\$0.00	\$101.17
	09/01/2024	\$70.54	\$14.07	\$18.36	\$0.00	\$102.97
	03/02/2025	\$72.34	\$14.07	\$18.36	\$0.00	\$104.77

**Apprentice - PLUMBER/GASFITTER - Local 12**

**Effective Date - 02/26/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$22.82	\$14.07	\$6.63	\$0.00	\$43.52
2	40	\$26.08	\$14.07	\$7.52	\$0.00	\$47.67
3	55	\$35.85	\$14.07	\$10.24	\$0.00	\$60.16
4	65	\$42.37	\$14.07	\$12.04	\$0.00	\$68.48
5	75	\$48.89	\$14.07	\$13.85	\$0.00	\$76.81

**Effective Date - 09/03/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.43	\$14.07	\$6.63	\$0.00	\$44.13
2	40	\$26.78	\$14.07	\$7.52	\$0.00	\$48.37
3	55	\$36.82	\$14.07	\$10.24	\$0.00	\$61.13
4	65	\$43.51	\$14.07	\$12.04	\$0.00	\$69.62
5	75	\$50.21	\$14.07	\$13.85	\$0.00	\$78.13

**Notes:**

\*\* 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr  
Step4 with lic\$69.00, Step5 with lic\$76.87

**Apprentice to Journeyworker Ratio:\*\***

PNEUMATIC CONTROLS (TEMP.) <i>PIPEFITTERS LOCAL 537</i>	03/01/2023	\$63.43	\$12.00	\$20.80	\$0.00	\$96.23
	09/01/2023	\$65.18	\$12.00	\$20.80	\$0.00	\$97.98
	03/01/2024	\$66.98	\$12.00	\$20.80	\$0.00	\$99.78
	09/01/2024	\$68.78	\$12.00	\$20.80	\$0.00	\$101.58
	03/01/2025	\$70.58	\$12.00	\$20.80	\$0.00	\$103.38

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$36.81	\$9.35	\$16.89	\$0.00	\$63.05
	06/01/2023	\$37.71	\$9.35	\$16.89	\$0.00	\$63.95
	12/01/2023	\$38.61	\$9.35	\$16.89	\$0.00	\$64.85
	06/01/2024	\$39.94	\$9.35	\$16.89	\$0.00	\$66.18
	12/01/2024	\$41.27	\$9.35	\$16.89	\$0.00	\$67.51
	06/01/2025	\$42.66	\$9.35	\$16.89	\$0.00	\$68.90
	12/01/2025	\$44.04	\$9.35	\$16.89	\$0.00	\$70.28
	06/01/2026	\$45.48	\$9.35	\$16.89	\$0.00	\$71.72
	12/01/2026	\$46.92	\$9.35	\$16.89	\$0.00	\$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	12/01/2022	\$38.16	\$9.10	\$16.64	\$0.00	\$63.90
	06/01/2023	\$39.06	\$9.10	\$16.64	\$0.00	\$64.80
	12/01/2023	\$39.96	\$9.10	\$16.64	\$0.00	\$65.70
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$37.56	\$9.35	\$16.89	\$0.00	\$63.80
	06/01/2023	\$38.46	\$9.35	\$16.89	\$0.00	\$64.70
	12/01/2023	\$39.36	\$9.35	\$16.89	\$0.00	\$65.60
	06/01/2024	\$40.69	\$9.35	\$16.89	\$0.00	\$66.93
	12/01/2024	\$42.02	\$9.35	\$16.89	\$0.00	\$68.26
	06/01/2025	\$43.41	\$9.35	\$16.89	\$0.00	\$69.65
	12/01/2025	\$44.79	\$9.35	\$16.89	\$0.00	\$71.03
	06/01/2026	\$46.23	\$9.35	\$16.89	\$0.00	\$72.47
	12/01/2026	\$47.67	\$9.35	\$16.89	\$0.00	\$73.91
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.63	\$14.25	\$16.05	\$0.00	\$83.93
	06/01/2023	\$54.88	\$14.25	\$16.05	\$0.00	\$85.18
	12/01/2023	\$56.13	\$14.25	\$16.05	\$0.00	\$86.43
	06/01/2024	\$57.43	\$14.25	\$16.05	\$0.00	\$87.73
	12/01/2024	\$58.88	\$14.25	\$16.05	\$0.00	\$89.18
	06/01/2025	\$60.18	\$14.25	\$16.05	\$0.00	\$90.48
	12/01/2025	\$61.63	\$14.25	\$16.05	\$0.00	\$91.93
	06/01/2026	\$62.93	\$14.25	\$16.05	\$0.00	\$93.23
	12/01/2026	\$64.38	\$14.25	\$16.05	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.63	\$14.25	\$16.05	\$0.00	\$83.93
	06/01/2023	\$54.88	\$14.25	\$16.05	\$0.00	\$85.18
	12/01/2023	\$56.13	\$14.25	\$16.05	\$0.00	\$86.43
	06/01/2024	\$57.43	\$14.25	\$16.05	\$0.00	\$87.73
	12/01/2024	\$58.88	\$14.25	\$16.05	\$0.00	\$89.18
	06/01/2025	\$60.18	\$14.25	\$16.05	\$0.00	\$90.48
	12/01/2025	\$61.63	\$14.25	\$16.05	\$0.00	\$91.93
	06/01/2026	\$62.93	\$14.25	\$16.05	\$0.00	\$93.23
	12/01/2026	\$64.38	\$14.25	\$16.05	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$35.08	\$14.25	\$16.05	\$0.00	\$65.38
	06/01/2023	\$35.90	\$14.25	\$16.05	\$0.00	\$66.20
	12/01/2023	\$36.72	\$14.25	\$16.05	\$0.00	\$67.02
	06/01/2024	\$37.57	\$14.25	\$16.05	\$0.00	\$67.87
	12/01/2024	\$38.52	\$14.25	\$16.05	\$0.00	\$68.82
	06/01/2025	\$39.37	\$14.25	\$16.05	\$0.00	\$69.67
	12/01/2025	\$40.32	\$14.25	\$16.05	\$0.00	\$70.62
	06/01/2026	\$41.18	\$14.25	\$16.05	\$0.00	\$71.48
	12/01/2026	\$42.13	\$14.25	\$16.05	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 653 - Southeastern Concrete (Weymouth)</i>	05/01/2023	\$25.00	\$13.41	\$6.90	\$0.00	\$45.31
	08/01/2023	\$25.00	\$13.91	\$6.90	\$0.00	\$45.81
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROOFER (Inc.Roofer Waterproofing &Roofer Damproofg) ROOFERS LOCAL 33	02/01/2023	\$48.53	\$12.78	\$20.20	\$0.00	\$81.51
	08/01/2023	\$50.03	\$12.78	\$20.20	\$0.00	\$83.01
	02/01/2024	\$51.28	\$12.78	\$20.20	\$0.00	\$84.26
	08/01/2024	\$52.78	\$12.78	\$20.20	\$0.00	\$85.76
	02/01/2025	\$54.03	\$12.78	\$20.20	\$0.00	\$87.01
	08/01/2025	\$55.53	\$12.78	\$20.20	\$0.00	\$88.51
	02/01/2026	\$56.78	\$12.78	\$20.20	\$0.00	\$89.76

**Apprentice - ROOFER - Local 33**

**Effective Date - 02/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.27	\$12.78	\$5.59	\$0.00	\$42.64
2	60	\$29.12	\$12.78	\$20.20	\$0.00	\$62.10
3	65	\$31.54	\$12.78	\$20.20	\$0.00	\$64.52
4	75	\$36.40	\$12.78	\$20.20	\$0.00	\$69.38
5	85	\$41.25	\$12.78	\$20.20	\$0.00	\$74.23

**Effective Date - 08/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.02	\$12.78	\$5.59	\$0.00	\$43.39
2	60	\$30.02	\$12.78	\$20.20	\$0.00	\$63.00
3	65	\$32.52	\$12.78	\$20.20	\$0.00	\$65.50
4	75	\$37.52	\$12.78	\$20.20	\$0.00	\$70.50
5	85	\$42.53	\$12.78	\$20.20	\$0.00	\$75.51

**Notes: \*\* 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1**  
 Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.  
 (Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)

**Apprentice to Journeyworker Ratio:\*\***

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	02/01/2023	\$48.78	\$12.78	\$20.20	\$0.00	\$81.76
	08/01/2023	\$50.28	\$12.78	\$20.20	\$0.00	\$83.26
	02/01/2024	\$51.53	\$12.78	\$20.20	\$0.00	\$84.51
	08/01/2024	\$53.03	\$12.78	\$20.20	\$0.00	\$86.01
	02/01/2025	\$54.28	\$12.78	\$20.20	\$0.00	\$87.26
	08/01/2025	\$55.78	\$12.78	\$20.20	\$0.00	\$88.76
	02/01/2026	\$57.03	\$12.78	\$20.20	\$0.00	\$90.01

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	02/01/2023	\$55.31	\$14.11	\$26.64	\$2.83	\$98.89
	08/01/2023	\$57.01	\$14.11	\$26.64	\$2.83	\$100.59
	02/01/2024	\$58.71	\$14.11	\$26.64	\$2.83	\$102.29
	08/01/2024	\$60.46	\$14.11	\$26.64	\$2.83	\$104.04
	02/01/2025	\$62.21	\$14.11	\$26.64	\$2.83	\$105.79
	08/01/2025	\$64.06	\$14.11	\$26.64	\$2.83	\$107.64
	02/01/2026	\$66.01	\$14.11	\$26.64	\$2.83	\$109.59

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - SHEET METAL WORKER - Local 17-A**

**Effective Date - 02/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$23.23	\$14.11	\$6.13	\$0.00	\$43.47
2	42	\$23.23	\$14.11	\$6.13	\$0.00	\$43.47
3	47	\$26.00	\$14.11	\$11.90	\$1.54	\$53.55
4	47	\$26.00	\$14.11	\$11.90	\$1.54	\$53.55
5	52	\$28.76	\$14.11	\$12.88	\$1.65	\$57.40
6	52	\$28.76	\$14.11	\$13.13	\$1.65	\$57.65
7	60	\$33.19	\$14.11	\$14.54	\$1.83	\$63.67
8	65	\$35.95	\$14.11	\$15.52	\$1.94	\$67.52
9	75	\$41.48	\$14.11	\$17.48	\$2.16	\$75.23
10	85	\$47.01	\$14.11	\$18.94	\$2.36	\$82.42

**Effective Date - 08/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$23.94	\$14.11	\$6.13	\$0.00	\$44.18
2	42	\$23.94	\$14.11	\$6.13	\$0.00	\$44.18
3	47	\$26.79	\$14.11	\$11.90	\$1.58	\$54.38
4	47	\$26.79	\$14.11	\$11.90	\$1.58	\$54.38
5	52	\$29.65	\$14.11	\$12.88	\$1.70	\$58.34
6	52	\$29.65	\$14.11	\$13.13	\$1.70	\$58.59
7	60	\$34.21	\$14.11	\$14.54	\$1.89	\$64.75
8	65	\$37.06	\$14.11	\$15.52	\$2.00	\$68.69
9	75	\$42.76	\$14.11	\$17.48	\$2.23	\$76.58
10	85	\$48.46	\$14.11	\$18.94	\$2.45	\$83.96

**Notes:**  
Steps are 6 mos.

**Apprentice to Journeyworker Ratio:1:4**

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.53	\$13.41	\$16.01	\$0.00	\$65.95
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2023	\$66.20	\$10.90	\$23.20	\$0.00	\$100.30
	10/01/2023	\$67.95	\$10.90	\$23.20	\$0.00	\$102.05
	03/01/2024	\$69.75	\$10.90	\$23.20	\$0.00	\$103.85
	10/01/2024	\$71.55	\$10.90	\$23.20	\$0.00	\$105.65
	03/01/2025	\$73.35	\$10.90	\$23.20	\$0.00	\$107.45

**Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1**

**Effective Date - 03/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.17	\$10.90	\$9.70	\$0.00	\$43.77
2	40	\$26.48	\$10.90	\$9.70	\$0.00	\$47.08
3	45	\$29.79	\$10.90	\$9.70	\$0.00	\$50.39
4	50	\$33.10	\$10.90	\$9.70	\$0.00	\$53.70
5	55	\$36.41	\$10.90	\$9.70	\$0.00	\$57.01
6	60	\$39.72	\$10.90	\$11.20	\$0.00	\$61.82
7	65	\$43.03	\$10.90	\$11.20	\$0.00	\$65.13
8	70	\$46.34	\$10.90	\$11.20	\$0.00	\$68.44
9	75	\$49.65	\$10.90	\$11.20	\$0.00	\$71.75
10	80	\$52.96	\$10.90	\$11.20	\$0.00	\$75.06

**Effective Date - 10/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.78	\$10.90	\$9.70	\$0.00	\$44.38
2	40	\$27.18	\$10.90	\$9.70	\$0.00	\$47.78
3	45	\$30.58	\$10.90	\$9.70	\$0.00	\$51.18
4	50	\$33.98	\$10.90	\$9.70	\$0.00	\$54.58
5	55	\$37.37	\$10.90	\$9.70	\$0.00	\$57.97
6	60	\$40.77	\$10.90	\$11.20	\$0.00	\$62.87
7	65	\$44.17	\$10.90	\$11.20	\$0.00	\$66.27
8	70	\$47.57	\$10.90	\$11.20	\$0.00	\$69.67
9	75	\$50.96	\$10.90	\$11.20	\$0.00	\$73.06
10	80	\$54.36	\$10.90	\$11.20	\$0.00	\$76.46

**Notes:** Apprentice entered prior 9/30/10:  
40/45/50/55/60/65/70/75/80/85  
Steps are 850 hours

**Apprentice to Journeyworker Ratio:1:3**

STEAM BOILER OPERATOR	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
OPERATING ENGINEERS LOCAL 4	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2023	\$47.38	\$13.00	\$19.63	\$0.00	\$80.01
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**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103**

**Effective Date - 03/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.32	\$13.00	\$0.65	\$0.00	\$34.97
2	45	\$21.32	\$13.00	\$0.65	\$0.00	\$34.97
3	50	\$23.69	\$13.00	\$15.20	\$0.00	\$51.89
4	50	\$23.69	\$13.00	\$15.20	\$0.00	\$51.89
5	55	\$26.06	\$13.00	\$15.58	\$0.00	\$54.64
6	60	\$28.43	\$13.00	\$15.96	\$0.00	\$57.39
7	65	\$30.80	\$13.00	\$16.34	\$0.00	\$60.14
8	70	\$33.17	\$13.00	\$16.73	\$0.00	\$62.90
9	75	\$35.54	\$13.00	\$17.11	\$0.00	\$65.65
10	80	\$37.90	\$13.00	\$17.48	\$0.00	\$68.38

Notes:

**Apprentice to Journeyworker Ratio:1:1**

TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2023	\$59.29	\$11.49	\$22.34	\$0.00	\$93.12
	08/01/2023	\$61.34	\$11.49	\$22.34	\$0.00	\$95.17
	02/01/2024	\$62.59	\$11.49	\$22.34	\$0.00	\$96.42
	08/01/2024	\$64.69	\$11.49	\$22.34	\$0.00	\$98.52
	02/01/2025	\$65.99	\$11.49	\$22.34	\$0.00	\$99.82
	08/01/2025	\$68.14	\$11.49	\$22.34	\$0.00	\$101.97
	02/01/2026	\$69.49	\$11.49	\$22.34	\$0.00	\$103.32
	08/01/2026	\$71.69	\$11.49	\$22.34	\$0.00	\$105.52
	02/01/2027	\$73.09	\$11.49	\$22.34	\$0.00	\$106.92

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile**

**Effective Date - 02/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$29.65	\$11.49	\$22.34	\$0.00	\$63.48
2	60	\$35.57	\$11.49	\$22.34	\$0.00	\$69.40
3	70	\$41.50	\$11.49	\$22.34	\$0.00	\$75.33
4	80	\$47.43	\$11.49	\$22.34	\$0.00	\$81.26
5	90	\$53.36	\$11.49	\$22.34	\$0.00	\$87.19

**Effective Date - 08/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.67	\$11.49	\$22.34	\$0.00	\$64.50
2	60	\$36.80	\$11.49	\$22.34	\$0.00	\$70.63
3	70	\$42.94	\$11.49	\$22.34	\$0.00	\$76.77
4	80	\$49.07	\$11.49	\$22.34	\$0.00	\$82.90
5	90	\$55.21	\$11.49	\$22.34	\$0.00	\$89.04

**Notes:**

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**Apprentice to Journeyworker Ratio:1:3**

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2022	\$46.58	\$9.35	\$17.97	\$0.00	\$73.90
	06/01/2023	\$47.58	\$9.35	\$17.97	\$0.00	\$74.90
	12/01/2023	\$48.83	\$9.35	\$17.97	\$0.00	\$76.15
	06/01/2024	\$50.31	\$9.35	\$17.97	\$0.00	\$77.63
	12/01/2024	\$51.78	\$9.35	\$17.97	\$0.00	\$79.10
	06/01/2025	\$53.28	\$9.35	\$17.97	\$0.00	\$80.60
	12/01/2025	\$54.78	\$9.35	\$17.97	\$0.00	\$82.10
	06/01/2026	\$56.33	\$9.35	\$17.97	\$0.00	\$83.65
	12/01/2026	\$57.83	\$9.35	\$17.97	\$0.00	\$85.15

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2022	\$42.70	\$9.35	\$17.97	\$0.00	\$70.02
	06/01/2023	\$43.70	\$9.35	\$17.97	\$0.00	\$71.02
	12/01/2023	\$44.95	\$9.35	\$17.97	\$0.00	\$72.27
	06/01/2024	\$46.43	\$9.35	\$17.97	\$0.00	\$73.75
	12/01/2024	\$47.90	\$9.35	\$17.97	\$0.00	\$75.22
	06/01/2025	\$49.40	\$9.35	\$17.97	\$0.00	\$76.72
	12/01/2025	\$50.90	\$9.35	\$17.97	\$0.00	\$78.22
	06/01/2026	\$52.45	\$9.35	\$17.97	\$0.00	\$79.77
	12/01/2026	\$53.95	\$9.35	\$17.97	\$0.00	\$81.27

For apprentice rates see "Apprentice- LABORER"



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2022	\$42.58	\$9.35	\$17.97	\$0.00	\$69.90
	06/01/2023	\$43.58	\$9.35	\$17.97	\$0.00	\$70.90
	12/01/2023	\$44.83	\$9.35	\$17.97	\$0.00	\$72.15
	06/01/2024	\$46.31	\$9.35	\$17.97	\$0.00	\$73.63
	12/01/2024	\$47.78	\$9.35	\$17.97	\$0.00	\$75.10
	06/01/2025	\$49.28	\$9.35	\$17.97	\$0.00	\$76.60
	12/01/2025	\$50.78	\$9.35	\$17.97	\$0.00	\$78.10
	06/01/2026	\$52.33	\$9.35	\$17.97	\$0.00	\$79.65
	12/01/2026	\$53.83	\$9.35	\$17.97	\$0.00	\$81.15
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.05	\$14.25	\$16.05	\$0.00	\$83.35
	06/01/2023	\$54.29	\$14.25	\$16.05	\$0.00	\$84.59
	12/01/2023	\$55.53	\$14.25	\$16.05	\$0.00	\$85.83
	06/01/2024	\$56.81	\$14.25	\$16.05	\$0.00	\$87.11
	12/01/2024	\$58.25	\$14.25	\$16.05	\$0.00	\$88.55
	06/01/2025	\$59.53	\$14.25	\$16.05	\$0.00	\$89.83
	12/01/2025	\$60.97	\$14.25	\$16.05	\$0.00	\$91.27
	06/01/2026	\$62.25	\$14.25	\$16.05	\$0.00	\$92.55
	12/01/2026	\$63.69	\$14.25	\$16.05	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.82	\$13.41	\$16.01	\$0.00	\$66.24
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2022	\$54.81	\$9.35	\$18.42	\$0.00	\$82.58
	06/01/2023	\$55.81	\$9.35	\$18.42	\$0.00	\$83.58
	12/01/2023	\$57.06	\$9.35	\$18.42	\$0.00	\$84.83
	06/01/2024	\$58.54	\$9.35	\$18.42	\$0.00	\$86.31
	12/01/2024	\$60.01	\$9.35	\$18.42	\$0.00	\$87.78
	06/01/2025	\$61.51	\$9.35	\$18.42	\$0.00	\$89.28
	12/01/2025	\$63.01	\$9.35	\$18.42	\$0.00	\$90.78
	06/01/2026	\$64.56	\$9.35	\$18.42	\$0.00	\$92.33
	12/01/2026	\$66.06	\$9.35	\$18.42	\$0.00	\$93.83
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2022	\$56.81	\$9.35	\$18.42	\$0.00	\$84.58
	06/01/2023	\$57.81	\$9.35	\$18.42	\$0.00	\$85.58
	12/01/2023	\$59.06	\$9.35	\$18.42	\$0.00	\$86.83
	06/01/2024	\$60.54	\$9.35	\$18.42	\$0.00	\$88.31
	12/01/2024	\$62.01	\$9.35	\$18.42	\$0.00	\$89.78
	06/01/2025	\$63.51	\$9.35	\$18.42	\$0.00	\$91.28
	12/01/2025	\$65.01	\$9.35	\$18.42	\$0.00	\$92.78
	06/01/2026	\$66.56	\$9.35	\$18.42	\$0.00	\$94.33
	12/01/2026	\$68.06	\$9.35	\$18.42	\$0.00	\$95.83
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2022	\$46.88	\$9.35	\$18.42	\$0.00	\$74.65
	06/01/2023	\$47.88	\$9.35	\$18.42	\$0.00	\$75.65
	12/01/2023	\$49.13	\$9.35	\$18.42	\$0.00	\$76.90
	06/01/2024	\$50.61	\$9.35	\$18.42	\$0.00	\$78.38
	12/01/2024	\$52.08	\$9.35	\$18.42	\$0.00	\$79.85
	06/01/2025	\$53.58	\$9.35	\$18.42	\$0.00	\$81.35
	12/01/2025	\$55.08	\$9.35	\$18.42	\$0.00	\$82.85
	06/01/2026	\$56.63	\$9.35	\$18.42	\$0.00	\$84.40
	12/01/2026	\$58.13	\$9.35	\$18.42	\$0.00	\$85.90
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2022	\$48.88	\$9.35	\$18.42	\$0.00	\$76.65
	06/01/2023	\$49.88	\$9.35	\$18.42	\$0.00	\$77.65
	12/01/2023	\$51.13	\$9.35	\$18.42	\$0.00	\$78.90
	06/01/2024	\$52.61	\$9.35	\$18.42	\$0.00	\$80.38
	12/01/2024	\$54.08	\$9.35	\$18.42	\$0.00	\$81.85
	06/01/2025	\$55.58	\$9.35	\$18.42	\$0.00	\$83.35
	12/01/2025	\$57.08	\$9.35	\$18.42	\$0.00	\$84.85
	06/01/2026	\$58.63	\$9.35	\$18.42	\$0.00	\$86.40
	12/01/2026	\$60.13	\$9.35	\$18.42	\$0.00	\$87.90
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$36.81	\$9.35	\$16.89	\$0.00	\$63.05
	06/01/2023	\$37.71	\$9.35	\$16.89	\$0.00	\$63.95
	12/01/2023	\$38.61	\$9.35	\$16.89	\$0.00	\$64.85
	06/01/2024	\$39.94	\$9.35	\$16.89	\$0.00	\$66.18
	12/01/2024	\$41.27	\$9.35	\$16.89	\$0.00	\$67.51
	06/01/2025	\$42.66	\$9.35	\$16.89	\$0.00	\$68.90
	12/01/2025	\$44.04	\$9.35	\$16.89	\$0.00	\$70.28
	06/01/2026	\$45.48	\$9.35	\$16.89	\$0.00	\$71.72
	12/01/2026	\$46.92	\$9.35	\$16.89	\$0.00	\$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2022	\$53.63	\$14.25	\$16.05	\$0.00	\$83.93
	06/01/2023	\$54.88	\$14.25	\$16.05	\$0.00	\$85.18
	12/01/2023	\$56.13	\$14.25	\$16.05	\$0.00	\$86.43
	06/01/2024	\$57.43	\$14.25	\$16.05	\$0.00	\$87.73
	12/01/2024	\$58.88	\$14.25	\$16.05	\$0.00	\$89.18
	06/01/2025	\$60.18	\$14.25	\$16.05	\$0.00	\$90.48
	12/01/2025	\$61.63	\$14.25	\$16.05	\$0.00	\$91.93
	06/01/2026	\$62.93	\$14.25	\$16.05	\$0.00	\$93.23
	12/01/2026	\$64.38	\$14.25	\$16.05	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WATER METER INSTALLER <i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>	02/26/2023	\$65.19	\$14.07	\$18.36	\$0.00	\$97.62
	09/03/2023	\$66.94	\$14.07	\$18.36	\$0.00	\$99.37
	03/03/2024	\$68.74	\$14.07	\$18.36	\$0.00	\$101.17
	09/01/2024	\$70.54	\$14.07	\$18.36	\$0.00	\$102.97
	03/02/2025	\$72.34	\$14.07	\$18.36	\$0.00	\$104.77

For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"

Additional Apprenticeship Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)

Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

\*\* Multiple ratios are listed in the comment field.

\*\*\* APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.

\*\*\*\* APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.



FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

**SECTION 00 44 00 – BID ACCEPTANCE FORM - NOTICE OF AWARD**

A. Acceptance

1. The foregoing proposal of Fort Revere Water Tower Rehabilitation project, dated \_\_\_\_\_ in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_ ) is hereby accepted as of \_\_\_\_\_ .

2. This Proposal contains the following Alternates:

\_\_\_\_\_  
(describe the Alternates)

3. Signed By: \_\_\_\_\_

for Town of Hull

Attest:

\_\_\_\_\_



# **CONTRACT DOCUMENTS**





**CONTRACT FOR CONSTRUCTION SERVICES  
AND  
GENERAL CONDITIONS**

**PROJECT TITLE:**                    **Rehabilitation/Renovation of  
The Fort Revere Water Tower**

**LOCATION:**                         **60 Farina Road, Hull, MA 02045**

This agreement is made under seal the \_\_\_\_ day of \_\_\_\_\_, 2023, between  
Town of Hull, Massachusetts, a municipal corporation having its usual place of business at  
Town Hall, 253 Atlantic Avenue, Hull, Plymouth County, Massachusetts 02045 acting by and  
through its Town Manager, (the "Owner", the "Town"), and

\_\_\_\_\_ of  
\_\_\_\_\_, having its  
usual place of business at \_\_\_\_\_, (the "Contractor").

Although not a direct party to this Contract, the Engineer/Designer for the Project is  
\_\_\_\_\_, having its usual place of business at  
\_\_\_\_\_, (the "Engineer" or "Designer")

**SCOPE OF SERVICES**

The Contractor shall perform the construction services briefly described hereafter, in  
accordance with the terms and provisions of the Contract Documents. The Contractor shall  
provide the Owner with the following construction services:

**Rehabilitation of and Renovation of the Fort Revere Water Tower and related work, as  
described in the Contract Documents.**

Town of Hull, Fort Revere Water Tower Rehabilitation and Renovation Spring-Summer 2023  
jbl41723

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**ARTICLE 1: DEFINITIONS**

CHANGE ORDER, a written order or directive from the Owner or its authorized agent, including the Engineer, directing or authorizing the Contractor to make changes in the work required by the Contract, including any increase, decrease, or other equitable adjustment in the Contract price or in the time for performing the Contract. The term "equitable adjustment" shall be considered synonymous with Change Order.

CLERK OF THE WORKS/ OWNERS REPRESENTATIVE, as designated by Owner, the Owner's on-site or other representative, if any, who may be the Engineer. Engineer, unless otherwise limited by the Owner, shall act as the Owner's representative, assuming all duties and responsibilities., rights and authority assigned to the Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

CONTRACT, this agreement between the Owner and the Contractor to provide the construction services required pursuant to the Contract Documents.

CONTRACT DOCUMENTS, this Contract and General Conditions, the following referenced and/or attached documents [1]; Bidding Documents- Advertisement, Notice to Bidders, Instructions to Bidders, , General Bid Form, Prevailing Wages Drawing List and Drawings; Technical Specifications (including all subparts (i.e. Divisions 01, 02, 06, 07, 09) Drawings; Plans and Specifications contained in the "Documents and Specifications for **Rehabilitation of and Renovation of the Town of Hull Historic Fort Revere Water Town and related work**, issued \_\_\_\_\_ by \_\_\_\_\_."); Bid submission and all addenda issued by the Owner or its agent during the bidding period; Change Orders, procedures and forms attached to the Contract, all of which constitute one instrument.

CONTRACTOR or GENERAL Contractor or a pronoun in place thereof, the party Contracting to perform the construction services required by the Contract.

\_\_\_\_\_

ENGINEER, or the "Engineer" or ARCHITECT, or the "Architect" (which term may be used interchangeably), \_\_\_\_\_, the Engineer/Architect hired by the Owner to develop the plans and specifications for the Project and to provide services related to the administration of the contract.

DRAWINGS, are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

GENERAL LAWS, the General Laws of the Commonwealth as amended, including any rules, regulations, and administrative procedures implementing said laws and applicable to this project.

PROJECT, is the total construction of which the Work performed under the Contract Documents, may be the whole or a part and which may include construction by the Owner or by separate contractors.

OWNER, The Town of Hull and its authorized representatives.

PROJECT MANAGER, if applicable, the person designated by the Town Manager as providing project management services to the Owner, who shall oversee the performance of the Engineer and the Contractor. References to "Owners Representative" shall mean the PROJECT MANAGER. If no separate Project Manager has been specifically designated, the term shall mean the Clerk or Works or Owners Representative.

SPECIFICATIONS, are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

SUPERINTENDENT or SUPERVISOR, the person employed by the Contractor to be in attendance at the project site throughout the prosecution of construction services under the Contract and shall have authority to act on behalf of the CONTRACTOR.

WORK, means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

## **ARTICLE 2: DESCRIPTION OF WORK, INTERPRETATION, INTENT**

1. The Contractor agrees to do and complete all the work and furnish all the materials required by the Contract Documents in a proper, thorough, and workmanlike manner, in accordance with the terms of the Contract and customary construction practice.

2. All plans, general and detailed, are to be deemed a part of the Contract, and the plans and specifications and Contract are to be considered together, and are intended to be mutually complementary, so that any work shown on the plans, though not specified in the specifications, and any work specified in the specifications, though not shown on the plans, is to be executed by the Contractor as a part of the Contract. Figured dimensions are to prevail over scale. All things which in the opinion of the Engineer may reasonably be inferred from the Contract Documents are to be executed by the Contractor in accordance with the terms of the Contract. In the event of a conflict, Contractor is to assume the greater quantity or quality of work, unless directed by written addendum, and shall bring forthwith to the attention of the Engineer said purported conflict or questions. In the event of any conflict among the Contract Documents, the Documents shall be construed according to the following priorities: Highest priority: Addenda, later date to take precedence; Second priority: Specifications; Fourth priority: Plans (Drawings); Fifth: this Contract and General Conditions. In all instances of any question, conflict or ambiguity, the work that will result in the greater value and benefit to the Owner is to be followed unless advised otherwise by the Owner.

3. The Contractor shall be responsible to the Owner for the acts and omissions of its subcontractors and suppliers and of all persons directly or indirectly employed by it in connection with the work required under the Contract.

4. Any Table of Contents, titles, headings, and marginal notes or sub-scripts contained herein are solely to facilitate references and in no way affect or limit the interpretation of the provisions to which they refer.

5. Where codes, standards, requirements and publications of public and private bodies are referred to in the specifications, references shall be understood to be to the latest revision prior to the date of receiving bids, except where otherwise indicated, or the latest revision, to the extent legally applicable and approved by the Owner.

6. Where no explicit quality or standards for material or workmanship are established for work, such work is to be of a good and workmanlike manner with good quality for the intended use and consistent with the quality of the surrounding work and of the construction of the Project generally.

7. All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's written or printed directions and instructions unless otherwise indicated in the Contract Documents.

8. The Contractor and all Subcontractors shall refer to all of the Drawings, including those showing primarily the Work of the mechanical, electrical and other specialized trades, and to all of the Sections of the Specifications, and shall perform all the Work reasonably inferable

therefrom as being necessary to produce the indicated results.

9. All indications or notations which apply to one of a number of similar situations, materials or processes shall be deemed to apply to all such situations, materials or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.

10. It is expressly understood and agreed that this contract is for a completed project, which the Contractor shall provide to the Owner, unless specifically excused therefrom by this agreement or a written authorization signed by the Owner.

### **ARTICLE 3: GENERAL PERFORMANCE OBLIGATIONS OF THE CONTRACTOR**

In general, the Contractor shall:

#### **1. Plans and Specifications**

Carefully study the Contract Documents and any orders that shall be made and given as authorized in the Contract.

#### **2. Dimensions**

Before starting the work and at frequent intervals during the progress thereof, carefully compare all specifications, plans, orders, field conditions, information furnished by the Owner, drawings, all figures, dimensions, line marks, and scales, and all information provided by the Engineer pursuant to Article 3.4, Requests for Information, so there will be a clear understanding regarding the work to be performed under the Contract, and at once submit questions or discrepancy to the Engineer for review. If the Contractor proceeds with the work without such notice to the Engineer, having discovered such discrepancies, or if by reasonable study of the contract documents, the contractor could have discovered such discrepancies, the contractor shall bear all costs arising therefrom.

#### **3. Mechanical, Electrical and Fire Protection Drawings**

The Mechanical, Electrical and Fire Protection Drawings, if any, are diagrammatic only, and are not intended to show the alignment, physical locations, or configurations of such Work. Such work shall be installed without additional cost to the Owner to clear all obstructions, permit proper clearances for the work or other trades, and present an orderly appearance where exposed. Prior to beginning such work, the Contractor shall have prepared a submittal, for approval pursuant to Article 3.5 hereof, consisting of coordination drawings showing the exact alignment, physical location and configuration of the Mechanical, Electrical and Fire Protection installations demonstrating to the Contractor's satisfaction that the installations will comply with the preceding sentence. The Contractor shall be solely



liable and responsible for any costs and/or delays resulting from the Contractor's failure to prepare such coordination drawings. Exact locations of fixtures and outlets shall be obtained from the Engineer before the work is roughed in; work installed without such information from the Engineer shall be relocated at the Contractor's expense.

#### 4. Requests for Information

(a) The Contractor may submit requests for information to the Engineer to help facilitate the Contractor's performance of the Contract. Prior to submitting each request for information, the Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner-provided information, Contractor prepared Coordination Drawings, and prior Project Correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources.

(b) Each request for information shall be submitted to the Engineer, in writing, in such form and with such accompanying information as the Engineer may require for such purpose. Each request for information shall identify the specific sources which were reviewed by the Contractor in its efforts to determine the information requested, and a statement to the effect that the information being requested could not be determined from such sources.

(c) The Contractor shall submit each request for information sufficiently in advance of the date by which such information is required in order to allow the Engineer sufficient time, in the Engineer's professional judgment, to permit adequate review and response and to permit Contractor compliance with the latest construction schedule.

(d) The Contractor shall maintain a log at the Project site that sequentially numbers and lists each request for information. This log shall also contain the Drawing reference or Specification section to which the request pertains, the date of the request, to whom the request was made, by whom the request was made, the nature of the request, and the resolution thereof, and such other information as the Engineer and/or Owner may specify from time to time. This log shall be reviewed at each Project meeting and the resolution of requests for information shall be made part of the minutes of such meetings.

#### 5. Shop Drawings, Product Data and Samples (If applicable)

(a) Shop Drawings are drawings, diagrams, schedules and other data specifically prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

(b) Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

(c) Samples are physical examples which illustrate materials, equipment and workmanship and establish standards by which the Work will be judged.

(d) The Contractor shall review for compliance with the Contract Documents, approve and submit to the Engineer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor and submittals which are made by the Contractor but not required by the Contract Documents may be returned without action.

(e) The Contractor shall provide a submittal schedule to the Owner and Engineer, which schedule shall include for each submittal, a sufficient and reasonable review period prior to the Contractor's scheduled date for ordering, purchasing, fabricating, etc. the items that constitute the subject matter of the submittal.

(f) By approving and submitting Shop Drawings, Product Data, Samples, and similar submittals the Contractor thereby represents that the Contractor has determined and verified all dimensions, quantities, field dimensions, relations to existing work, coordination with work to be installed later, coordination with information on previously accepted Shop Drawings, Product Data, Samples, or similar submittals and verification of compliance with all the requirements of the Contract Documents. The accuracy of all such information is the responsibility of the Contractor. In reviewing Shop Drawings, Product Data, Samples, and similar submittals the Engineer shall be entitled to rely upon the Contractor's representation that such information is correct and accurate.

(g) The Engineer will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Engineer's actions will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Engineer's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Engineer's review of the Contractor's submittals shall not relieve the Contractor of any obligations of the Contractor hereunder. The Engineer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Engineer, of any construction means, methods, techniques, sequences or procedures. The Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

(h) The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Engineer. Such Work shall be in accordance with approved submittals.

(i) The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Engineer in writing of such deviation at the time of submittal and the Engineer has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Engineer's approval thereof.

(j) The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Engineer on previous submittals.

(k) Informational submittals upon which the Engineer is not expected to take responsive action may be so identified in the Contract Documents.

(l) When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Engineer shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

#### 6. Notices, Permits, Conformance with Codes.

(a) Give all notices, secure all permits, including the building permit, pay all charges, fees, water and other rates, give personal supervision to the work, keep a full time competent superintendent and a sufficient number of competent employees on the site until the completion of the work, carry on the work in accordance with the Contract Documents, with all proper speed and in accordance with the requirements of law and of all other public authorities, and furnish the Owner with such information and vouchers relative to the work, the materials therefor, and the persons employed thereon, as the Owner shall from time to time request.

(b) It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Engineer and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

(c) If the Contractor performs Work knowing it or should have known it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations and or good

practice, without notice to the Engineer and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

#### 7. Communications Facilitating Contract Administration

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall communicate through the Engineer. Communications by and with the Engineer's consultants shall be through the Engineer. The Contractor shall direct any communications regarding the requirements of the contract documents or the acceptability of the work to the Engineer. Notwithstanding the foregoing, the Contractor may also communicate directly with the Owner's Representative whenever requested to do so by the Owner's Representative. Communications by and with subcontractors and material suppliers shall be through the Contractor.

#### 8. Site Layout, Registered Engineer, Survey

Unless otherwise required by the specifications or directive of the Owner, the Contractor may retain a competent Registered Professional Engineer or Registered Land Surveyor at its own expense. A failure to do so shall be at the sole risk of the Contractor.

#### 9. Sheeting, Shoring, Bracing (If applicable)

Prevent, by sheeting and shoring or bracing, if necessary, any caving or bulging of the sides of any excavation made by the Contractor leaving sheeting and shoring in place, and if any is removed, fill solid the spaces left thereby.

#### 10. De-Watering (If applicable)

Provide pumping, drainage, and disposal of all water and/or whatever flows in any conduit interfered with by the Contractor so that no puddle or nuisance will be caused by water or flood; protect the work from injury by water, frost, wind, fire, accident, or other cause.

#### 11. Correction of Work

(a) The Engineer will have authority to reject Work that does not conform to the Contract Documents. Whenever the Engineer considers it necessary or advisable, the Engineer will have authority to require inspection or testing of the Work whether or not such Work is fabricated, installed, or completed. However, neither this authority of the Engineer nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Engineer to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities

performing portions of the Work.

(b) The Contractor shall promptly correct Work rejected by the Engineer or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for the Engineer's services and expenses made necessary thereby. If the Contractor fails to commence the correction of Work rejected by the Engineer, within seven days of notice to the Contractor of such rejection, the Owner may use other contractors to correct the work, in which event the Owner shall be entitled to backcharge the Contractor for all costs related to such corrections.

#### 12. Sanitary Facilities (If applicable)

Unless otherwise provided in the Contract, provide and maintain buildings for the sanitary necessities of all persons employed on the work, including the Clerk of Work/ Owner's Representative, beginning with the first workman at the site as follows:

- (a) at approved locations near the work;
- (b) on the basis of not less than the number of units required by the standards of the "Occupational Safety and Health Act of 1970" (OSHA);
- (c) in a clean, sanitary condition at all times;
- (d) of an approved chemical or incinerator type, or water closets, if permitted (if an incinerator type, a sufficient number shall be provided to permit daily incineration of 33 1/3%); and
- (e) adequately screened to be inaccessible to flies.

#### 13. Temporary Site Office (If applicable)

Unless otherwise provided in the Contract:

(a) The Contractor shall erect temporary offices at the site of the work for its own use and if called for in the specifications or contract documents for the Owner's use, in a location approved by the Owner, adequately furnished and maintained in a clean, orderly condition by the Contractor, provided that the cost of relocating the trailers or temporary offices shall be borne by the Contractor if the need so arises.

#### 14. Telephone/Electronic, Heat, Utilities

The Contractor shall provide, maintain, and pay for separate individual telephone/electronic service to the Contractor's field office including a separately dedicated internet and facsimile machine line. Unless specifically noted otherwise, the Contractor shall be responsible for providing and paying for all temporary heat and utility costs associated with the construction of the Project until use and occupancy is realized, at which time the Contractor and the Owner shall determine a fair and appropriate allocation for heat and utility costs incurred after use and occupancy. If required by the specifications or contract documents that the Contractor provide an office for the Owner at the site, the Contractor shall also be responsible for such utilities, telephone/electronic communications and heat as are necessary and required by the contract documents.

#### 15. Competent Workers; Superintendent

(a) The Contractor shall employ only competent workers and whenever the Owner shall notify the Contractor, in writing, that any worker is in its opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such employee shall be discharged from the work and shall not again be employed on the Project except with the consent of the Owner.

#### (b) Duties and Qualifications of the Superintendent

The Superintendent shall be a competent and responsible employee, satisfactory to the Owner, who is regularly employed by the Contractor and is designated by it as its representative to be in full time attendance at the Project site throughout the prosecution and progress of the construction of the work. The Superintendent shall be responsible for coordinating all the work of the Contractor and the subcontractors. The Superintendent shall be licensed consistent with the Massachusetts Building Code and any other applicable codes. The Superintendent's resume shall be submitted to the Owner prior to commencement of construction and must demonstrate to the Owner's reasonable satisfaction that the Superintendent has satisfactorily performed similar duties on previous construction projects similar to the Project.

#### 15. A. Appropriate Conduct by Contractor and Subcontractors; Computer and Internet Usage

Contractor agrees that its employees and agents shall conduct themselves while in the performance of the services under this contract in a professional and appropriate manner. All members of the public, employees of the Town and other vendors and their employees shall be treated with courtesy and respect. No activities shall be undertaken on the premises of the Town which would generally be viewed as inappropriate in a governmental and/or business setting. Included as examples and not as a limitation of such

activities would be any illegal activities, harassment, use or possession of drugs or intoxicating beverages, obscene or pornographic material or material which would generally be considered offensive. All persons are expected to use good common sense in their conduct and not to engage in any activities which would reasonably be viewed as conduct unbecoming or cause the public to lose confidence and respect for the Town, its departments, boards, commissions, employees, and officers. Violations or contrary actions to this policy may result in contract suspension or termination or the need for the Contractor to replace the offending employee. In specific reference to computer and internet usage on the premises of the Town, the following general guidelines are to be adhered to:

### Computer and Internet Usage

(1) Appropriate use. The Town encourages the use of the Internet as a resource to gain various types of information via WWW (home page), Email, news groups or discussion groups on the Internet. However, when accessing the Internet the contents of the usage should be limited to job-related information. Modest usage for personal reasons (i.e., Email from/to friends or relatives) is allowed, but it should be occasional rather than regular use. The Town does not have control over what is available on the Internet. Therefore, it is the users' responsibility to limit Internet usage to a proper level in terms of the content of the usage. The Internet also contains information that is not suitable for children nor appropriate for a non-private personal setting. Such material should not be displayed or accessed at a government setting. Searching and displaying such information are strictly prohibited on Town premises regardless of whose equipment is being used. Violation of this policy may lead to the termination of the employment of the offender and or suspension/termination of the contract with the vendor. The following is a list of sample (i.e. not all inclusive and illustrative only) web sites and Internet/computer activities that are deemed inappropriate for undertaking, accessing or displaying on Town premises:

- Online auctions unrelated to the Contractor's business
- Online chat
- Online gambling
- Online games
- Computer use, including email or Web sites that promote hatred opinions, threatening, offensive or harassing information (messages or images) which contains defamatory, abusive, obscene, pornographic, profane, sexually oriented, threatening, racially offensive, or otherwise biased, discriminatory, or illegal material or material demeaning any person or group of persons on the basis of race, ethnicity, gender, disability, beliefs concerning religion, or sexual orientation or
- Online Personal & dating services
- Pornography, pornographic material, sexually explicit material, material of a sexual nature or any material that is illegal unless such access is within the scope of his or her employment (ex. Police Department investigations)
- File sharing web, e.g., Kazza, etc.
- Web sites that promote criminal activities, e.g., bomb building, teaching theft method, etc.

## 16. Subcontractors

The Contractor shall submit to the Engineer a listing of the names and categories of work to be performed by subcontractors (other than filed subcontractors) for review and approval of the Owner prior to the subcontractor or sub-subcontractors performing services on the Project. The Owner's review of such listing shall be limited to a check on the qualifications and responsibility of the subcontractor or sub-subcontractor proposed, and the approval shall not be unreasonably withheld. The Owner's review or failure to review shall not be cause or basis for any claim against the Owner. The Contractor shall require each subcontractor to be bound to the Contractor by the terms of the Contract Documents and to assume toward the Contractor all the obligations and responsibilities which the Contractor assumes toward the Owner and the Engineer. Each subcontract agreement shall preserve and protect the rights of the Owner and the Engineer under the Contract Documents, with respect to the work to be performed by the subcontractor and shall allow the subcontractor the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Filed subcontractors and the Contractor shall execute the statutory Form of subcontract found in G.L. c.149 §44F and other applicable law.

## 17. Safety Requirements

(a) The Contractor shall take reasonable precautions for safety, of, and shall provide reasonable protection to prevent damage, injury or loss to:

1. employees on the Work and other persons who may be affected thereby;
2. the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the contractor's Subcontractors or Sub-subcontractors; and
3. other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

(b) The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful order of public authorities bearing on safety of persons or property or their protection from damage, injury, or loss.

(c) The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

(d) When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise



utmost care and carry on such activities under supervision of properly qualified personnel.

(e) The Contractor shall promptly remedy damage and loss (other than damage of loss insured and repaired/replaced/remedied under property insurance required by the contract Documents) to property referred to in Clauses 17(a)2 and 17(a)3 caused in whole or in part by the contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of the, or by anyone for whose acts they may be liable and for which the Contractor is responsible except damage or loss attributable to acts or omissions of the Owner or Engineer, or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor.

(f) The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Engineer.

(g) The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

(h) If the Contractor uses or stores toxic or hazardous substances it is subject to G.L. c. 111F, section 2, the "Right to Know" law and regulations promulgated by the Department of Public Health, 105 CMR 670, the Department of Environmental Quality Engineering, 310 CMR 33, and the Department of Labor and Industries, 441 CMR 21 and other applicable laws; and must post a Workplace Notice obtainable from the Department of Labor and Industries.

(i) Compliance with Dig Safe Laws

(i) Dig-Safe is the Utility Underground Plant Damage Prevention System, 111 South Bedford Road, Burlington, Massachusetts 01803, 1-800-322-4844 or such office location established for said program or its successor.

(ii) The Contractor must notify Dig-Safe of contemplated excavation, demolition, or explosive work in public or private ways, and in any utility company right of way or easement, by certified mail, with a copy to Department of Environmental Quality Engineering.

(iii) This notice must be given at least seventy-two (72) hours prior to the work, but not more than sixty (60) days before the work is to be done. Such notice shall set forth the name of the street or the route number of the way and an accurate description of the location and nature of the proposed work.

(iv) Dig-Safe is required to respond to the notice within seventy-two (72) hours of receipt by designating the location of pipes, mains, wires, or conduits at the site. The Contractor shall not commence work until Dig-Safe has responded. The work shall be performed in such manner and with reasonable precautions taken to avoid damage to utilities under the surface at the work location.

(v) The Contractor shall provide the superintendent with current Dig-Safe regulations and a copy of G.L. c. 82, §40.

(vi) Any costs related to the services performed by Dig-Safe shall be borne by the Contractor.

(j) No blasting shall be permitted prior to the Contractor's submittal to the Engineer and the Owner of a written certification that all proposed blasting has been properly permitted and shall be conducted in accordance with all applicable laws, regulations and codes; such written certification shall also list and include copies of all permits, licenses and approvals covered by the certification.

(k) The Contractor shall provide and maintain in good operating condition suitable and adequate fire protection equipment and services, and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the fire insurance company carrying insurance on the Work or by the local fire chief or fire marshal. The area within the site limits shall be kept orderly and clean, and all combustible rubbish shall be promptly removed from the site.

(l) The Contractor shall at all times protect excavations, trenches, buildings and materials, from rain water, ground water, backup or leakage of sewers, drains and other piping, and from water of any other origin and shall remove promptly any accumulation of water. The Contractor shall provide and operate all pumps, piping and other equipment necessary to this end.

(m) The Contractor shall remove snow and ice which might result in damage or delay.

(n) All construction and blasting operations shall be conducted in accordance with the Town's Noise Control bylaw, if any, a copy of which is incorporated into this agreement. In the absence of an applicable local Noise Control type law, the Contractor shall comply with state and federal noise related laws.

#### 18. Methods, Means, Coordination, Cutting and Patching

(a) The Contractor shall supervise and direct the work, using its best skill and attention. It shall be solely responsible for all construction means, methods, techniques, and procedures and for coordinating all portions of the work under the

Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Engineer and shall not proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor.

(b) The Contractor shall be responsible for the proper fitting of all work and the coordination of the operations of all trades, subcontractors, or materialmen engaged upon the work.

(c) All necessary cutting, coring, drilling, grouting, and patching to fit together the several parts of the work shall be done by the Contractor or the sub-contractors, as per the specifications and directions of the Engineer.

(d) The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

(e) The Contractor shall coordinate and supervise the work performed by subcontractors to the end that the work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the work. The Contractor and all subcontractors shall at all times afford each trade, any separate Contractor, or the Owner, every reasonable opportunity for the installation of work and the storage of materials and the Contractor shall cooperate with the Department(s) having any responsibility for the site.

#### 19. Debris, Cleaning Up

(a) The Contractor shall not permit the accumulation of debris, both exterior and interior, and the work area shall at all times be kept satisfactorily clean. At completion of the work the Contractor shall remove from and about the project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials. Immediately prior to the Engineer's inspection for substantial completion, the Contractor shall completely clean the premises. Concrete and

ceramic surfaces shall be cleaned and washed. Resilient coverings shall be cleaned, waxed and buffed. Woodwork shall be dusted and cleaned. Sash fixtures and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and all metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the Contractor at the Contractor's expense. If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

(b) The Contractor shall remove debris from the site of the work and dispose of it in a fully legal and compliance manner at any private or public dump that the Contractor may choose. The Contractor shall make all arrangements and obtain any approvals necessary from the Owners or officials in charge of such dumps and shall bear all cost, including fees resulting from such disposal. Garbage shall be removed daily.

(c) No open fire shall be permitted on site.

(d) Chemical Waste

Chemical waste shall be stored in corrosion resistant containers, removed from the Project site, and disposed of not less frequently than monthly unless directed otherwise. Disposal of chemical waste shall be in accordance with standard established practices. Fueling and lubricating of vehicles and equipment shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants to be discarded or burned shall be disposed of in accordance with approved procedures meeting all applicable federal, state, and local regulations. In the event of an oil or hazardous materials spill large enough to violate federal, state, or applicable local regulations, the Owner and Engineer shall be notified immediately. The Contractor shall be responsible for immediately cleaning up any oil or hazardous waste spills resulting from its operations. Any costs incurred in cleaning up any such spills shall be borne by the Contractor.

## 20. Use of Site, Site Protection, Work Hours

(a) The right of possession of the premises and the improvements made thereon by the Contractor shall remain at all times in the Owner. The Contractor's right to entry and use thereof arises solely from the permission granted by the Owner under the Contract Documents. The Contractor shall confine the Contractor's apparatus, the storage of materials and the operations of the Contractor's workmen to the limits indicated by law, ordinances, permit, the Contract Documents and/or information provided by the Engineer pursuant to Article 3.4, Requests for Information and shall not unreasonably encumber the premises with the Contractor's materials. The

Contractor shall provide the Owner and Engineer access to the Work at all times.

(b) The Contractor shall take precaution during the execution of work involving demolition not to disturb or damage any existing structures, landscaping, walks, roads, or other items scheduled to remain. The Contractor shall restore any damaged items to original condition and as directed by the Engineer.

(c) The Contractor shall provide and erect acceptable barricades, fences, signs, and other traffic devices to protect the work from traffic and the public.

(d) Work Hours: Regular work hours for the construction project are Monday thru Friday 7:00am to 5:30pm inclusive. The Owner's Representative may at his option, with reasonable notice, allow work to be performed at times other than those listed. Work on Sundays and holidays will also require authorization from the chief of police. If the Contractor desires to carry on the Work outside of regular hours, or on weekends or holidays, the Contractor shall provide the Owner's site representative with 48 hours notice to allow satisfactory arrangements to be made for inspecting Work in progress and the Contractor shall reimburse the Owner for the additional costs it incurs to monitor work performed outside of regular hours. **The Contractor is aware that the area around the Tower will be open and operating during the work and shall coordinate work so as to not interfere with public and/or municipal use.**

## 21. Weather Protection

The Contractor shall provide "weather protection," which means temporary protection of that Work adversely affected by moisture, wind and cold. Weather protection shall be achieved by covering, enclosing and/or heating working areas such that a minimum temperature of 40 degrees Fahrenheit is maintained at the working surface during the months of November through March in order to permit construction to be carried on during such period in accordance with the Progress Schedule. After the building or portion thereof is completely enclosed by either permanent construction or substantial temporary materials having a resistance comparable to the specified permanent construction, the Contractor shall provide heat therein of not less than 55 degrees F. nor more than 75 degrees F. The foregoing provisions do not supersede any specific requirements for methods of construction, curing of materials and the like. Such weather protection shall be consistent with the Progress Schedule, shall permit the continuous progress of the Work necessary to maintain an orderly and efficient sequence of construction operations, shall include one thermometer for every 2,000 square feet of floor space or fraction thereof, shall be subject to the Approval of the Owner, and shall meet such additional requirements as may be specified by the Owner and by the Contract Documents.

The Contractor shall install weather protection and provide adequate heat inside the building from November 1 to March 31, as required by G.L. c. 149, §44F (1), to protect the

materials and systems installed and prevent their deterioration.

## 22. Taxes

As a public project, the Contractor shall be entitled to exemptions from the state sales tax and the Owner will provide a tax exemption number. The Contractor shall pay all other employment, consumer, use and similar taxes for the project.

## **ARTICLE 4: CONTROL OF MATERIALS AND EQUIPMENT**

### 1. Source of Materials

Materials and Equipment to be installed as part of the Contract (both or either of which are hereinafter referred to as "Materials") shall be new, unused, of recent manufacture, and assembled and used in accordance with the best construction practices.

### 2. "Or Equal" Clause

Except where the Contract requires the use of a proprietary Material, the words "or equal" are understood to follow the name of any maker, vendor, or product specified to be used in the Contract Documents. To determine if Materials or articles proposed by the Contractor are equal to those specified, the Contractor shall provide to the Engineer all information and samples the Engineer shall reasonably require to determine whether the Materials or articles proposed are at least equal in quality, durability, appearance, strength, and design to the Material or articles named or described, and will perform at least equally the functions imposed by the design. See G.L. c.30, §39M.

### 3. Samples and Tests

(a) After reasonable notice by the Engineer, the Engineer may require testing of any Materials to be used in the work. Those materials may be tested or inspected after reasonable notice by the Engineer and may be rejected if they fail to comply with specified tests. Except as otherwise provided in the Contract, all testing of Material specifically requested by the Engineer will be performed by testing companies and will be paid for by the Owner, except that the cost of testing of Materials that fail the testing criteria shall be borne by the Contractor. If the Contractor requests permission to use a Material that was not specified in the Contract Documents and the Engineer requires testing of such Material before approving its use, the Contractor shall pay for such testing. Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the Contractor, notwithstanding approval or acceptance of such substitution by the Owner or the Engineer, unless such substitution was

made at the written request or direction of the Owner or the Engineer.

(b) The source of Material proposed by the Contractor shall be designated in time to permit all required testing and inspection before the Material is needed for incorporation into the work. The Contractor shall have no claim for delays or time extensions due to testing if it fails to designate the proposed source or to order the Material in time to provide for adequate testing and inspection. Necessary arrangements shall be made to permit the Engineer to make factory, shop, or other inspection of Materials or equipment ordered for the work, in process of manufacture or fabrication, or in storage elsewhere than the site of the work.

(c) The Contractor shall furnish the Engineer with samples of the Materials it proposes to use in the execution of the work in sufficient time to afford the Engineer the opportunity to adequately review and, if necessary, arrange for testing of such Materials.

#### 4. Deviations from Contract Requirements

The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer's approval of shop drawings, product data, samples or similar submittals unless the Contractor has specifically informed the Engineer in writing of such deviation at the time of submittal and the Engineer has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in shop drawings, product data, samples or similar submittals by the Engineer's approval thereof.

#### 5. Delivery and Storage

(a) Materials and equipment shall be progressively delivered to the site so that there will be neither delay in the progress of the work nor an undue accumulation of Materials that are not to be used within a reasonable time.

(b) Materials stored off site shall be stored at the expense of the Contractor in a manner that preserves their quality and fitness for the work. Material shall be placed on wooden platforms or other hard clean surfaces and not on the ground and shall be properly protected.

(c) If the Contractor requests the Engineer's inspection of Materials stored outside of Massachusetts, the Contractor shall assume the Engineer's reasonable costs for travel, room, and meals associated with such inspection.

(d) Materials stored either at the Project site or at some other location agreed upon in writing shall be located so as to facilitate prompt inspection and may again be

inspected prior to their use in the work.

(e) All storage sites shall be restored to their original condition by the Contractor at its expense.

(f) The Contractor shall take charge of and be liable for any loss of or injury to the Materials delivered at or in the vicinity of the place where the work is being done; it shall notify the Engineer as soon as any such materials are so delivered; and allow them to be examined by the Engineer.

#### 6. Payment for Stored Materials

The Contractor may request, with the permission of the Owner, in accordance with the provisions of Article 7, payment for those Materials purchased expressly for the work under the Contract that are delivered to the site or stored at a location agreed upon by the Engineer, provided the Contractor transfers absolute legal title to such Materials to the Owner and provides the Owner with a certificate of insurance insuring the Owner against loss, destruction, or disappearance of said Materials until such time as they may be incorporated in the work. The Contractor must submit a proper bill of sale to the Owner accompanied by certified copies of paid invoices or other acceptable proof of the Contractor's ownership of said Materials, as a prerequisite to payment for stored Materials under this Article and Article 7.

#### 7. Rejection of Defective Materials

The Engineer may reject Materials if it reasonably determines that such Materials do not conform to the Contract Documents. No rejected Materials, the defects of which have been subsequently corrected, shall be used in the work except with the permission of the Engineer. No extra time shall be allowed for completion of the work due to the rejection of non-conforming Materials.

#### 8. Rejection of Defective Work

The Engineer's review of the work shall not relieve the Contractor of any of its responsibilities to fulfill its Contract obligations and defective work shall be corrected. Unsuitable work may be rejected by the Engineer, notwithstanding that such work and Materials have been previously overlooked or misjudged by the Engineer and accepted for payment. If the work or any part thereof shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith correct such defect in a manner satisfactory to the Engineer and if any Material brought upon the site for use in the work, or selected for the same, shall be condemned by the Engineer as unsuitable or not in conformity with the Contract requirements, the Contractor shall forthwith remove such Materials from the vicinity of the work. Nothing in the Contract shall be construed as vesting



in the Contractor any right of property in the Materials used after they have been attached or affixed to the work or the soil; but all such Materials shall, upon being so attached or affixed, become the property of the Owner. Approvals or determinations of acceptability of Materials by the Engineer shall not in any way be construed to relieve the Contractor of its full responsibilities under the Contract.

## **ARTICLE 5: JOB MEETINGS, PROSECUTION AND PROGRESS, AND LIQUIDATED DAMAGES**

### **1. Job Meetings (If applicable)**

#### **(a) Pre-Construction Conference**

Prior to commencement of the work, the Contractor shall meet in conference with representatives of the Owner and Engineer to discuss and develop mutual understandings relative to administration of the Contract.

#### **(b) Weekly Meetings**

The Contractor shall arrange for and attend weekly job meetings with the Engineer and such other persons as the Engineer and the Owner's Representative may from time to time wish to have present. The Contractor shall be represented by a principal, project manager, general superintendent or other authorized representative, as well as by the Contractor's own superintendent. An authorized representative of any subcontractor or sub-subcontractor shall attend such meetings if the representative's presence is requested by the Engineer. Such representatives shall be empowered to make binding commitments on all matters to be discussed at such meetings including costs, payments, Change Orders, time schedules and manpower. Any notices required under the Contract may be served on such representatives.

### **2. Contract Time, Schedules, Time Extensions**

(a) The Contract time commences immediately from the date that the executed copy of the Contract accompanied by a NOTICE TO PROCEED is mailed or presented to the Contractor. The Contractor shall begin work on the Project within ten (10) days of the date that a properly executed copy of the Contract is delivered to the Contractor, unless otherwise ordered in writing by the Owner. The Contractor shall proceed expeditiously with adequate forces and shall achieve Contract Completion within the Contract Time. The Contractor shall carry out work on a continuous basis unless otherwise authorized by the Owner in writing. **Unless an extension is granted at the sole discretion of the Owner, the Contractor shall complete all work within 150 consecutive calendar days of the Notice to Proceed.**

(b) Prior to commencement of the work, the Contractor shall submit to the Engineer and the Owner's Representative a progress schedule in satisfactory form, showing in detail its proposed progress for the construction of the various parts of the work and the proposed times for receiving Materials required. The Progress Schedule shall be based on an orderly progression of the work, allowing adequate time for each operation (including adequate time for submission and review of submittals), and leading to a reasonable certainty of Contract Completion by the date established in the Agreement. The Progress Schedule will be reviewed by the Engineer and Owner for compliance with the requirements of this Article. The Contractor shall, at the end of each month, or more often if required, furnish the Engineer and Owner an updated schedule showing actual progress of the various parts of the work in comparison with the originally proposed progress schedule submitted to the Engineer for its review and comment. If the Engineer or the Owner's Representative raises any objections to progress schedules submitted by the Contractor, the Contractor shall immediately address and resolve such objections to their reasonable satisfaction. Contractor's schedules shall also comply with all other requirements of the Contract Documents relating to the Construction schedule.

(c) Time is of the essence in the performance of work under the Contract which shall be completed as defined in the contract documents. The Contractor may only be entitled to an extension of time if the time for completion of the work is extended due to the issuance of Change Orders, if the Contractor can demonstrate to the reasonable satisfaction of the Owner, upon the recommendation of the Engineer, that the critical path schedule for the Project has been adversely impacted by such events, and that the Contractor cannot revise its critical path schedule to eliminate the need for a time extension; provided however that the Town is entitled to utilize the "float" time in the CPM schedule, if any, if the utilization of such time avoids a time extension. Delays caused by suppliers, subcontractors, and sub-subcontractors shall be considered to be within the control of the Contractor. Should the Contractor require additional time to complete the work, it shall document its reasons therefor and request an extension of time at the time the alleged delay occurred, as provided in this Article and Article 6. Failure to notify the Owner of any delay as provided in this Article shall preclude the Contractor from requesting and obtaining a time extension due to said delay. Requests for extensions of time shall be submitted as a Change Order request to the Owner under Article 6.

(d) No extension of time shall be granted because of seasonal or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the Contractor, whether occurring within the time originally scheduled for completion or within the period of any extension granted. There shall be no increase in the Contract Sum on account of any additional costs of operations or conditions resulting therefrom.

(e) The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Owner or the Engineer on account of any delay in the commencement or performance of any of the work or any delay or suspension of any portion of the work, whether such delay is caused by the Owner, the Engineer, or otherwise, except as and to the extent expressly provided under G.L. c. 30, sec. 39O in the case of written orders by the Owner. The Contractor acknowledges that the Contractor's sole remedy for any such delay and/or suspension will be an extension of time as provided in this Article.

(f) Estimates of the extension of time must be accompanied by a detailed analysis identifying each action(s) or additional work item(s) which caused the delay and also identifying exactly which items along the critical path were impacted or delayed. Accumulating the amount of time required to complete a series of additional work items or delays and adding this time to the original Contract Time will not be considered justification for an extension of time. In order to justify an extension of Contract Time, the Contractor must prove that the critical path for construction has been impacted by circumstances beyond the control of the Contractor. An extension of time does not automatically warrant additional payment to the Contractor.

### 3. Substantial Completion, Final Completion

(a) Substantial completion is the stage in the progress of the work when the work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the work for its intended use and only minor items which can be corrected or completed without any material interference with the Owner's use of the work remain to be corrected or completed.

(b) When the Contractor considers that the work, or a portion thereof designated in the Contract Documents for separate completion is substantially complete, the Contractor shall submit to the Engineer a list of items to be completed or corrected, all special warranties and permits required by the Contract Documents, endorsed by the Contractor and in a form reasonably acceptable to the Engineer. The failure to include any items on the list mentioned in the preceding sentence does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents. When the Engineer on the basis of an inspection determines that the work or designated portion thereof is substantially complete and the other conditions have been met, the Engineer will then prepare a Certificate of Substantial Completion which shall establish the date of substantial completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the date of substantial completion of the work or designated portion thereof unless otherwise provided in the Certificate of

Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of the responsibilities assigned to them in such Certificate.

(c) The Engineer will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner for the Owner's review and records written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for payment upon compliance with the requirements of the Contract Documents. The Owner may backcharge the Contractor for multiple visits by the Engineer to review substantial or final completion and update the punch list, until there has been final acceptance by Owner.

(d) The Owner shall be entitled to occupy all or a portion of the work upon the Engineer's issuance of a Certificate of Substantial Completion covering the areas to be occupied.

#### 4. Phased Completion Dates.

If this project includes phased construction, the provisions for same in the specifications and contract documents shall be followed.

#### 5. Liquidated Damages

(a) Since time is of the essence and since the amount of damage and loss to the Owner which will result from the Contractor's failure to turn the Project over to the Owner by the completion date specified in the Contract will be difficult or impracticable to ascertain, the Contractor shall pay to the Owner the sum of **\$500** for each and every calendar day that the actual date of Substantial Completion exceeds the Contract date for completion, as such completion date may be extended by an approved extension of time granted pursuant to Article 6. Such moneys shall be paid as liquidated damages, not as a penalty, to partially cover losses and expenses to the Owner, including, but not limited to the Owner's costs for continuing to monitor construction and administer the construction contract during the period of the delay in completion.

(b) The Owner shall recover such liquidated damages by deducting the amount thereof out of any moneys due or that become due the Contractor, and if such moneys are insufficient to cover the liquidated damages, then the Contractor or its Surety shall pay the Owner the amount due for liquidated damages.

(c) Permitting the Contractor to continue and finish the work or any portion of it after

the time fixed in the Contract for completion, as extended by an authorized extension of time granted in accordance with the provisions of Article 6, shall not operate as a waiver on the part of the Owner of any of its rights under the Contract, including the right to assess liquidated damages.

(d) The assessment of liquidated damages or a portion thereof by the Owner may be waived in the sole discretion of the Owner.

(e) Nothing contained herein shall affect the right of the Owner to claim, charge and obtain from the Contractor and/or others for any other claim, including for example, defective, incomplete, damaged, inadequate work or the like.

## 6. Delays

(a) The Owner may delay the commencement of the work, or any part thereof, due to unforeseen circumstances or conditions which have a bearing on the work required under the Contract or for any other reason, if it is deemed to be in the best interest of the Owner to do so. The Contractor shall have no claim for damages on account of such delay, but shall be entitled to so much additional time in which to complete the whole or any portion of the work required under the Contract as the Owner, upon the recommendation of the Engineer shall reasonably determine is justified, pursuant to paragraph 2(c), above and subject to the provisions of the following subparagraphs (b) and (c).

(b) The Owner may, for its convenience, order the Contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine appropriate, provided however, that if there is a suspension, delay, or interruption for fifteen (15) days or more due to a failure of the Owner to act within the time specified in the Contract, the Owner shall make an adjustment in the Contract price for any increase in the cost of performance of the Contract, but shall not include any profit to the Contractor on account of such increase; and provided further that the Owner shall not make any adjustment in the Contract price under this provision for any suspension, delay, interruption, or failure to act to the extent that such is due to any cause for which the Contract provides for an equitable adjustment of the Contract price under any other Contract provisions.

(c) The Contractor must submit the amount of a claim under subparagraph (b) to the Owner in writing as soon as practicable after the end of the suspension, delay, interruption, or failure to act and, in any event, not later than the date of final payment under the Contract and, except for costs due to a written suspension order, the Owner shall not approve any costs in the claim incurred more than twenty (20) days before the Contractor notified the Owner in writing of the act or failure to act involved in the claim.

(d) The Owner and the Contractor agree that they understand that the preceding subparagraph (c) places a burden on the Contractor to inform the Owner, as soon as practicable, whenever the Contractor considers that an action or inaction of the Owner or its agents could result or has resulted in a delay in the Project, thereby providing the Owner with the opportunity to take action to avoid or lessen the time extensions or damages that might be associated with such action or inaction.

## **7. Use and Occupancy**

(a) Upon request of the Owner, the Contractor shall undertake reasonable efforts to provide the Owner with use and occupancy of the Project, or a portion thereof, before final completion, provided that the Owner is under no obligation to assume use and occupancy of all or a portion of the Project until the Contract is completed. In this regard, it is agreed and understood that the Owner, at its option, may occupy or use any completed or partially completed portion of the work at any stage in accordance with this section.

(b) The Owner will cooperate with the Contractor in respect to the completion of the work by taking reasonable steps to avoid interference with the Contractor's work.

(c) The Contractor shall not be responsible for wear and tear or damage resulting solely from temporary or early occupancy by the Owner.

(d) Use and occupancy of all or any part of the work prior to final acceptance does not relieve the Contractor from maintaining the required payment and performance bonds and insurance requirements under the Contract.

## **ARTICLE 6: CHANGES IN WORK**

### **1. General**

A Change Order request may originate with the Owner, the Engineer, or the Contractor and shall be submitted to the Owner. The Change Order request must be made in writing on forms provided by the Engineer and in accordance with the provisions of the Contract.

A Change Order may be submitted for changes in the Contract work, including but not limited to, changes in: (a) the plans and specifications; (b) in the method or manner of performance of the work; and/or (c) in the schedule for performance of the work.

Whenever a Change Order is requested or ordered, and said Change Order will cause an adjustment in the Contractor's cost, the Contractor may request an equitable

adjustment in writing in the Contract price.

The Owner and the Contractor shall attempt to negotiate an equitable adjustment in the Contract price before commencement of the pertinent work, or as soon thereafter as possible. In the absence of an agreement for an equitable adjustment, the Contractor shall proceed to perform the Change Order work on a time and material basis as provided in paragraph 3 of this Article, and the Contractor will provide the Owner with a written notice to that effect.

During the negotiation of an equitable adjustment in Contract price, the Contractor shall provide the Owner with all cost and pricing data used by him in computing the amount of the equitable adjustment, and the Contractor shall certify that the pricing data used was accurate, complete, and current. The Contractor shall promptly revise and resubmit such estimate if the Engineer determines that it is not in compliance with the requirements of this Article, or that it contains errors of fact or mathematical errors. If required by the Engineer, in order to establish the exact cost of new work added or of previously required work omitted, the Contractor shall obtain and furnish to the Engineer bona fide proposals from recognized suppliers for furnishing any material included in such work. Such estimates shall be furnished promptly so as to occasion no delay in the work, and shall be furnished at the Contractor's expense. The Contractor shall state in the estimate any extension of time required for the completion of the work if the change or extra work is ordered.

Statutory Contract adjustments made under the provisions of G.L. c.149 §44F shall not be considered a Change Order under this Article, and shall not entitle the Contractor to any adjustments for overhead, profit, and superintendent, although the Owner may, for administrative purposes, require that such Contract adjustments be processed on standard Change Order forms.

## 2. Computing Change Order Requests

Changes in the Contract price shall be determined according to one of the following methods, or a combination thereof, as determined by the Owner:

- (a) fixed price basis, provided that the fixed price shall be inclusive of items (i) through (vi) in subparagraph (c)(below) and shall be computed in accordance with those provisions;
- (b) estimated lump sum basis, to be adjusted in accordance with Contract unit prices, or other agreed upon unit prices provided that the unit prices shall be inclusive of all costs related to such equitable adjustment;
- (c) time and materials basis, on a not-to-exceed upset amount designated by the Owner to be subsequently adjusted on the basis of actual costs based on the

following items (i) through (vi):

(i) the cost at prevailing rates for direct labor, material, and use of equipment (charges for small tools or "tools of the trade" shall not be computed in the amount of a Change Order request);

(ii) plus cost of Workmen's Compensation Insurance, union fringe benefits, federal unemployment taxes, Federal Social Security, and Massachusetts Unemployment Compensation, or, as an alternative the Contractor may elect to use a flat thirty (30) percent of the total labor rate in item (i);

(iii) plus thirteen (13) percent of item (i) for overhead, superintendence and profit and for all General Conditions and work associated with the project, which will be paid to the Contractor for Item 1 work, which is the work of the Contractor and all its non-filed subcontractors. The Contractor and its non-filed subcontractors shall agree upon the distribution of the thirteen (13) percent as a matter of Contract between each other;

(iv) on Item 2 work, which is the work of filed subcontractors, the thirteen (13) percent will be allowed to the filed subcontractor for overhead, superintendence and profit and for all General Conditions and work associated with the project; the Contractor shall receive a seven (7) percent markup for overhead, superintendence and profit and for all General Conditions and work associated with the project on a filed subcontractor's price;

(v) if the net change is in addition to the Contract price, it shall include the Contractor's overhead, superintendence, profit and for all General Conditions and work associated with the project, . On any change which involves a net credit, no allowances for overhead, superintendence, and profit shall be figured;

(vi) plus actual direct premium cost of payment and performance bonds required of the Contractor and its subcontractors, provided there will be an appropriate credit for bond premiums in the case of a credit Change Order.

### 3. Work Performed Under Protest

The Contractor shall perform all work as directed by the Owner and if the Owner determines that certain work for which the Contractor has requested a Change Order does not represent a change in the Contract, or if the Contractor and the Owner cannot agree to the amount of compensation for a Change Order, the Contractor shall perform said work under protest and must follow the procedures described in the following subparagraphs (a)



and (b):

(a) If the Contractor claims compensation for a Change Order not approved by the Owner, it shall on or before the first working day following commencement of any such work or sustaining of any such damage submit to the Owner's site representatives, or, if there is none to the Engineer, a written statement of the nature of such work or damage sustained. The Contractor will not be entitled to compensation for any portion of its Change Order claim related to work performed prior to the Owner's receipt of the written statement referred to in the previous sentence.

(b) On or before the second (2nd) working day after the commencement of such work or sustaining of such damage, and daily thereafter, the Contractor shall file to the extent possible with the clerk of works itemized statements of the details and costs of such work performed or damage sustained; calculated pursuant to paragraph 2(c) of this Article; and unless such statements shall be made as so required, its claim for such compensation shall be forfeited and invalid and it shall not be entitled to payment on account of any such work or damage.

#### 4. Unilateral Credit Change Order

If the Owner and the Contractor cannot agree on the value of work that is deleted from the scope of the contract, the assessment of liquidated damages by the Owner, the value of backcharges the Owner has assessed against the Contractor for deficient, incomplete or unacceptable work, or the value of backcharges the Owner has assessed against the Contractor for having others perform the Contractor's deficient, incomplete or unacceptable work, the Owner may issue a unilateral credit change order against the contract balance, in the amount the Owner determines is appropriate.

#### 5. Statutory Provisions - Differing Site Conditions; Timely Decisions

The Contractor's attention is directed to G.L. c. 30, §39I, 39J, 39N, 39O, and 39P, to the extent the provisions of which apply to the Contract.

(a) Differing Site Conditions, G.L. c.30, §39N.

If, during the progress of the work, the Contractor or the Owner discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents either the Contractor or the Owner may request an equitable adjustment in the Contract price applying to work affected by the differing site conditions and an appropriate time extension. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as

possible after such conditions are discovered. Upon receipt of such a claim from a Contractor, or upon its own initiative, the Owner shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and Contract Documents and are of such nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the Owner shall upon submission by the Contractor of a properly submitted Change Order request, make an equitable adjustment in the Contract price and the Contract shall be modified in writing accordingly.

(b) Timely decision by the Owner or the Engineer. G.L. c.30, §39P.

Whenever the Contract requires the Owner or its Engineer to make a decision during construction of the Project on interpretation of the specifications, approval of equipment, material, or any other approval, or progress of the work, that decision shall be made promptly and, in any event, no later than thirty (30) days after receipt of a written submission for such decision by the Contractor; but if such decision requires extended investigation and study, the Owner or the Engineer shall, within thirty (30) days after the receipt of the submission, give the Contractor written notice of the reasons why the decision cannot be made within the thirty (30) day period and the date by which the decision will be made.

## **ARTICLE 7: PAYMENT PROVISIONS**

### **1. Contract Amount**

The Owner shall pay, and the Contractor shall accept, as full compensation for satisfactorily performing the work required by the Contract, the following amount:

\_\_\_\_\_ (\$ \_\_\_\_\_ ) DOLLARS.

### **2. Schedule of Values**

Before the first Application for Payment, the Contractor shall submit to the Engineer a schedule of values allocated to various portions of the work, prepared in such form and supported by such data to substantiate its accuracy as the Engineer may require and shall be revised if later found by the Engineer to be inaccurate. This schedule, unless and until objected to by the Engineer or the Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment.

### **3. Statutory Payment Provisions**

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The Contractor shall be entitled to payment from the Owner of the Contract amount, plus any approved additive Change Orders, less any approved deduct Change Orders, in accordance with the provisions of G.L. c. 30, §39K, if the Project is a building project or in accordance with the provisions of G.L. c. 30, §39G, if the Project is a public works project. The Contractor shall submit an application for payment in the form required by the Engineer and Owner.

(a) Method of Payment on Building Construction Projects. G.L. c. 30 §39K. (IF APPLICABLE TO THIS PROJECT)

The Owner shall pay the Contractor for the construction of the Project as follows: Within fifteen days (30 days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate than charged by the Federal Reserve Bank of Boston commencing

on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such

item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149.

#### 4. Application for Payment.

The Contractor shall, once in each month on the day of the month corresponding to the date of the Contract or on a date mutually agreed to, on forms provided and in the manner prescribed by the Engineer, submit to the Owner and its Engineer, its Application for Payment showing the total amount of work done to the time of such estimate and the value thereof. It shall be the sole responsibility of the Contractor to deliver or cause to be delivered to the Owner said periodic estimate in proper form and arithmetically correct. The Contractor shall arrange to deliver each invoice to the Owner at a scheduled weekly meeting. The Contractor shall include in such periodic estimate only such materials as are incorporated in the work, except that it may upon delivery of a bill of sale to the Owner accompanied by receipted vouchers or other acceptable proof of payment by the Contractor or subcontractor for such materials, include the value of materials or equipment delivered at the site of the work (or at some location agreed to in writing) ready for use, provided that in the judgment of the Engineer they are materials or equipment which meet the requirements of the Contract, and which the Contractor can adequately protect until incorporated in the work. The Owner shall retain five (5) percent of such estimated value as part security for the fulfillment of the Contract by the Contractor and shall pay to the Contractor the balance not retained as aforesaid after deducting therefrom all previous payments and all sums to be kept under the provisions of the Contract.

#### 5. Certificates for Payment

(a) The Engineer will, within seven days after the receipt of the Contractor's Application for Payment, either issue to the Owner, a Certificate for Payment, with a copy to the Contractor, for such amount as the Engineer determines is properly due, or notify the Contractor and Owner in writing of the Engineer's reasons for withholding certification in whole or in part.

(b) The issuance of a Certificate for Payment will constitute a representation by the

Engineer to the Owner, based on the Engineer's observations at the site and the data comprising the Application for Payment, that, to the best of the Engineer's knowledge information and belief, the Work has progressed to the point indicated and the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Engineer. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Engineer has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the contract Sum.

(c) If the contractor proposes a Progress Schedule indicating a date of Substantial Completion which is earlier than the Contract Time, the Contractor shall not be entitled to additional payment or compensation of any kind if, for any reason, the full Contract time is required to achieve Substantial Completion of the Work.

(d) If in any Application for Payment the total value of the completed Work in place, as certified by the Engineer, is less than 90% of the total value of the Work in place estimated in the Progress Schedule, the Owner may, at the Owner's option, require the Contractor to accelerate the progress of the Work without cost to the Owner by increasing the work force or hours of work, or by other reasonable means approved by the Engineer.

(f) If each of three successive applications, as certified by the Engineer, indicate that the actual Work completed is less than 90% of the values estimated in the Progress Schedule to be completed by the respective dates, the Owner may at the Owner's option, treat the Contractor's delinquency as a default justifying the action permitted under this contract for a default.

(g) If the Engineer has determined that the Contractor should be permitted to extend the time for completion, the calendar dates the Progress Schedule shall be adjusted accordingly to retain their same relationship to the adjusted date of Substantial Completion, and the dollar of Work to be completed as of the firsts of each month shall be adjusted prorata.

(h) If the Contractor fails to submit any Application for Payment in any month, the Engineer shall, for the purposes of this evaluation of progress, certify separately to the actual value of the Work in place completed as of the first of the month to the best of the

Engineer's knowledge.

6. Subcontractor Direct Payment Provisions (IF APPLICABLE TO THIS PROJECT)

Direct Payment to Subcontractors, G.L. c. 30, §39F, provides as follows:

In accordance with said law, the following language is inserted in this contract:

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

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

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

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

(d) If, within seventy days after the subcontractor has substantially completed the

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

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

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



shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

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

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

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

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

(3) "Subcontractor" as used in this section (i) for contracts awarded as provided in

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

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

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

#### 7. Payment Liabilities of Contractor

(a) The Contractor shall be responsible to the Owner for all expenses, losses and damages incurred in consequence of any defect, omission or mistake of the Contractor its employees or the making good thereof. In case the work required by the Contract shall not be completed by the time herein designated, as extended pursuant to the terms of the Contract, the Contractor shall pay to the Owner as liquidated damages in full compensation for such delay the sum specified hereinbefore (see Article 5, paragraph 4).

#### (b) Retention of Moneys by the Owner

The Owner may retain any moneys which would otherwise be payable under the Contract and apply the same, or so much as may be necessary therefore, to the payment of any expenses, losses, or damages incurred by the Owner as a direct result of the Contractor's failure to perform its obligations hereunder.

(c) No moneys retained under the provisions of this Article shall be held to be statutory security for the payment of claims filed in accordance with the provisions of G.L. c. 149, §29, for which security is provided by bond.

#### 8. Acceptance of Final Payment

The acceptance by the Contractor of the last payment due under the Contract or the execution of the Certificate of Final Inspection, Release, and Acceptance, shall operate as a release to the Owner and the Engineer from all claims and liability related to the Contract, except for a claim against the Owner for the amount set forth by the Contractor in such Certificate.

### **ARTICLE 8: TERMINATION**

#### 1. Termination for Cause

If the Contractor shall be adjudged bankrupt, or if he shall make a general assignment for the benefit of its creditors, or if a receiver shall be appointed of its property, or if the work to be done under the Contract shall be abandoned and/or not completed in accordance with the Contract, or if the Contract or any part thereof shall be sublet without

the previous written consent of the Owner, or if the Contract or any claim thereunder shall be assigned by the Contractor otherwise than as herein specified, or if at any time the Owner shall be of the opinion, and shall so state in writing that the conditions herein specified as to the rate of progress are not being fulfilled, or that the Contractor has substantially violated any of the provisions of the Contract, the Owner may terminate the Contract and hold the Contractor and its sureties liable in damages as for a breach of Contract, or the Owner may notify the Contractor to discontinue all work, or any part thereof, and thereupon the Contractor shall discontinue all work, or any part thereof, as the Owner may designate and the Owner may thereupon complete the work, or any part thereof, and charge its expense of so completing the work or part thereof, to the Contractor, and the Owner may take possession of and use or cause to be used in the completion of the work or part thereof any materials, machinery, implements, and tools found upon the site of said work. The Owner may, at its option, require the surety or sureties to complete the Contract. The Owner shall not be liable for any depreciation, loss, or damage to said materials, machinery, implements, or tools during said use and the Contractor shall be solely responsible for their removal from the Project site after the Owner has no further use for them.

## 2. Acceleration in Lieu of Termination

If, in the determination of the Owner, after consultation with the Engineer, the Contractor fails to maintain the rate of progress required to complete the project on schedule due to causes within the Contractor's control, the Owner may, instead of notifying the Contractor to discontinue all work or any part thereof, notify it from time to time to increase the force, equipment, and plant, or any of them, employed on the whole or any part of the work, stating the amount of increase required; and unless it shall, within five (5) days, after any such notice, increase its force, equipment, and plant to the extent required therein, and maintain and employ the same from day to day until the completion of the work or such part thereof or until the condition as to the rate of progress shall, in the opinion of the Owner, be fulfilled, the Owner may employ and direct the labors of such additional force, equipment, and plant as may, in the opinion of the Owner, be necessary to ensure the completion of the work or such part thereof within the time herein specified, or at the earliest possible date thereafter, and charge the expense thereof to the Contractor. Neither the notice from the Owner to the Contractor to increase its force, equipment, or plant, nor the employment of additional force, equipment, or plant by the Owner shall be held to prevent a subsequent notice from the Owner to Contractor to discontinue work under provisions of the preceding paragraph, nor shall the Contractor be entitled for any costs of acceleration required to comply with this paragraph.

## 3. Termination Liabilities

All expenses charged under paragraphs (1) and (2) of this Article shall be deducted and paid by the Owner out of any moneys then due or to become due the Contractor under

the Contract; and in such accounting the Owner shall not be held to obtain the lowest figures, by competitive bid or otherwise, for the work of completing the Contract or any part thereof, or for insuring its proper completion, or for the additional force, equipment, and plant that may be employed, but all sums actually paid therefor shall be charged to the Contractor. In case the expenses charged are less than the sum which would have been payable under the Contract if the same had been completed by the Contractor, the Contractor shall be entitled to receive the difference, and in case such expenses shall exceed the said sum, the Contractor shall pay the amount of the excess to the Owner, upon completion of the work.

#### 4. Termination - No Fault

The Owner may for convenience terminate, without liability, the contract in which event, the Contractor shall be paid for work performed to date and documented expenses incurred to date less any offsets for costs, losses, damages, or the like, incurred or expected to be incurred by the Owner, said termination shall be made by written notice to the Contractor. In calculating the sum due, Owner shall consider the expenses of Contractor's construction services, including reasonable costs of de-mobilization, calculated on a percent completion basis as provided in Article 7, paragraph 3, covering the period of time between the last periodic payment and the date of termination. The foregoing compensation shall be considered to fully compensate the Contractor for all of its claims and expenses and those of its consultants, subcontractors, and suppliers, directly or indirectly attributable to the termination, and Contractor and its subcontractors shall not be entitled to lost profits.

#### 5. Owners Right to Terminate – Failure to Complete Punchlist

**In accordance with G.L.c. 30 section 39K, any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete**

**the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149.**

#### 6. Invalid Termination

Should there be a termination for cause which is later found or determined to have not been for cause, said termination shall be treated as a "Termination-No Fault" and payment shall be made as provided for in said section 4, "Termination-No Fault". Said payment shall not operate in any event as a waiver of any rights or claims which the Owner may have against the Contractor or others.

### **ARTICLE 9: GUARANTY**

If any time during the period **one (1)** year(s) from the date of the use and occupancy of the work to be performed under the Contract any part of the work shall, in the reasonable determination of the Engineer or the Owner require replacing or repairing due to the fact that it is broken, defective, or otherwise does not conform to the Contract Documents, the Owner will notify the Contractor to make the required repairs or replacement. If the Contractor shall neglect to commence such repairs or replacements to the satisfaction of the Owner within ten (10) days from the date of giving or mailing such notice, then the Owner may employ other persons to make the same. The Contractor agrees, upon demand, to pay to the Owner all amounts which the Owner expends for such repairs or replacements. During this **one (1)** year guarantee period any corrective work shall be performed in accordance with the applicable terms of the Contract. The **one (1)** year guarantee shall commence at the time the Owner accepts such items (substantial completion). This **one (1)** year guarantee shall not limit any express guaranty or warranty provided elsewhere in the Contract.

### **ARTICLE 10: MISCELLANEOUS LEGAL REQUIREMENTS AND OTHER TERMS AND CONDITIONS**

#### 1. General

The Contractor shall keep itself fully informed of all existing and future state and national laws and municipal ordinances and regulations in any manner affecting those engaged or employed in the work, or the materials used or employed in the work, or in any way affecting the conduct of the work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the Contract work. All provisions of law that apply to the Contract are made a part of the Contract, whether incorporated into the Contract or not. If any discrepancy or inconsistency is discovered in the Contract

Documents in relation to any such law, ordinance, regulation, order, or decree, the Contractor shall forthwith report the same to the Owner in writing. It shall cause all its agents and employees to observe and comply with all such existing and future laws, ordinances, regulations, orders, and decrees.

## 2. Corporate Disclosures and Acknowledgments and Assurances

The Contractor, if a foreign corporation, shall comply with G.L. c. 181, §3 and 5, and c. 30, §39L.

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

Contractor has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work.

Contractor has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to in the above paragraph as he deems necessary for the performance of the Work at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports, or similar data are or will be required by him for such purposes.

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

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

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

## 3. Veterans Preference

In the employment of mechanics and apprentices, teamsters, chauffeurs, and laborers in the construction of public works in the Commonwealth, preference shall first be given to citizens of the Commonwealth who have been residents of the Commonwealth for

at least six (6) months at the commencement of their employment and who are veterans, as defined in G.L. c. 4, §7, clause 43, and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the Commonwealth generally who have been residents of the Commonwealth for at least six (6) months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States.

#### 4. Prevailing Wage Rates

The Commissioner of Labor and Industries has established the attached schedule of the prevailing minimum wage rates (the "Schedule") that must be paid to all workers employed on the Contract. The Schedule shall continue to be the minimum rate of wages payable to workers on the Contract throughout the term of the Contract. The Contractor shall not have any claim for extra compensation from the Owner if the actual wages paid to employees on the Contract exceeds the rates listed on the Schedule. The Contractor shall cause a copy of the Schedule to be kept in a conspicuous place at the Project site during the term of the Contract (see G.L. c. 149, §27). If reserve police officers are employed by the Contractor, they shall be paid the prevailing wage of regular police officers (see G.L. c. 149, §34B).

#### 5. Employment Records

The Contractor and its subcontractors shall keep a true and accurate record of all mechanics and apprentices, teamsters, chauffeurs, and laborers employed on the Project, showing the name, address, and occupational classification of each such employee, and shall furnish to the Owner or to the Commissioner of Labor and Industries, upon his request, a certified copy of such payroll records, signed by the employer or its authorized agent under the penalties of perjury. Such records shall be open to inspection by any authorized representative of the department at any reasonable time, and as often as may be necessary.

Each such Contractor and subcontractor shall preserve its payroll records for a period of three (3) years from the date of completion of the Contract.

Each Contractor and subcontractor shall furnish to the Clerk of Works within fifteen (15) days after completion of its portion of the work a statement, executed by the Contractor or subcontractor in the following form:

[balance of page intentionally left blank; see next page for continuation]



**STATEMENT OF COMPLIANCE**

I, \_\_\_\_\_ (Name of Signatory Party),  
\_\_\_\_\_ (Title), do hereby state that I pay or supervise the payment of the  
persons employed by \_\_\_\_\_ (Contractor of  
Subcontractor) on the \_\_\_\_\_ (Building or Project) and that all  
mechanics and apprentices, teamsters, chauffeurs, and laborers employed on said project  
have been paid in accordance with wages determined under the provisions of G.L. c. 149,  
§26 and 27.

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

The above mentioned copies of payroll records and statement of compliance shall be available for inspection by any interested party filing a written request to the Contractor for such inspections (G.L. c.149, §27B).

**6. Vehicle and Equipment Operators**

If the Commissioner of Labor and Industries has established a Schedule of wage rates to be paid to the operators of trucks, vehicles, or equipment for this Project, the Contractor shall be obligated to pay such operators the minimum wage rate contained on such Schedule (see G.L. c. 149, §27F).

**7. Certificate of Appropriation.** (Statutory reference: M.G.L. c.44, §31C).

This paragraph applies to contracts for construction, reconstruction, alteration, remodeling, repair or demolition of any public building or public work by any city or town costing more than the amount set forth in M.G.L. c.44, §31C.

This Contract shall not be deemed to have been made until the Town accountant or other officer of the city or town having similar duties has certified thereon that an appropriation in the amount of this Contract is available therefor and that an officer or agent of the city, town, or awarding authority has been authorized to execute said Contract and approve all requisitions and change orders. No order to the Contractor for a change in or addition to the work, whether in the form of a drawing, plan, detail, or any other written instruction, unless it is an order which the Contractor is willing to perform without any increase in the Contract price, shall be deemed to be given until the Town accountant, or other officer of the awarding authority having similar duties, has certified thereon that an appropriation in the amount of such order is available therefore; but such certificate shall not be construed as an admission by the

awarding authority of its liability to pay for such work. The certificate of the Town accountant or other officer of the awarding authority having similar duties, that an appropriation in the amount of this Contract, or in the amount of such order, is available shall bar any defense by the awarding authority on the grounds of insufficient appropriation.

#### 8. Captions and Headings and Formatting

The used herein are used for convenience only and shall not affect the interpretation of any clause hereunder.

#### 9. Non-Waiver

The failure of the Owner to insist on strict compliance of any term or condition of the Contract or Contract Documents shall not constitute a waiver of the Owner to do so thereafter or shall it constitute a waiver of any rights or remedies of the Owner.

#### 10. Local Hiring

Contractor shall comply with the provisions of any Local Hiring Requirements, of the Contract Documents. Contractor shall, upon request, provide documentation evidencing its compliance with this clause and of its efforts to so comply,

#### 11. Terms Required by Law

All terms required by law to be included in this Contract are hereby included and shall be in as full effect as if set forth in full herein.

#### 12. Notice

Any notice required to be given to Contractor under the terms of this Agreement shall be in writing and served by a police officer or person authorized to make service of civil process or sent by registered or certified mail, postage prepaid, return receipt requested to Contractor at the address stated above or such other address as Contractor from time to time may have designated by written notice to and received by the Owner and shall be deemed to have been given when mailed or so served or posted at the address of the Contractor by or on behalf of the Owner. All such addresses shall contain a valid street address. No change of address without a valid street address within the Commonwealth of Massachusetts shall be deemed an effective change of address.

#### 13. Independent Contractor

Contractor is not an agent or employee of the Owner and is not authorized to act on behalf of the Owner. Contractor is not entitled to any benefits or privileges of the Owner's employees by reason of this agreement.

14. Complete Agreement

This Agreement supersedes all prior agreements and understanding between the parties and may not be changed unless mutually agreed upon in writing by both parties.

15. Assignment

Contractor shall not assign this Agreement or any interests therein, without prior written consent of the Owner.

16. Subcontractors

Contractor shall not engage any other company, subcontractor not specified in the contract documents or individual to perform any obligation hereunder, without the prior written consent of the Owner.

17. Governing Law

This Agreement shall be governed by the law of the Commonwealth of Massachusetts. Venue for any legal proceedings shall be and remain in Plymouth County.

18. Enforceability

In the event any provision of this Agreement is found to be legally unenforceable, such unenforceability shall not prevent enforcement of any other provision of the Agreement.

19. Personal Liability

No member, employee, official, office, agent, staff or consultant of the Owner shall be under any personal obligation or liability by reason of this contract, the execution thereof or anything relating thereto.

20. Additional Provisions

See attached Table of Appendices, if any, attached hereto and incorporated by reference herein.

**ARTICLE 11: EQUAL EMPLOYMENT OPPORTUNITY, AFFIRMATIVE ACTION (IF APPLICABLE TO THIS PROJECT)**

(Statutory reference: M.G.L. c.151B; Executive Orders No. 74, No. 116, and No. 246) Subparagraph 11.2.1 applies to 11.2.2 - 11.2.9 and Paragraphs 11.1 and 11.3 - 11.9 apply to all state or state-assisted contracts for public buildings and public works or for goods and services exceeding the dollar amount set forth in Executive Order No. 116, as amended. The provisions of this Article 11 are intended to comply with the Commonwealth's Supplemental Equal Opportunity Anti-Discrimination and Affirmative Action Program, referred to in Executive Order No. 116 and administered by the Massachusetts Commission Against Discrimination. If no specific percentage has been inserted in Subparagraph 11.2.3 below, the applicable minimum percentage provided for in such Supplemental Program shall be deemed to have been so inserted.

11.1. Definitions: For purposes of this Contract, "minority" refers to Asian-Americans, Blacks, Spanish Surnamed Americans, North American Indians, and Cape Verdeans. "Commission" refers to the Massachusetts Commission Against Discrimination.

11.2. Non-Discrimination and Affirmative Action Requirements. During the performance of this contract, the Contractor and all of its subcontractors (hereinafter collectively referred to as the Contractor), for itself, its assignees, and successors in interest, agree as follows:

11.2.1 In connection with the performance of work under this Contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age or sex. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising; recruitment layoff; termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship. The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Commission setting forth the provisions of the Fair Employment Practices Law of the Commonwealth.

11.2.2 In connection with the performance of work under this Contract, the Contractor shall undertake in good faith affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading,

demolition or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age, or sex. A purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future Commonwealth public construction projects.

11.2.3 As part of his obligation of remedial action under the foregoing Subparagraph 11.2.2, the Contractor shall maintain on this project a not-less-than five percent (5%) ratio of minority employee man-hours to total man-hours in each job category including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers, and those "classes of work" enumerated in M.G.L. c.149, §44F.

11.2.4 In the hiring of minority journeymen, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi-employer affirmative action program approved by the Commission, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one time, designated by the Liaison Committee (described in subparagraph 11.2.5 below) or the Commission.

11.2.5 At the discretion of the Commission there may be established for the life of this Contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering this project, hereinafter called the administering agency, the Commission and such other representatives as may be designated by the Commission in conjunction with the administering agency.

11.2.6 The Contractor (or its agent, if any, designated to be the on-site equal employment opportunity officer) shall recognize the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

11.2.7 The Contractor shall prepare projected manning tables on a quarterly basis. These shall be broken down into projections, by week, of workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and also when updated, to the Commission and Liaison Committee.

11.2.8 Records of employment referral riders, prepared by the Contractor, shall be made available to the Commission and to the Liaison Committee on request.

11.2.9 The Contractor shall prepare weekly reports in a form approved by the Commission of hours worked in each trade by each employee, identified as minority or non-

minority. Copies of these shall be provided at the end of each such week to the Commission and to the Liaison Committee.

If the Contractor shall use any Subcontractor on any work performed under this Contract, it shall take affirmative action to negotiate with qualified minority subcontractors. This affirmative action shall cover both pre-bid and post-bid periods. It shall include notification to the Office of Minority Business Assistance (within the Executive Office of Communities and Development) or its designee, while bids are in preparation, of all products, work or services for which the Contractor intends to negotiate bids.

In the employment of journeymen, apprentices, trainees and advanced trainees, the Contractor shall give preference, first, to citizens of the Commonwealth who have served in the armed forces of the United States in time of war and have been honorably discharged therefrom or released from active duty therein, and who are qualified to perform the work to which the employment relates, and, secondly, to citizens of the Commonwealth generally, and if such cannot be obtained in sufficient numbers, then to citizens of the United States.

A designee of the Commission and a designee of the Liaison Committee shall each have right of access to the construction site.

11.3 Compliance with Requirements. The Contractor shall comply with the provisions of Executive Order No. 74, as amended by Executive Order No. 166, dated May 1, 1975, and of M.G.L. c.151B, both of which are herein incorporated by reference and made a part of this Contract.

11.4 Non-Discrimination. The Contractor, in the performance of all work after award, and prior to completion of the contract work, will not discriminate on grounds of race, color, religious creed, national origin, age or sex in employment practices, in the selection or retention of Subcontractors, or in the procurement of materials and rentals of equipment.

11.5 Solicitations for Sub-Contracts, and for the Procurement of Materials and Equipment. In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential Subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this contract relative to non-discrimination and affirmative action.

11.6 Bidders' Certification Requirement. The Contractor hereby certifies that it shall comply with the minority manpower ratio and specific action steps contained herein. The Contractor shall be required to obtain for each of its Subcontractors and submit to the contracting or administering agency prior to the performance of any work under the contract a certification by said Subcontractor, regardless of tier, that it will comply with the minority manpower ratio and a specific affirmative action steps contained herein. Such certification

shall be provided on forms furnished by the awarding authority or, in the absence thereof, on forms prescribed by the Commission.

11.7 Contractor's Certification. The Contractor's certification form must be signed by all successful low bidder(s) prior to award by the contracting agency.

11.8 Compliance-Information, Reports and Sanctions.

11.8.1 The Contractor will provide all information and reports required by the administering agency or the Commission on instructions issued by either of them and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the Commission to affect the employment of personnel. This provision shall apply only to information pertinent to the Commonwealth's supplementary affirmative action contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the administering agency or the Commission as appropriate and shall set forth what efforts it has made to obtain the information.

11.8.2 Whenever the administering agency, the Commission, or the Liaison Committee believes the Contractor or any Subcontractor may not be operating in compliance with the terms of this Paragraph 11.8, the Commission directly, or through its designated agent, shall conduct an appropriate investigation, and may confer with the parties, to determine if such Contractor is operating in compliance with the terms of this Paragraph 11.8. If the Commission or its agent finds the Contractor or any Subcontractor not in compliance, it shall make a preliminary report on noncompliance, and notify such Contractor into compliance. In the event that such Contractor fails or refuses to fully perform such steps, the Commission shall make a final report of non-compliance, and recommend to the administering agency the imposition of one or more of the sanctions listed below. If, however, the Commission believes the Contractor or any Subcontractor has taken or is taking every possible measure to achieve compliance, it shall not make a final report of non-compliance. Within fourteen (14) days of the receipt of the recommendations of the Commission, the administering agency shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement:

(i) The recovery by the administering agency from the Contractor of 1/100 of 1% of the contract award price or \$1,000, whichever sum is greater, in the nature of liquidated damages or, if a Subcontractor is in non-compliance, the recovery by the administering agency from the Contractor, to be assessed by the Contractor as a back charge against the Subcontractor, of 1/10 of 1% of the subcontract price or \$400, whichever sum is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply;

(ii) The suspension of any payment or part thereof due under the Contract until such time as the Contractor or any Subcontractor is able to demonstrate its compliance with the terms of the Contract;

(iii) The termination, or cancellation, of the Contract, in whole or in part, unless the Contractor or any Subcontractor is able to demonstrate within a specified time its compliance with the terms of the Contract;

(iv) The denial to the Contractor or any Subcontractor of the right to participate in any future contracts awarded by the administering agency for a period of up to three years.

If at any time after the imposition of one or more of the above sanctions a Contractor is able to demonstrate that it is in compliance with this paragraph 11.8, it may request the administering agency, in consultation with the Commission, to suspend the sanctions conditionally, pending a final determination by the Commission as to whether the Contractor is in compliance. Upon final determination of the Commission, the administering agency, based on the recommendation of the Commission, shall either lift the sanctions or reimpose them.

Sanctions enumerated under Subparagraph 11.8.2 of this Paragraph 11.8 shall not be imposed by the administering agency except after an adjudicatory proceeding, as that term is used in M.G.L. c.30A, has been conducted. No investigation by the Commission or its agent shall be initiated without prior notice to the Contractor.

11.9 Severability. The provisions of this Article 11 are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions.

11.10 Equal Employment Opportunity for the Handicapped. The Contractor shall comply with the provisions of Executive Order No. 246, relating to discrimination against, and equal employment opportunity for, the handicapped, which is herein incorporated by reference and made a part of this Contract. In connection with the performance of work under this Contract, the Contractor, Subcontractors and suppliers of goods and services shall not discriminate against the handicapped. Furthermore, Contractors, Subcontractors and suppliers of goods and services must give written notice of their commitments under this Paragraph 11.10 to any labor union, association or brotherhood with which they have a collective bargaining contract or other agreement, and must give such notice to handicap contractors and to handicapped contractor associations. A copy of such notice must be furnished to the awarding authority at the time of the signing of the Contract.

#### 11.11 Suspension of Payments.

11.11.1 If the awarding authority determines after investigation that the Contractor or any Subcontractor is not in compliance with the terms of Article 11, it may suspend any



payment or portion thereof due under the Contract until the Contractor demonstrates compliance with the terms of Article 11.

11.11.2 Payment shall not be suspended if the awarding authority finds that the Contractor made his best efforts to comply with Article 11, or that some other justifiable reason exists for waiving the provisions of Article 11 in whole or in part.

11.11.3 Payment may be suspended only after the Contractor and another interested party shall have been given the opportunity to present evidence in support of its position at an informal hearing held by the awarding authority and the awarding authority has concluded upon review of all the evidence that such penalty is justified.

11.11.4 This temporary suspension of payments by the awarding authority is separate from the sanctions set forth in Paragraph 11.8 above, which are determined by the Commission and recommended to the awarding authority.

## **ARTICLE 12: CONTRACTOR'S ACCOUNTING REQUIREMENTS**

1. The words defined herein shall have the meaning stated below whenever they appear in this Article.

(a) "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded the Contract.

(b) "Contract" means any Contract awarded or executed pursuant to G.L. c. 30, §39M, or G.L. c. 149, §44 A - H, which is for an amount greater than one hundred thousand dollars (\$100,000).

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

(d) "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his/her residence or principal office and who is in fact independent.

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

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

(g) "Management" means the chief executive officers, partners, principals, or other person or persons primarily responsible for the financial and operational policies and practices of the Contractor.

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

2. The Contractor shall make and keep for at least six (6) years or such longer time as may be required by law after final payment books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

3. Until the expiration of six (6) years or such longer time as may be required by law after final payment, the Inspector General and the Owner shall have the right to examine any books, documents, papers, or records of the Contractor or its subcontractors that directly pertain to and involve transactions relating to the Contractor or its subcontractors.

4. The Contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the Owner, including in its description the date of the change and reasons therefor, and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes.

5. The Contractor shall file a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the Contract.

6. The Contractor shall file prior to the execution of the Contract an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below and will continue to file such statement annually during the term of the Contract.

7. The Contractor shall file with the Owner a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

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

(b) transactions are recorded as necessary:

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

(ii) to maintain accountability for assets;

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

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

8. The Contractor shall also file with the Owner a statement prepared and signed by an independent certified public accountant, stating that s/he has examined the statement of management on internal accounting controls, and expressing an opinion as to:

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

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

## **ARTICLE 13: INSURANCE REQUIREMENTS**

### 1.01 GENERAL REQUIREMENTS

A. These insurance requirements as part of the GENERAL CONDITIONS of the Contract.

B. The Contractor shall provide all insurance coverage specified. Coverage shall apply to all work under the Contract.

### 1.02 INSURANCE REQUIREMENTS

A. The General Contractor shall purchase and maintain such insurance as will protect him from claims under worker's compensation acts and from claims for damages because of bodily injury, including death, and property damage which

might arise from and during operations under this Contract, whether such operations be by himself or by a Subcontractor or anyone directly or indirectly employed by either of them.

B. Contractor shall not commence work under this Contract until he has obtained all insurance required herein nor until such insurance has been approved by the Owner. Contractor shall not allow any Subcontractor to commence work until the insurance required of the Subcontractor has been so obtained and approved.

C. Subcontracts: Contractor, subject to the approval of the Owner, shall either (1) require each Subcontractor to procure and to maintain during the life of his Subcontract, Subcontractor's General Liability and Property Damage Insurance of same type and in same manner as specified herein, or (2) insure activities of his Subcontractors in his own policy.

D. All insurance required by this Document shall be provided by a Best "A. VIII" - rated company or companies, or greater rating, authorized to do business in the Commonwealth of Massachusetts and satisfactory to the Owner and shall be written for not less than any limits of liability specified herein, or required by law, whichever is greater.

E. Certificates: Certificates of Insurance acceptable to the Owner shall be submitted in triplicate to the Owner before or simultaneously with the execution of the Contract. It is advisable to submit insurance certificates in advance for review and approval to minimize delays in processing. Certificates shall indicate that broad form Contractual Liability coverage is in force, as well as deletions of the XCU exclusions. Certificates shall contain a provision that the insurance company will notify the Owner by registered mail at least thirty (30) calendar days in advance of any cancellation, non-renewal, change or expiration of the policies. Certificates shall include description of coverage, effective dates and expiration dates of policies and shall clearly indicate all exclusions which will be added to the policies provided.

F. Deductibles: In the event of paid claims, Contractor shall bear costs of any amounts deductible.

G. Waiver: Subject to the approval of the Owner, and subject to the consent of their respective insurers, the Owner and the Contractor waive all rights against each other and against the subcontractors, consultants, agents and employees of the other, for damages to the Project covered by any property insurance.

H. The Owner and the Engineer shall be named as additional insureds under all policies of Contractor and subcontractors and others performing services for this project.

I. Before any blasting is done, Contractor shall present evidence that blasting damage is included in his insurance coverage.

J. Notwithstanding any insurance or bonding requirements, Contractor is to provide a completed and finished product and nothing contained in this agreement shall excuse performance of said obligation.

### 1.03 COVERAGE AND LIMITS

#### A. Workers Compensation Insurance:

The Contractor shall maintain Workers Compensation insurance in at least the statutory amount and shall cause all subcontractors and lower tier contractors to maintain Workers Compensation and Employers Liability Insurance in accordance with the laws and Regulations of the Commonwealth of Massachusetts.

#### B. Contractor's Liability Insurance:

The Contractor shall purchase and maintain, subject to the Owner's approval, and cause all subcontractors and lower tier contractors to maintain throughout the term of the Work Commercial General Liability Insurance with all applicable broad form endorsements. Limits of liability to be provided shall be no less than as provided for herein (in the event of a conflict between amounts, the higher amount shall govern unless changed by an addendum).

Coverage shall specifically include blanket contractual liability covering Contractor's indemnity obligations as contained in this Document.

Products/Completed Operations insurance to be maintained for three years after project completion.

#### C. Motor Vehicle Liability:

The Contractor shall maintain and cause all subcontractors and lower tier contractors to maintain motor vehicle liability insurance covering all owned, non-owned, leased, rented and hired motor vehicles. The limits of liability shall be as provided herein.

The Owner shall not be liable for physical loss or damage to any owned, non-owned, leased, rented or hired motor vehicles.

#### D. Umbrella or Excess Liability:

Umbrella or Excess Liability shall be provided in excess of the primary limits of liability required herein. Coverage shall be at least as broad as provided in the primary coverage required. The limits of liability to be provided shall be as provided for herein.

E. Builders Risk Property Coverage:

The contractor shall maintain Builders Risk Property Insurance for the full insurable value (completed value) of the project, until such time as the Owner assumes full use and occupancy of the Project. Said coverage shall include "all risks" coverage, including theft, flood and earthquake. Any exclusions or limitations must be enumerated and are subject to acceptance or rejection by the Owner.

F. Minimum Insurance Limits Not Otherwise Provided For:

The insurance required shall include all major divisions of coverage, and shall be on a comprehensive general basis including Premises and Operations (including X-C-U), Owner's and Contractor's Protective, Products and Completed Operations, and Owned, Non-owned, and Hired Motor Vehicles. Such insurance shall be written for not less than any limits of liability required by law or the limits provided herein, whichever are greater:

#### WORKERS' COMPENSATION INSURANCE

Coverage A: Statutory (Commonwealth of Massachusetts)  
Coverage B: \$1,000,000 per insuring agreement.

#### COMPREHENSIVE AUTOMOBILE LIABILITY INSURANCE

Bodily Injury & Property Damage (combined limit) - - \$2,000,000 (all owned, hired and non- owned autos).  
Covering "any vehicle" or, if not available, "owned, hired and non-owned " vehicles.

The referenced coverage limit may be attained through a combination of primary and excess policies.

The Owner reserves the right to modify the coverage requirement in each approved program participant's specific contract.

#### COMMERCIAL GENERAL LIABILITY INSURANCE

## Limits of liability

Commercial Liability- Per Occurrence / Aggregate \$2,000,000 / \$4,000,000

Coverage to include and not be limited to:

Products & Completed Operations Aggregate

Personal injury/Advertising Injury Aggregate

Fire Damage Legal Liability

The referenced coverage limit may be attained through a combination of primary and excess policies.

Completed operations coverage must be in force for 24 months after the project is accepted by the Owner.

## CONTRACTORS' EQUIPMENT INSURANCE

The Owner is not providing any insurance or other protection for the Contractors' or Subcontractors Equipment. The General Contractor and Subcontractor, regardless of tier, by submitting a bid agrees that the Owner, the Owners Representative or Engineer are not responsible for loss of damage to any of the Contractors' or Subcontractors equipment regardless as to cause. The General Contractor and subcontractor, regardless as to tier, agrees to indemnify, defend, and hold the Owner, Owners Representative and Engineer, or any of the Owner's agents or consultants harmless from and against any and all claims for loss of or damage to Contractor's or Subcontractors Equipment or that of any person or entity on the site.

Excess / Umbrella Liability –\$2,000,000

Independent Contractors -Same limits as above

Products and Completed Operations -Same limits as above commencing with issuance of final Certificate of Payment.

Contractual Liability - Same limits as above.

## CERTIFICATE OR EVIDENCE OF INSURANCE

The General Contractor must provide Certificates of Insurance satisfactory to the Owner. Subcontractors, regardless as to tier, shall furnish their Certificates to the General Contractor and in turn the General Contractor shall be endorsed to waive insurer's right of subrogation against the Owner, Owner Representative and Engineer.

All policies and Certificates of Insurance must contain language that the insurance shall not be canceled, materially changed or non-renewed without at least 30 days advance written notice to the Owner. Such notice shall be provided to the Owner.

If any of the foregoing insurance coverage(s) are to remain in force after final payment, an additional Certificate of Insurance evidencing continuation of such coverage shall be submitted with the final Application for Payment. Information concerning reduction of coverage shall be furnished by the General Contractor or subcontractors with reasonable promptness in accordance with the contractor's information and belief.

The General Contractor shall require each of its subcontractors to procure and maintain during the life of its subcontract all the insurance required and shall not allow subcontractors to begin work until the insurance has been so obtained and Certificates of Insurance are approved by the General Contractor. The General Contractor shall require each subcontractor to provide an insurance certificate requiring at least 30 days written notice of cancellation to the contractor, material change in coverage or alteration of any of the insurance coverage.

If the property insurance requires a minimum deductible, the Contractor shall bear the cost not covered because of such deductible.

Property insurance for portions of the Work stored off site and in transit shall be procured and the cost borne by the Contractor, unless otherwise provided in the Contract Documents.

#### **ARTICLE 14: INDEMNIFICATION**

14.1 The Contractor shall take all responsibility for the work and take all precautions for preventing injuries or damage to persons and property in or about the work and shall bear all losses resulting to it on account of the amount or character of the work. The Contractor shall pay or cause payment to be made for all labor performed or furnished and for all materials used or employed in carrying out the Contract. The Contractor shall assume the defense of, and indemnify and save harmless (collectively called "indemnification" or words of similar import), the Engineer, the Owner, and their officers and agents from all claims relating to the work, labor performed or furnished and materials used or employed for the work; to inventions, patents and patent rights used in and in doing the work unless such patent infringement is due to a product or process specified by the Owner; to injuries to any person or corporation received or sustained by or from the Contractor and its employees, and subcontractors and employees, in doing the work, or in consequence of any improper materials, implements or labor used or employed therein; and to any act, omission or neglect of the Contractor and its employees therein. To the extent legally permissible, Contractor shall ensure that all subcontractors are similarly bound to the Owner and



Engineer as provided for in this clause. The indemnification obligations are notwithstanding any insurance requirements and no insurance provision shall excuse any indemnification requirement.

14.2 The obligations of indemnification under the contract shall not be construed to negate or abridge any other obligation of indemnification running to the Town which would otherwise exist. The extent of this agreement of indemnification shall not be limited by any obligation or any term or condition of any insurance policy pursuant to this Contract.

14.3 The indemnification, defense and hold harmless rights and obligations shall accrue immediately upon the utterance of a claim or complaint covered by this agreement, regardless of other claims simultaneously brought, and shall not be contingent upon the merits of such claim or questions of fact raised by the claim or complaint. This obligation will survive any termination or completion of this contract.

14.4 The obligations under this clause shall include being responsible for the actual notification of any person or entity or other required actions as may be required under G.L. c. 93H and c. 93I, any other state or federal law and the applicable regulations thereunder pertaining to privacy rights or reimbursing the Town for any costs associated therewith it may incur.

#### **ARTICLE 15: PERFORMANCE AND PAYMENT BONDS**

The Contractor shall provide the Owner with a performance bond and a labor and materials or payment bond executed by a surety company licensed by the Division of Insurance and approved by the Owner, in the forms attached and identified as Attachments A and B for the full and faithful performance of this contract. Each such bond shall be in the amount of the Contract price.

If the Owner solicits filed sub-bids for a subtrade section of the work through the subcontractor prequalification process required by G.L.c. 149 Section 44D 3/4, the filed subcontractor awarded the subcontract work shall furnish a payment and a performance bond to the Contractor and the filed subcontractor shall include the cost for the premium for those bonds in its sub-bid price. Ref. G.L.c. 149 Sect. 44 F(2)D.

If the Owner does not follow the subcontractor prequalification process to obtain sub-bids for a sub-trade section, and if the Contractor requires the subcontractor to provide a payment and a performance bond to the Contractor, the Contractor shall pay the premium for the subcontractor's payment and performance bonds, without any increase in the contract price. Ref. G.L.c. 149 Sect. 44 F(2)D.

#### **MISCELLANEOUS PROVISIONS**

Town of Hull, Fort Revere Water Tower Rehabilitation and Renovation Spring-Summer 2023  
jbl41723

A. Right of Access to Work.

The Town and the Designer and all persons designated by them may for any purpose enter upon the Work, the Site, and premises used by the Contractor, and the Contractor shall provide safe facilities therefore. Other contractors of the Town may also enter upon the same for the purposes that may be required by their contracts or work. Any differences or conflicts that may arise between the Contractor and any other contractors of the Town with respect to their work shall be initially resolved by the Designer.

B. Inspection No Waiver.

No inspection by the Town or the Designer or employees or agents of any of them, and no order, measurement, certificate, approval, payment order, payment, acceptance or any other action or inaction of any of them shall operate as a waiver by the Town of any provision of this Contract.

C. Town's Right to Stop the Work.

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents or fails to carry out Work in accordance with the Contract Documents, the Town may, in addition to any other remedy it may have herein, terminate in accordance with the termination provisions of the Contract or issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Town to stop the Work shall not give rise to a duty on the part of the Town to exercise this right for the benefit of the Contractor or any other person or entity.

D. Town's Right to Carry Out the Work.

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten (10) day period after receipt of written notice from the Town to immediately correct such default or neglect with diligence and promptness, the Town may, without prejudice to other remedies the Town may have (including Termination in accordance with the Contract), correct such deficiencies. In such case an appropriate Construction Change Directive shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Town's expenses and compensation for Designer's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Town. In

the event that the Contractor's failure to prosecute the Work causes (in the opinion of the Town), a risk of harm to the public, the Town shall have the right to carry out the Work without notice at the Contractor's cost and/or deduct such sums from monies due the Contractor.

E. Contractor's Financial Condition.

The Contractor represents and warrants that its financial condition is sound and that the Contractor is capable of performing the work required pursuant to the Contract Documents. Upon request by the Town, the Contractor shall make available to the Town such audited and unaudited financial statements of the Contractor as the Town may reasonably request. The Contractor shall promptly advise the Town of any occurrence, event, fact, or other matter that has had, will have, or might reasonably be predicted to have a material adverse effect upon the financial condition of the Contractor.

F. Review of Contract and Field Conditions.

Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become thoroughly familiar with all the existing conditions at the site, has taken all such conditions into consideration as they may affect the Work under his Contract, and correlated personal observations with requirements of the Contract Documents. Except as provided for in and authorized by G.L. c. 30, § 39N, no allowance will be made in the Contract or the Work under the Contract for failure of the Contractor to visit the site.

G. Ordering of Materials, etc.

Before ordering any material or doing any work, each trade shall verify all measurements at this project and shall be responsible for the correctness of the same. No extra charge or compensation will be allowed on account of difference between actual dimensions and the measurements indicated on the Drawings, any difference that may be found shall be submitted to the Designer for consideration before proceeding with the work.

H. Quality or Standards.

Where no explicit quality or standards for material or workmanship are established for work, such work is to be of as good quality of the surrounding work and of the construction of the Project generally.

I. Manufactured articles, etc.

All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's written or printed directions and instructions unless otherwise indicated in the Contract Documents.

J. Study of Project.

Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as any information furnished by the Town, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Designer in writing any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Designer may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. Before starting the work and at frequent intervals during the progress thereof, the Contractor shall carefully study and compare the contract documents with each other and with any information furnished by the Town and shall at once report to the Designer any error, inconsistency or omission the Contractor may discover. Any necessary change will be ordered as provided in Section 9.0 of this Contract, subject to the requirements of the Contract Documents. If the Contractor proceeds with the Work without such notice, the Designer, having discovered such errors, inconsistencies or omissions and having made the determination that by reasonable study of the Contract Documents the Contractor could have discovered the same, the Contractor shall bear all cost arising therefrom.

K. Contract Documents.

The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Designer in writing any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Designer may require.

L. Reimbursement to Designer.

The Contractor shall reimburse the Town for costs incurred by the Designer, , and any other consultant of the Town for design and construction administration services that

are caused by the Contractor's inefficient or otherwise faulty administration or execution of its Work. These may include but are not limited to the cost of the Designer or Town to perform:

- i. Repeated review of the Contractor's resubmittals, substantially out of sequence from the submittal schedule provided by the Contractor and agreed to by the Designer.
- ii. An extensive number of responses to the Contractor's requests for information where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Town-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.
- iii. An extensive number of Change Orders and Construction Change Directives requiring evaluation of proposals and the preparation or revision of Instruments of Service and not otherwise caused by the design defects of the Designer.
- iv. Consultation regarding replacement of Work resulting from fire or other damage caused during construction.
- v. Evaluation of an extensive number of claims not otherwise caused by design defect.
- vi. Evaluation of substitutions proposed by the Contractor and making subsequent revisions to Instruments of Services resulting therefrom.
- vii. Preparation of design and documentation for alternate bid or proposal requests proposed by the Contractor.
- viii. Contract administration services made necessary by the Contractor's failure to complete the project on schedule, achieve milestones, including substantial and final completion.
- ix. Contract administration services provided sixty (60) days or more after Substantial Completion.

M. Preconstruction Inspection.

The Contractor shall notify the Town and Designer in writing of any existing damage to the property or any unsafe conditions at the site prior to commencing the Work.

N. Contractor's Need for Additional Information.

The Contractor shall give the Designer timely notice of any additional design drawings, specifications or instructions required to define the Work in greater detail, or to permit the proper progress of the Work.

M. Proceeding with Work.

The Contractor shall not proceed with any work not clearly and consistently defined in detail in the Contract Documents, but instead shall request additional drawings or

instructions from the Designer. If the Contractor proceeds with such work without obtaining further drawings or instructions, it shall correct work incorrectly done at its own expense.

N. Employment of Competent Workers.

The Contractor shall employ workers competent to perform the work required by the contract and, upon written request of the Town, remove and replace workers whom the Town deems to be disorderly, careless or incompetent, or to be employed in violation of the terms of the Contract Documents, at no increase in the Contract Price or the Contract Time.

O. No Smoking, Liquor or Drugs Allowed.

The Contractor shall neither permit nor suffer smoking, nor the introduction or use of spirituous or intoxicating liquors upon or about the works embraced in this Contract or upon any of the ground occupied by him. The Contractor shall establish and maintain a drug-free workplace throughout the duration of the Project.

P. Contractor's Inspection of Work.

The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

Q. Ownership and Use of Documents.

All Drawings, Specifications and copies thereof furnished by the Designer are and shall remain the property of the Town. They are to be used only with respect to his project and are not to be used any other project. With the exception of one contract set for each party to the Contract, such documents are to be returned or suitably accounted for to the Town on request at the completion of the Work. Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Town's rights.

**ARTICLE 16: SIGNATURES**

IN WITNESS WHEREOF, the Owner and the Contractor have caused the Contract to be executed by their respective authorized officers as a sealed instrument.

OWNER - Town of Hull  
Town Manager, by

Contractor-  
By

\_\_\_\_\_  
Philip E. Lemnios  
Town Manager

\_\_\_\_\_ Department

\_\_\_\_\_  
Name:

\_\_\_\_\_  
Name  
Position: \_\_\_\_\_

Date: \_\_\_\_\_

[Complete Attached Certificate  
Of Corporate Vote]

Certified as to Availability of Appropriation in the amount of \_\_\_\_\_ and not to exceed said amount without prior certification.

\_\_\_\_\_  
J. Michael Buckley  
Town Accountant

Approved as to Form Only

\_\_\_\_\_  
James B. Lampke, Esq.  
Town Counsel

**CERTIFICATE OF AUTHORIZATION FOR CONTRACTOR SIGNATURE**

[INSTRUCTIONS BELOW CONCERNING BUSINESS/CORPORATE STATUS]

**I. IF YOU ARE A SOLE PROPRIETORSHIP-**

- 1. I am a Sole Proprietorship. \_\_\_\_\_ Yes \_\_\_\_\_ No
- 2. As a Sole Proprietorship, the business name is my name.  
\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Not Applicable
- 3. The business name is not my name and attached is a copy of my DBA certificate.  
\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Not Applicable

**II. IF YOU ARE A PARTNERSHIP-**

- 1. Contractor is a Partnership. \_\_\_\_\_ Yes \_\_\_\_\_ No
- 2. As a Partnership the business name is  
\_\_\_\_\_.
- 3. Attached is a copy of the Partnership's DBA certificate.  
\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Not Applicable
- 4. The names and addresses of all partners are:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**III. IF A CORPORATION OR LIMITED LIABILITY PARTNERSHIP-**

- 1. Contractor is a corporation organized in  
\_\_\_\_\_.
- \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Not Applicable



2. Contractor is a LLP organized \_\_\_\_\_  
\_\_\_\_\_.

\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Not Applicable

3. The registered name of the corporation or LLP is:  
\_\_\_\_\_.

4. Attached is a Certificate of Corporate Existence  
\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Not Applicable

5. Attached is a Certificate of Good Standing  
\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Not Applicable

6. If organized outside of Massachusetts, attached is proof of being registered to do  
business in Massachusetts.  
\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Not Applicable

7. Attached is a Certificate of Corporate or LLP Vote authorizing the person signing the  
contract to do so on behalf of the corporation or LLP.  
\_\_\_\_\_ Yes \_\_\_\_\_ No

**CERTIFICATE OF CORPORATE VOTE**

If the Contractor is a corporation, complete the following certification:

At a duly authorized meeting of the Board of Directors of the \_\_\_\_\_ (Name of the Corporation) held on \_\_\_\_\_ (Date), at which all the Directors were present or waived notice, it was voted that, \_\_\_\_\_ (Name), \_\_\_\_\_ (Officer) of this company, is authorized to execute Contracts and bonds in the name and behalf of said company, and affix its corporate seal thereto, and such execution of any Contract or obligation in this company's name on its behalf by such \_\_\_\_\_ (Officer) of the company, shall be valid and binding upon this company.

I hereby certify that I am the Clerk of the \_\_\_\_\_ (Name of the Corporation), that \_\_\_\_\_ (Name) is the duly elected \_\_\_\_\_ (Officer) of said company, and that the above vote has not been amended or rescinded and remains in full force and effect as of the date of the Contract.

A true copy,  
Attest: \_\_\_\_\_  
(Clerk)

Place of Business: \_\_\_\_\_  
Corporate Seal:

STATE TAX CERTIFICATE

Pursuant to G.L. c. 62C, §49A, I certify under the penalties of perjury that the Contractor, to my best knowledge and belief, has filed all state tax returns and paid all state taxes required under law.

\_\_\_\_\_  
Social Security Number  
or Federal Identification Number

\_\_\_\_\_  
Signature of Individual or  
Corporate Name

By: \_\_\_\_\_  
Corporate Officer  
(if applicable)

TABLE OF ATTACHMENTS

- A Payment Bond
- B Performance Bond

ATTACHMENT "A"

PAYMENT BOND

Bond No. \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENT, that we \_\_\_\_\_ with a place of business at \_\_\_\_\_ as principal (the "Principal"), and \_\_\_\_\_, a corporation qualified to do business in the Commonwealth of Massachusetts, with a place of business at \_\_\_\_\_ as Surety (the "Surety"), are held and firmly bound unto Town of Hull as Obligee (the "Obligee"), in the sum of \_\_\_\_\_ lawful money of the United States of America, to be paid to the Obligee, for which payment, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present.

WHEREAS, the Principal has assumed and made a contract with the Obligee, bearing the date of \_\_\_\_\_, and entitled **Fort Revere Water Tower Rehabilitation**.

NOW, THE CONDITIONS of this obligation are such that if the Principal and all Subcontractors under said contract shall pay for all labor performed or furnished and for all materials used or employed in said contract and in any and all duly authorized extensions, modifications, alterations, changes or additions to said contract that may hereafter be made, notice to the Surety of such extensions, modifications, alterations, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject, as may be applicable, to, the provisions of Massachusetts General Laws, Chapter 30, Section 39A, and Chapter 149, Section 29, as amended, then this obligation shall become null and void; otherwise, it shall remain in full force and virtue.

IN WITNESS WHEREFORE, the Principal and Surety have hereto set their hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

PRINCIPAL

SURETY

\_\_\_\_\_

\_\_\_\_\_

[Name and Seal]

[Attorney-In-Fact][Seal]

[Title]

[Address]

[Phone]

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_



**PERFORMANCE BOND**

Bond No. \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENT, that we \_\_\_\_\_ with a place of business at \_\_\_\_\_ as principal (the "Principal"), and \_\_\_\_\_, a corporation qualified to do business in the Commonwealth of Massachusetts, with a place of business at \_\_\_\_\_ as Surety (the "Surety"), are held and firmly bound unto the Town of Hull as Obligee (the "Obligee"), in the sum of \_\_\_\_\_ lawful money of the United States of America, to be paid to the Obligee, for which payment, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present.

WHEREAS, the Principal has assumed and made a contract with the Obligee, bearing the date of \_\_\_\_\_, and entitled **Fort Revere Water Tower Rehabilitation**.

NOW THE CONDITIONS of this obligation are such that if the Principal and all Subcontractors or Suppliers under said contract shall well and truly keep and perform all the undertakings, covenants, agreement, terms, and conditions of said contract on its part to be kept and performed during the original term of said contract and any extensions, modifications, alterations, changes or additions thereof that may be granted by the Obligee, with or without notice to the Surety, and during the life and including any guarantee required under the contract, and shall also well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of any and all duly authorized extensions, modifications, alterations, changes or additions, the obligations of the Surety set forth herein shall become null and void but only if expressly waived in writing by the Obligee Town of Hull; otherwise such obligations shall remain in full force and virtue.

IN THE EVENT the Contract is abandoned and/or defaulted and/or not completed by the Principal, or is terminated by the Obligee, Town of Hull, under the applicable provisions of the contract, the Surety hereby further agrees that the Surety shall, if requested in writing by the Town of Hull promptly take all such actions as is necessary to complete said Contract in accordance with its terms and conditions and shall cooperate with the Town in doing so.

IN WITNESS WHEREOF, the Principal and Surety have hereto set their hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

PRINCIPAL

SURETY

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

[Name and Seal]

[Attorney-In-Fact]

\_\_\_\_\_  
[Title] \_\_\_\_\_

[Address]

\_\_\_\_\_

[Phone]

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

code jbl7720

END OF PERFORMANCE BOND





# AIA<sup>®</sup> Document G715<sup>™</sup> – 2017

## Supplemental Attachment for ACORD Certificate of Insurance 25

<b>PROJECT:</b> <i>(name and address)</i>	<b>CONTRACT INFORMATION:</b> Contract For: Date:	<b>CERTIFICATE INFORMATION:</b> Producer: Insured: Date:
<b>OWNER:</b> <i>(name and address)</i>	<b>ARCHITECT:</b> <i>(name and address)</i>	<b>CONTRACTOR:</b> <i>(name and address)</i>

	Yes	No	N/A
<b>A. General Liability</b>			
1. Does this policy include coverage for:			
<b>a</b> Damages because of bodily injury, sickness, or disease, including occupational sickness or disease, and death of any person?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>b</b> Personal injury and advertising injury?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>c</b> Damages because of physical damage to or destruction of tangible property, including the loss of use of such property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>d</b> Bodily injury or property damage arising out of completed operations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>e</b> The Contractor's indemnity obligations included in the Contract Documents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Does this policy contain an exclusion or restriction of coverage for:			
<b>a</b> Claims by one insured against another insured, where the exclusion or restrictions is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>b</b> Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>c</b> Claims for bodily injury other than to employees of the insured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>d</b> Claims for the Contractor's indemnity obligations included in the Contract Documents arising out of injury to employees of the insured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>e</b> Claims for loss excluded under a prior work endorsement or other similar exclusionary language?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>f</b> Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>g</b> Claims related to residential, multi-family, or other habitational projects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>h</b> Claims related to roofing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>i</b> Claims related to exterior insulation finish systems, synthetic stucco, or similar exterior coatings or surfaces?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>j</b> Claims related to earth subsistence or movement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>k</b> Claims related to explosion, collapse, and underground hazards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>B. Other Insurance Coverage</b>			
1. Indicate whether the Contractor has the following insurance coverages and, if so, indicate the coverage limits for each.			
<b>a</b> Professional liability insurance Coverage limits:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>b</b> Pollution liability insurance Coverage limits:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>c</b> Insurance for maritime liability risks associated with the operation of a vessel Coverage limits:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- d Insurance for the use or operation of manned or unmanned aircraft     
     Coverage limits:
- e Property insurance     
     Coverage limits:
- f Railroad protective liability insurance     
     Coverage limits:
- g Asbestos abatement liability insurance     
     Coverage limits:
- h Insurance for physical damage to property while it is in storage and in transit to  
     the construction site     
     Coverage limits:
- i Other:

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*(Authorized Representative)*

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*(Date of Issue)*

## Application and Certificate for Payment

**TO OWNER:** PROJECT: CBI Consulting, LLC  
 CBI Consulting, LLC

**FROM CONTRACTOR:** VIA ARCHITECT:

**APPLICATION NO:** 001  
**PERIOD TO:**

**CONTRACT FOR:** General Construction  
**CONTRACT DATE:** January 01, 2018  
**PROJECT NOS:** 110 / /

**Distribution to:**  
 OWNER:  ARCHITECT:   
 CONTRACTOR:  FIELD:   
 OTHER:

### CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

- 1. ORIGINAL CONTRACT SUM ..... \$0.00
- 2. NET CHANGE BY CHANGE ORDERS ..... \$0.00
- 3. CONTRACT SUM TO DATE (Line 1 ± 2) ..... \$0.00
- 4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) ..... \$0.00
- 5. RETAINAGE:
  - a. 0 % of Completed Work (Column D + E on G703) ..... \$0.00
  - b. 0 % of Stored Material (Column F on G703) ..... \$0.00
- Total Retainage (Lines 5a + 5b or Total in Column I of G703) ..... \$0.00
- 6. TOTAL EARNED LESS RETAINAGE ..... \$0.00  
 (Line 4 Less Line 5 Total)
- 7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... \$0.00  
 (Line 6 from prior Certificate)
- 8. CURRENT PAYMENT DUE ..... \$0.00
- 9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6) ..... \$0.00

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

### CONTRACTOR:

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 State of: \_\_\_\_\_  
 County of: \_\_\_\_\_  
 Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_  
 Notary Public: \_\_\_\_\_  
 My Commission expires: \_\_\_\_\_

### ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ..... \$0.00  
 (Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

### ARCHITECT:

By: \_\_\_\_\_ Date: \_\_\_\_\_

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$0.00	\$0.00
Total approved this Month	\$0.00	\$0.00
<b>TOTALS</b>	<b>\$0.00</b>	<b>\$0.00</b>
NET CHANGES by Change Order		\$0.00





# AIA<sup>®</sup> Document G701<sup>™</sup> – 2017

## Change Order

<b>PROJECT:</b> <i>(Name and address)</i>	<b>CONTRACT INFORMATION:</b> Contract For: General Construction Date:	<b>CHANGE ORDER INFORMATION:</b> Change Order Number: 001 Date:
<b>OWNER:</b> <i>(Name and address)</i>	<b>ARCHITECT:</b> <i>(Name and address)</i>	<b>CONTRACTOR:</b> <i>(Name and address)</i>

**THE CONTRACT IS CHANGED AS FOLLOWS:**

*(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)*

The original Contract Sum was	\$	0.00
The net change by previously authorized Change Orders	\$	0.00
The Contract Sum prior to this Change Order was	\$	0.00
The Contract Sum will be increased by this Change Order in the amount of	\$	0.00
The new Contract Sum including this Change Order will be	\$	0.00

The Contract Time will be increased by Zero (0) days.  
 The new date of Substantial Completion will be

**NOTE:** This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

**NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.**

ARCHITECT <i>(Firm name)</i>	CONTRACTOR <i>(Firm name)</i>	OWNER <i>(Firm name)</i>
SIGNATURE	SIGNATURE	SIGNATURE
PRINTED NAME AND TITLE	PRINTED NAME AND TITLE	PRINTED NAME AND TITLE
DATE	DATE	DATE





# AIA<sup>®</sup> Document G704<sup>™</sup> – 2017

## Certificate of Substantial Completion

**PROJECT:** *(name and address)*

**CONTRACT INFORMATION:**

Contract For:

Date:

**CERTIFICATE INFORMATION:**

Certificate Number: 001

Date:

**OWNER:** *(name and address)*

**ARCHITECT:** *(name and address)*

**CONTRACTOR:** *(name and address)*

The Work identified below has been reviewed and found, to the Architect's best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate.

*(Identify the Work, or portion thereof, that is substantially complete.)*

\_\_\_\_\_  
**ARCHITECT** *(Firm Name)*

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME AND TITLE**

\_\_\_\_\_  
**DATE OF SUBSTANTIAL COMPLETION**

### WARRANTIES

The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

*(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)*

### WORK TO BE COMPLETED OR CORRECTED

A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:

*(Identify the list of Work to be completed or corrected.)*

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within ( ) days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: \$

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:

*(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)*

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

\_\_\_\_\_  
**CONTRACTOR** *(Firm Name)*

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME AND TITLE**

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**OWNER** *(Firm Name)*

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME AND TITLE**

\_\_\_\_\_  
**DATE**





FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

**SECTION 00 65 19 – GENERAL RELEASE AND WAIVER OF LIEN**  
**(General Contractor)**

NAME: \_\_\_\_\_  
(General Contractor)

ADDRESS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATE: \_\_\_\_\_

To: Chris Dilorio  
Director of Community Development & Planning  
Town of Hull  
253 Atlantic Ave.,  
Hull, MA 02045

Project: Fort Revere Water Tower Rehabilitation  
Hull, Massachusetts

We, the undersigned, in consideration of payments made to us, hereby waive and release all actions, debts, claims, and demands against \_\_\_\_\_ (General Contractor) and the Town of Hull on account of all work, services, equipment, and materials performed or furnished by us in connection with the construction of a building, improvements, and facilities on real property owned by Town of Hull and in connection with the Rehabilitation of the Fort Revere Water Tower, or pursuant to our contract, dated \_\_\_\_\_ made with the Town of Hull, and amendments and change orders thereto; and

We hereby waive and release any mechanics', materialman's, or like lien, and all rights to file any such lien in the future, against said real property on account of said work, services, equipment and materials performed or furnished by us.

Date: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

(Seal)



FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

**SECTION 00 65 20 – GENERAL RELEASE AND WAIVER OF LIEN**  
**(Subcontractor/Material Supplier)**

NAME: \_\_\_\_\_  
(Sub-Contractor)

ADDRESS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATE: \_\_\_\_\_

To: Chris Dilorio  
Director of Community Development & Planning  
Town of Hull  
253 Atlantic Ave.,  
Hull, MA 02045

Project: Fort Revere Water Tower Rehabilitation  
Hull, Massachusetts

We, the undersigned, in consideration of payments made to us, hereby waive and release all actions, debts, claims, and demands against \_\_\_\_\_ (Subcontractor) and the Town of Hull on account of all work, services, equipment, and materials performed or furnished by us in connection with the construction of a building, improvements, and facilities on real property owned by Town of Hull and in connection with the Rehabilitation of the Fort Revere Water Tower, or pursuant to our contract, dated \_\_\_\_\_ made with the Town of Hull, and amendments and change orders thereto; and

We hereby waive and release any mechanics', materialman's, or like lien, and all rights to file any such lien in the future, against said real property on account of said work, services, equipment and materials performed or furnished by us.

Date: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

(Seal)



**SECTION 00 85 10 –DRAWING LIST**

Drawings Sheets (All drawings are 24" x 36").

**GENERAL**

G0-01 COVER SHEET

**ARCHITECTURAL**

D1-01 TOWER PLANS  
D1-02 TOWER PLANS  
D2-01 ELEVATIONS  
D2-02 ELEVATIONS  
D2-03 DEMOLITION 3D VIEWS  
S1-01 TOWER PLANS  
S1-02 TOWER PLANS  
S2-01 ELEVATIONS  
S2-02 ELEVATIONS  
S2-03 SECTION THROUGH WATER TOWER  
S2-04 3D VIEWS  
S3-01 SECTIONS  
S3-02 DETAILS  
S3-03 DETAILS  
S3-04 SECTIONS  
S3-05 WINDOW DETAILS  
S4-01 STAIR SECTIONS  
S4-02 OBSERVATION LEVEL FENCE  
SECTIONS AND DETAILS  
S4-03 SITE FENCE ELEVATION  
S4-04 SITE FENCE AND GATE ELEVATION  
S5-01 PHOTO SHEET  
S5-02 PHOTO SHEET

**ELECTRICAL**

E0-01 LEGEND AND SPECIFICATIONS  
ED1-01 DEMOLITION PLANS  
E1-01 PROPOSED PLANS  
E2-01 PROPOSED ELEVATION

END OF SECTION



# **TECHNICAL SPECIFICATIONS**





**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 11 13**

**SUMMARY OF WORK**

**PART 1 GENERAL**

**1.01 GENERAL REQUIREMENTS**

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.02 PROJECT**

- A. Project Name: Restoration of Fort Revere Water Tower
- B. Owner's Name: Town of Hull
- C. Architect's Name: SOCOTEC AE Consulting, LLC

**1.03 WORK UNDER THIS CONTRACT**

- A. The work to be done under this contract consists of executing and completing all work required for the Restoration of Fort Revere Water Tower.
- B. In general, the Contractor shall supply all material, labor, equipment, insurance, temporary protection, tools and appliances necessary for the proper completion of the Work as described in the Plans and Specifications, in accordance with good construction practice, and as required by the materials manufacturers.
- C. Supply all shoring and protection necessary to protect the occupants, building site, building systems, and landscape areas. All means and methods are the responsibility of the Contractor. The Contractor is solely responsible for safety on the job site.
- D. All materials shall be new and of the best quality.

- E. General Information
1. If there is a conflict between or within any part of the plans and the specifications, the more stringent requirement shall apply at the sole discretion of the Architect.
  2. This document describes the renovations and required upgrades at the Restoration of Fort Revere Water Tower in Town of Hull.
  3. The property will be unoccupied for the duration of the project. The Contractor shall maintain the entrance and egress paths at all times.
- F. The work will include all operations necessary to deliver the building and ancillary on and off-site amenities in a fully installed and operable condition including all utility and site work and obtaining all necessary licenses, permits, and certificates.
- G. A Permit Set of the drawings and project manual is to be kept at one location at the site for the duration of the project. As-built records are to be kept and coordinated by the General Contractor throughout the project. Provide As-Built drawings – by the GC and all the File Sub-Bidders – in CAD files using AutoCad, latest version.
- H. The following is the general scope of work. The work applies to the Limit of Work areas noted on the Drawings. All work required without limiting the generality thereof includes all labor, materials, equipment, and services required to perform the work fully in the drawings and specifications and to provide a complete finished project and includes, but is not limited to, the following:
1. Contractor to remove and replace all existing sealants and backer rods at all locations shown on plans.
  2. Contractor to perform concrete repair, including horizontal repairs, vertical repairs, overhead repairs, top surface repairs at existing cast-in-place and concrete elements.
  3. Contractor to perform crack repair with sealant and gravity fed epoxy.
  4. Installation of high performance coating at exterior surfaces.
  5. Replace concrete sidewalk apron at base of tower.
  6. Repointing of exterior brick.
  7. Replacement of individual spalled bricks, large areas of brick, and repair of cracks in brick.
  8. Repair and painting of ornamental iron fencing around upper platform.
  9. Replacement of exterior lighting.
  10. Repairs to existing door and frame.
  11. Demolition of existing interior concrete stairs.

12. Installation of new interior metal stairs and railings.
13. Painting of existing stair handrails.
14. Restoration of existing windows on the entire exterior of the building.
15. Removal and replacement of existing slate roofing.
16. Demolition and replacement of existing concrete slab at upper platform.
17. Installation of new traffic coating at platform slab.
18. Installation of new hatch at upper platform.
19. Removal of chain link fence and installation of new fence.

#### 1.04 OWNER OCCUPANCY

- A. Owner does not intend to occupy the existing building during the entire construction period.
- B. Cooperate with Owner to minimize conflict and to facilitate the operation of the adjacent apartment building.

#### 1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Arrange use of site and premises to allow:
  1. Work by Others.
  2. Work by Owner.
- B. Provide access to and from site as required by law and by Owner:
  1. Emergency Building Exits During Construction: Maintain all exits in fully-operable condition during construction period; provide temporary exit signs (inside and outside) if exit routes are temporarily altered. Submit to Owner a site utilization plan and protection procedure for review and approval.
  2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Time Restrictions:
  1. Work may be performed Monday – Friday, from 7:00AM to 5:00PM. Work may be allowed on Saturdays and/or Sundays with prior approval by the Town of Hull.

#### 1.06 EXAMINATION OF SITE AND DOCUMENTS

- A. A formal briefing session will be held and all interested bidders are strongly encouraged to view the ramp and location.
- B. The bidders are expected to examine and to be thoroughly familiar with all contract documents and with the conditions under which the work is to be carried out. The Town of Hull will not be responsible for errors, omissions, and/or charges for extra work arising from the General Contractors, Filed Sub-bid Contractors or Subcontractors failure to familiarize themselves with the contract documents, that they are familiar with the conditions and requirements of both

where they require, in any part of the work a given result to be produced, that the contract documents are adequate and they will produce the required results.

#### 1.07 SUPERVISION OF WORK

- A. The Contractor shall be held directly responsible for the correct installation of all work performed under this Contract. The Contractor must make good repair, without expense to the Owner, of any part of the new work, or existing work to remain, which may become inoperative on account of leaving the work unprotected or unsupervised during construction of the system or which may break or give out in any manner by reason of poor workmanship, defective materials or any lack of space to allow for expansion and contraction of the work during the Contractor's warranty period, from the date of final acceptance of the work by the Owner.
- B. The Contractor shall furnish a competent full-time Massachusetts licensed superintendent approved by the Owner and Architect. The licensed superintendent shall supervise all work under this contract and who shall remain on duty at the site throughout the Contract period while work is in progress. The same superintendent shall remain on the project for the entire duration of the job.

#### 1.08 FIELD MEASUREMENTS

- A. Although care has been taken to ensure their accuracy, the dimensions shown for existing items and structures are not guaranteed. It is the responsibility of the Contractor to verify these dimensions in the field before fabricating any construction component. No claims for extra payment due to incorrect dimensions will be considered by the Owner.

#### 1.09 DAMAGE RESPONSIBILITY

- A. The Contractor shall repair, at no cost to the Owner, any damage to building elements, site appurtenances, landscaping, utilities, etc. caused during demolition operation and work of this Contract.
- B. The Contractor shall secure the work area and equipment at the end of each workday.

#### 1.10 OWNER FURNISHED PRODUCTS

- A. Products indicated "N.I.C." (Not in Contract), or "E. O." (Equipment by Owner), or "O.F.O.I." (Owner Furnished Owner Installed), or other similar acronyms as defined in the contract documents will be furnished and installed by the Owner. Coordination and provision of service lines for such products shall be included under these Construction Contract Documents, if indicated. Final connections from service lines to equipment will be by the Owner, unless otherwise indicated.

#### 1.11 INTENT OF THE PROJECT MANUAL

- A. Words in the singular shall also mean and include the plural, wherever the context so indicates, and words in the plural shall mean the singular, wherever the context so indicates.

- B. Wherever the terms "shown on drawings" are used in the specifications, they shall mean "noted", "indicated", "scheduled", "detailed", or shall refer to any other diagrammatic or written reference made on the drawings.
- C. Wherever the terms "furnish", "install" or "provide" are used in the contract documents, it shall mean to "connect", "apply", "erect", "construct", or similar terms in order to make operative, and to supply all labor and materials, including miscellaneous fittings, hardware, and accessories necessary to complete the installation of the specified item.
- D. All the work of the project is "related" in some fashion either by direct contract, sequencing, or coordination. It is the Contractor's responsibility to perform all the work and coordinate all the various trades and types of "related" work in order to meet the schedule and quality standards of the Project.
- E. Means and methods of construction as well as compliance with OSHA and all other safety laws and regulations is the exclusive responsibility of the Contractor, his Subcontractors, suppliers, consultants, and servants. The Architect does not have control of the job site.
- F. Wherever the term "material" is used in the specifications it will mean any "product", "equipment", "device", "assembly", or "item" required under the Contract, as indicated by trade or brand name, manufacturer's name, standard specifications reference or to other description.
- G. The terms "approved" or "approval" shall mean the written approval of the Owner or Architect.
- H. The term "specifications" shall mean all information contained in the bound or unbound volume, including all "Contract Documents" defined herein, except for the drawings.
- I. The terms "directed", "required", "permitted", "ordered", "designated", "prescribed", and similar words shall mean the direction, requirement, permission, order, designation or prescription of the Owner or Architect; the terms "approved", "acceptable", "satisfactory", and similar words shall mean approved by, acceptable or satisfactory to the Owner or Architect; and the terms "necessary", "responsible", "proper", "correct", and similar words shall mean necessary, reasonable, proper or correct in the judgment of the Owner or Architect.
- J. "Concealed" means hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in construction or in crawl spaces.
- K. "Exposed" means not installed underground or "concealed" as defined above.
- L. "Removed" means complete removal of item, and complete disposal in an approved manner.

#### 1.12 ERRORS, OMISSIONS, AND CONFLICTS IN THE PROJECT MANUAL

- A. In the case of conflicts in the Drawings and the Specifications noticed by the Contractor, the Architect shall be notified immediately in writing of such errors and/or omissions. In no case shall the Contractor proceed without written authorization from the Architect.

#### 1.13 UNFORESEEN FIELD CONDITIONS

- A. In the case of unforeseen field conditions, the Contractor shall notify the Owner and Architect immediately in writing of such conditions. In no case shall the Contractor proceed without written authorization from the Architect. If such unforeseen conditions result in additional expense, the Contractor shall not proceed without the written approval of the Owner.

#### 1.14 INSURANCE

- A. The Town of Hull and SOCOTEC AE Consulting, LLC (SOCOTEC) shall be listed as Additional Insured with a Waiver of Subrogation on all the Contractors Insurance Policies for the project.

#### 1.15 GENERAL NOTES

- A. Contractor shall be responsible for checking and coordinating all dimensions with architectural drawings. In case of conflict, the Architect shall be notified and shall resolve the conflict.
- B. In any case of conflict between or within the drawings and the project specifications, the more stringent requirements shall govern at the sole discretion of the Architect.
- C. The contractor shall make no deviation from design drawings without prior review by the Architect.
- D. Work not indicated on a part of the drawings but reasonably implied to be similar to that shown at corresponding places shall be repeated.
- E. All work shall comply with applicable codes and local laws and regulations.
- F. General Contractor shall coordinate locations of openings, pits, boxes, sumps, trenches, sleeves, depressions, grooves, and chamfers, with mechanical, electrical and plumbing trades.
- G. The structural design of the building is based on the full interaction of all its component parts. No provisions have been made for conditions occurring during construction. It is the sole responsibility of the contractor to make proper and adequate provisions for stability of, and all stresses to the structure due to any cause during construction.
- H. Contractor shall not scale drawings. Contractor shall request all dimensions or information required to perform the work from the architect. Work completed by the Contractor without dimensions or information shall be done at their own risk

FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

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Boston, Massachusetts  
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Fax: (617) 464-2971

and, if deemed incorrect by the architect, shall be removed and reinstalled to the specifications of the Architect at no additional cost to the owner.

- I. CODES: The project is based on the requirements of the Massachusetts State Building Code - Ninth Edition.
- J. The plans were compiled from various sources. The Contractor is responsible for verifying all existing conditions and dimensions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION





**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 22 00**

**UNIT PRICES**

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

- A. Attention is directed to the general and supplementary conditions and Division 1 including all sub-divisions therein attached in this document and drawings, which are made a part of this section.

1.02 DESCRIPTION

- A. Scope of Work:
  - 1. This Section covers those items for which indefinite quantities can be expected and, therefore, pre-agreed prices per unit of work are established as means to determine adjustments to the Contract Price after actual quantities are determined.
- B. Related Work Specified Elsewhere:
  - 1. Refer to Division 1 for limitations.
  - 2. Examine Contract Documents for requirements that affect work of this Section.

1.03 QUANTITIES AND COST ADJUSTMENTS

- A. Refer to this Section and individual Specification Sections for methods of measurement and payment for unit prices. As soon as the work involved in each unit cost item has been completed, submit documentation to establish the actual quantities provided. Submit to the Architect for review and issuance of Change Order.
- B. Change Order amount for each unit cost item will be based on actual quantities multiplied by the unit cost. This unit cost is a total cost and includes all mark-ups applicable taxes, overhead, and profit as described below.

1.04 UNIT PRICES

- A. General Provisions
  - 1. Materials, methods of installation and definitions of terms set forth under the various unit price items are indicated in the Schedule of Unit Prices and indicated in the Contract Documents.
  - 2. Performance of work which is not required under the Contract Documents or which is not authorized by Change Order, whether or not such work item is set forth hereunder as a Unit Price Item, shall not be considered cause for any

extra payment. The Contractor will be held fully responsible for such unauthorized work, including the performance of all corrective measures required by the Architect or Owner.

3. The Owner may choose not to approve any or all unit prices prior to award of the contract if it deems the unit price unreasonable. In this case, the Owner at their discretion may choose to:
  - a. Negotiate the unit costs prior to signing the contract;
  - b. Disapprove any or all of the unit prices and adjust the work on the change order process; or
  - c. Disqualify the bidder if the Owner deems the unit prices to be unreasonable.
- B. Schedule of Unit Prices: Should certain additional work be required, or should the quantities of certain classes of work be increased or decreased from those required by the Contract Documents, by authorization of the Owner, the below unit prices shall, at the option of the Owner, be the basis of payment to the Contractor or credit to the Owner, for such increase or decrease in the work. The Unit Prices shall represent the exact total cost per unit to be paid the Contractor (in the case of additions or increases) or to be refunded the Owner (in the case of decreases). No additional adjustment will be allowed for overhead, profit, insurance, or other direct or indirect expenses of the Contractor or Subcontractors. No additional adjustments will be allowed for additional work without the prior written approval of the Owner.
- C. The above unit prices shall include all labor, materials, overhead, profit, insurance, etc., to cover the finished work. Changes shall be processed in accordance with the provisions of Division 1 governing Changes in the Work.

1.05 UNIT PRICE SCHEDULE

#	Description	Unit	Base Bid Quantities	Reference Detail(s)	Add/Deduct price (Insert Only One Number)
1	Vertical Concrete Repair	SF	280	1,2/S3-02	
2	Top Surface Concrete Repair	SF	95	3,4/S3-01	
3	Underside Concrete Repair	SF	85	2,3/S3-01	
4	Upper Band Concrete Repair	LF	85	3/S3-01	
5	Lower Band and Tower Base Concrete Repair	LF	90	2,5/S3-01	
6	Epoxy Crack Injection at Concrete	LF	20	7/S3-01	
7	Brick Replacement Masonry Filed Sub-Bid	EA	50	6/S3-02	
8	Brick Pointing Masonry Filed Sub-Bid	SF	1300	5/S3-02	
9	Rout & Seal Brick Masonry Sub-Bid	LF	100	3/S3-02	
10	Roof Sheathing/Board Replacement	SF	20	1,2/S3-03	
11	Ceiling Boards Replacement (Observation Deck)	SF	10	6/S3-03	
12	Cementitious 1/4" Skim Coating	SF	625	1,2/S3-02 similar	

- A. All repair locations will be determined and marked in the field by the Engineer. Repairs will be located at small individual locations throughout the entire scope area. Unit Price work performed without the approval of the Engineer will not be paid for.
- B. The Owner reserves that right to increase or decrease the unit cost quantities without any adjustment in the unit costs.

FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

- C. Unit costs include pro-rata share of Contractor's, general conditions, staging, insurance, bond, overhead, and profit, etc.

PART 2 PRODUCTS - Not Used.

PART 3 EXECUTION - Not Used.

END OF SECTION

**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 31 13**

**COORDINATION**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that the equipment to be furnished complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 COORDINATION AND PROCEDURES

- A. The safety and welfare of the citizens, employees of the Town of Hull and residents of the adjacent apartment building is the utmost concern of the project. All work by the Contractor, his Sub-Contractors, suppliers, and employees shall be performed in a way that will safeguard this concern. Safety is the sole responsibility of the Contractor on the jobsite. Extraordinary care must be taken throughout the project to coordinate work activities with city schedules, procedures, and activities.
- B. All construction activities and deliveries to the site are to be coordinated with the Town of Hull.
- C. A Pre-construction meeting shall be held with the Town of Hull, the Contractor, and Architect to coordinate locations for dumpsters, deliveries, worker parking, material storage, as well as to discuss safety, scheduling, procedures, and to emphasize 1.02.A, above.
- D. Contractor shall restrict hazardous items and activities to locations that will have the least impact on the daily operations of the streets and the other buildings. All

material storage, locations of cranes, dumpsters, workers access, etc. will be only in areas approved by the City.

- E. Contractor shall provide signage and other safety barriers at the site adequate to support their safety program.
- F. Contractor shall update the Construction schedule monthly. Requisitions for payment must be accompanied by an updated Critical Path Method (CPM) schedule.

#### 1.04 SCHEDULING

- A. Time is of the essence in this project.
- B. Temperature is a critical factor in the construction work. Adhere to manufacturer's specifications.
- C. Within five (5) days after the Contractor has received the Owner's Notice to Proceed, and before the commencement of any work, the Contractor shall transmit the proposed construction schedule to the Owner and Architect for review. If any change in the work will alter agreed upon schedules, the Contractor shall immediately notify the Owner and Architect in writing.
- D. The Contractor shall confine his/her apparatus, storage of materials, and operation of his/her workmen to limits as required by the Owner, and shall not unreasonably encumber the premises with these materials. He/she shall keep all access roads and walks clear of construction equipment, materials, and debris of any kind. He shall repair any and all damage to access roads, walks, the building facade and roof caused by construction operations, and leave them in at least as good condition as originally found. All operations shall be confined within the property. All delivery and construction operations shall be conducted so as to avoid all possible obstruction of the work and building operations. The Contractor shall meet regularly with the Owner to coordinate the use of the Site.
- E. The Contractor must request approval from the Town of Hull to work overnight, or on Saturdays at no additional expense to the owner. No work can be performed on Sundays.

#### 1.05 SUBCONTRACTORS

- A. Subcontractors are subject to approval by the Owner.

#### 1.06 CONSTRUCTION REVIEW

- A. All materials and workmanship shall be subject to review by the Architect and all designated representatives of the Owner. Such review may take place at any time during the construction, and wherever work relating to this project is underway. The Contractor shall notify the Architect of any approaching stage of the work likely to require his/her attention, and the Architect shall have the right to reject all defective or non-conforming workmanship and material, and to require its replacement.
- B. If any unreviewed work is covered up without approval, the Contractor shall bear the costs of uncovering it upon request.

#### 1.07 CODES

- A. Codes, standards, and publications of private and public bodies mentioned in these specifications, and other such standards and specifications, refer to the latest edition thereof at the time of taking bids unless a specific edition is designated, and shall be considered and integral part of the Contract Documents.

#### 1.08 COORDINATION OF WORK

- A. Contractor shall coordinate all construction work with Town of Hull.
- B. Contractor is responsible for all building and sidewalk permits, police details as required as well as any other requirements that may be imposed by the Town of Hull.

#### 1.09 SPECIFICATION DISTRIBUTION TO WORKMEN

- A. A complete copy of the project manual, including plans and specifications shall be kept at the construction site at all times.
- B. At the direction of the Architect, the Contractor shall photocopy various parts of pertinent Sections of the Project Manual to be handed out to each tradesman.

#### 1.10 FIELD MEASUREMENTS

- A. Before ordering any materials or performing any work, the Contractor or his/her subcontractors shall inspect all existing conditions and perform all measurements at the building. No extra charge or compensation will be allowed because of differences between the drawings and the actual dimensions. Any differences between the Project Manual and the actual conditions found shall be submitted to the Architect for his/her decision before proceeding with the work.

#### 1.11 CUTTING AND PATCHING

- A. The work to be performed under this Contract shall include all cutting and patching necessary to accommodate new work.

#### 1.12 PERMITS

- A. All fees and procurement of building permits including burn permits shall be the responsibility of the Contractor. Requests for inspections by the Building Inspector and the obtaining of required signatures by Inspection on permits is the responsibility of the Contractor.

#### 1.13 DUMPING

- A. The contractor shall submit an affidavit certifying legal and proper dumping and disposal (including locations) of all materials from the project.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION



**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 33 00**

**SUBMITTALS**

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1- GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be provided complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually provided in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated into the work shall be new and of the best grade of their respective kinds.
- E. Consult the individual sections of the specifications for the specific submittals required under those sections and for further details and descriptions of the requirements.

1.02 GENERAL PROCEDURES FOR SUBMITTALS

- A. Timeliness - The Contractor shall transmit each submittal to the Designer sufficiently in advance of performing related Work or other applicable activities so that the installation is not delayed by processing times, including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Architect in advance of the Work.
- B. Sequence - The Contractor shall transmit each submittal in a sequence which will not result in the Architect's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.

**SUBMITTALS**

- C. The Contractor's Review - Only submittals received from and bearing the stamp of approval of the Contractor will be considered for review by the Architect. Submittals shall be accompanied by a transmittal notice stating name of Project, date of submittal, "To", "From" (Contractor, Subcontractor, Installer, Manufacturer, Supplier), Specification Section, or Drawing No. to which the submittal refers, purpose (first submittal, resubmittal), description, remarks, distribution record, and signature of transmitter.
- D. Architect's Action - The Architect will review the Contractor's submittals and return them with one of the following actions recorded thereon by appropriate markings:
1. Final Unrestricted Release: Where marked "Approved" the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.
  2. Final-But-Restricted Release: When marked "Approved as Noted" the Work may proceed provided it complies with the Architect's notations or corrections on the submittal and complies with the requirements of the Contract Documents. Acceptance of the Work will depend on these compliances.
  3. Returned for Resubmittal: When marked "Revise and Resubmit" or "Disapproved" the Work covered by the submittal (such as purchasing, fabrication, delivery, or other activity) should not proceed. The submittal should be revised or a new submittal resubmitted without delay (no limit to number of resubmissions), in accordance with the Designer's notations stating the reasons for returning the submittal.
- E. Processing - All costs for printing, preparing, packaging, submitting, resubmitting, and mailing, or delivering submittals required by this contract shall be included in the Contract Sum.

### 1.03 OR EQUALS

- A. Definition - Whenever a specification section names one or more brands for a given item, and the Contractor wishes to submit, for consideration, another brand, the submission shall be considered an "or-equal" or a "material substitution". For the purposes of this Contract, the terms "or-equal" and "material substitution" shall be considered synonymous.
- B. In no case may an item be provided on the Work other than the item named or described, unless the Architect, with the Owner's written concurrence, shall consider the item equal to the item so named or described, as provided by M.G.L. c.30 § 39M.

- C. The equality of items offered as "equal" to items named or described shall be proved to the satisfaction of the Architect, including all research and full documentation, at the expense of the Contractor submitting the substitution.
- D. The Designer and/or the Owner may require that full size samples of both the specified and proposed products be submitted for review and evaluation. The Contractor shall bear full cost for providing, delivering, and disposal of all such samples.
- E. The Contractor shall assume full responsibility for the performance of any item submitted as an "Or-Equal" and assume the costs of any changes in any Work which may be caused by such substitution.
- F. Or Equal Approval Process - On the transmittal, or on a separate sheet attached to the submission, the Contractor shall direct attention to any deviations, including minor limitations and variations, from the Contract Documents.
  - 1. The Contractor shall submit to the Architect for consideration of any or-equal substitution a written point-by-point comparison containing the name and full particulars of the proposed product and the product named or described in the Contract Documents.
  - 2. Such submittal shall in no event be made later than ten (10) calendar days prior to the incorporation of the item into the Work. In any case in which the time period specified in the Contract Documents from the Notice to Proceed to Substantial Completion is less than 30 days, this requirement can be waived by the Architect.
  - 3. Upon receipt of a written request for approval of an or-equal substitution, the Architect shall investigate whether the proposed item shall be considered equal to the item named or described in the Contract Documents. Upon conclusion of the investigation, the Architect shall promptly advise the Contractor that the item is, or is not, considered acceptable as on Or-Equal substitution. Such written notice must have the concurrence of the Owner.

#### 1.04 SUBMISSION OF SHOP DRAWINGS

- A. Shop Drawings shall be complete, giving all information necessary or requested in the individual section of the specifications. They shall also show all adjoining Work, other work affected, and details of connection thereto, including hardware, flashing, waterproofing, and all utilities.
- B. Shop Drawings shall be for whole systems. Partial submissions will not be accepted.

- C. The Architect reserves the right to review and approve shop drawings only after approval of related product data and samples.
- D. Shop drawings shall be properly identified and contain the name of the project, name of the firm submitting the shop drawings, shop drawing number, date of shop drawings and revisions, Contractor's stamp of approval, and sufficient spaces near the title block for the Architect's stamp.
- E. The Contractor shall submit all submittals electronically to the Architect. Each submittal shall be accompanied by a transmittal notice and shall be approved by the GC (and shall bear their approved stamp) in advance of submission to the architect.
- F. When the submittal is returned by the Architect with the stamp "Revise and Resubmit" or "Disapproved", the Contractor shall correct the original drawing or prepare a new drawing and resubmit to the Architect for approval. This procedure shall be repeated until the Architect's approval is obtained. No limit. However, the architect shall be compensated by the contractor, via change order, for any time expended if they have to review any submittal more than twice.
- G. The Contractor shall maintain one full set of approved shop drawings at the site.
- H. Photo copies of the bid documents are not acceptable as shop drawings.
- I. Provide shop drawings for every item to be installed or repaired in the entire project, whether or not indicated in the spec section.

1.05 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES (SUBMITTALS AND DISTRIBUTION)

- A. The General Contractor, within ten (10) working days after the commencement of work shall prepare and submit for the Architect's approval a schedule of Shop Drawings, Product Data and Samples required to be submitted for the work. The schedule shall indicate by trade the date by which final approval of each item must be obtained, and shall be revised as required by conditions of the work, subject to Architect's approval. The schedule of Shop Drawings shall correspond to the Construction Schedule so that the submissions relate to the time when the products and/or systems will be required on the site. The Architect will not approve a Schedule which calls for out of sequence submittals.
- B. General Contractor shall submit Shop Drawing, product data and samples accompanied by the General Contractor's Shop Drawing, Product Data and Sample Transmittals form.

C. Preparation of Submittal Form: Fill out transmittal form in the following manner using a typewriter or word processor, and retain one copy – General Contractor’s first file:

- |     |                        |   |
|-----|------------------------|---|
| 1.  | General Contr. Job No. | General Contractor’s name and job number.   |
| 2.  | Spec. Section          | The Specification Section number where item is specified – do not submit items from more than one Specification Section on the same form. |
| 3.  | Submitted by           | Name of General Contractor’s employee responsible for the General Contractor’s review.  |
| 4.  | Project/No.            | Project name and Architect’s project number.  |
| 5.  | Transmittal No.        | Transmittal numbers shall be consecutive for the project.   |
| 6.  | Date Submitted         | Date leaving General Contractor’s office.   |
| 7.  | Subcontractor          | Name of firm preparing original documents (shop drawings or sample).  |
| 8.  | Submission No.         | 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> , etc. depending on previous submission for same item (see Resubmittal procedure).    |
| 9.  | Spec. Sec. Para.       | Specific paragraph number which item as Specified.  |
| 10. | Copies & Type          | Number of copies submitted and type of material submitted (sepia, print, brochure or sample, etc.).                                       |
| 11. | Contr.’s Remarks       | Note exceptions or deviations from the Contract Documents and reasons for them.   |

D. Resubmissions: Resubmittal shall follow the same procedures as the initial submittal with the following exceptions:

1. Transmittal shall contain the same information as the first transmittal except that transmittal numbers shall run consecutively and the submission number shall indicate 2<sup>nd</sup>, 3<sup>rd</sup>, etc. submission. The drawing number/description

shall be identical to the initial submission and the date shall be the revised date for that submission.

2. Unless otherwise approved by the A, no new material shall be included on the same transmittal for a resubmission.
3. Where Resubmittal has not been required by the Architect, but corrections have been noted on a shop drawing, the drawings after the noted corrections have been made shall be submitted to the Architect by the means noted in paragraph 1.04 E above, for record purposes but not for action.

E. Submittal Procedures by General Contractor for Approval

1. General: All submittals shall be made to Architect's office.
2. Shop Drawings: submit in PDF format electronically, except as requested otherwise.

F. Architect's Review Procedures:

1. The Architect's review, including Architect's review period will not exceed fourteen (14) calendar days from the established date of each submission indicated on the Schedule of Shop Drawings, Product Data, and Samples plus the additional time, if any, for distribution by the General Contractor and receipt of submissions by the Architect. The General Contractor is required to strictly adhere to the established Schedule dates.
2. The Architect will process the submission and indicate the appropriate action on the submission and the transmittal. Incomplete or erroneous transmittals will be returned without action.
3. The Architect will fill out transmittal in the following sequence:
  - a. Date Received                      Date arriving in the Architect's office.
  - b. Date Return                         Date leaving the Architect's office to the General Contractor.
  - c. To/Date                                Name of architect to whom submission is sent for review and date leaving the Architect's office.
  - d. From/Date                             Name of architect reviewing submission and date arriving in the Architect's office.
  - e. Action                                 Indicate action taken on submission.

- |    |                     |  |
|----|---------------------|--|
| f. | Distribution        | Number of copies distributed and type of material distributed (sepia, print, brochure or samples, etc.). |
| g. | Architect's Remarks | Note major deviations from the Contract Documents.   |
4. The Architect will return two (2) of Shop Drawings, one Sample or two brochures with copies of transmittal forms to the General Contractor.
5. The Architect will keep a copy and send one copy to the Owner.

#### 1.06 SUBMISSION OF PRODUCT DATA

- A. The Contractor shall submit seven (7) copies of Product Data to the Architect. All such data shall be specific and identification of material or equipment submitted shall be clearly marked in ink. Data of general nature will not be accepted.
- B. Product Data shall be accompanied by a transmittal notice. The Contractor's stamp of approval shall appear on the printed information itself, in a location which will not impair legibility.
- C. Product Data returned by the Designer as "Disapproved" shall be resubmitted in seven (7) days until the Architect's approval is obtained.
- D. When the Product Data are acceptable, the Architect will stamp them "Approved" or "Approved as Corrected", distribute copies to the team 3 copies, and return two (2) copies to the Contractor. The Contractor shall provide and distribute additional copies as may be required to complete the Work.
- E. The Contractor shall maintain one (1) full set of approved, original, Product Data at the site.
- F. Provide product data for all items to be installed whether or not noted in the specification section.

#### 1.07 SUBMISSION OF SAMPLES

- A. Unless otherwise specified in the individual section, the Contractor shall submit three specimens of each sample.
- B. Samples shall be of adequate size to permit proper evaluation of materials. Where variations in color or in other characteristics are to be expected, samples shall show the maximum range of variation. Materials exceeding the variation of approved samples will not be approved on the Work.

- C. Samples of items of interior finishes shall be submitted all at once to permit a coordinated selection of colors and finishes.
- D. Samples which can be conveniently mailed shall be sent directly to the Designer, accompanied by a transmittal notice. All transmittals shall be stamped with the Contractor's approval stamp of the material submitted.
- E. All other samples shall be delivered at the field office of the Project Representative with sample identification tag attached and properly filled in. Transmittal notice of samples so delivered with the Contractor's stamp of approval shall be mailed to the Architect.
- F. If a sample is rejected by the Architect, a new sample shall be resubmitted in the manner specified hereinabove. This procedure shall be repeated until the sample is approved by the Architect.
- G. Samples will not be returned unless return is requested at the time of submission. The right is reserved to require submission of samples whether or not particular mention is made in the specifications, at no additional cost to DCAM.
- H. Samples shall not be installed as part of the work.
- I. Provide color and finish samples of every item to be installed.

#### 1.08 CONSTRUCTION SCHEDULE

- A. The Proposed Construction Schedule shall be based on an orderly progression of the work, allowing adequate time for each operation, and leading to a reasonable certainty of Substantial Completion by the date established in the Agreement. The Proposed Construction Schedule will be reviewed by the Owner/Architect for compliance with the requirements of this Article and will be accepted or returned to the Contractor for revision and resubmittal. Unless specifically required by law, no payment under this Contract shall be due until the Proposed Construction Schedule has been approved by the Owner/Architect.
- B. The Proposed Construction Schedule in **critical path method form** which shall include the following with such other details as Owner/Architect may require:
  - 1. Indicate complete sequence of construction by activity, with dates for beginning and completion of each element and stage of construction.
  - 2. Identify each item by major Specification Section number.
  - 3. Submittal and Approval Dates for all Shop Drawings and Samples.



4. A chart showing Critical Delivery Dates for Material and Equipment to be incorporated into the Work.
  5. Provide sub-schedules to define critical portions of entire Schedule.
  6. Coordinate content with Schedule of Values and provide the cost of each activity as identified in the Construction Schedule.
- C. During the progress of the Work, any changes in the original schedule desired by the General Contractor which affect Contract completion dates shall be approved by the Owner before being put into effect.
- D. When changes in the Work are required, the original Proposed Construction Schedule shall be revised without delay to incorporate such changes or new work and indicate the effect hereof on the Project as a whole.
- E. Provide updated critical path method (CPM) chart each month. Submit chart for review with Contractor's Application for Payment.

#### 1.09 SCHEDULE OF VALUES

- A. Prior to the first request for payment, the General Contractor shall submit to the Architect and Owner, a Schedule of Values of the various portions of the work in sufficient detail to reflect various major components of each trade, including quantities when requested, aggregating the total contract sum, and divided so as to facilitate payments for work under each Section in accordance with Article VII of the Contract Form. The Schedule shall be prepared in such form as specified or as the Architect or Owner may approve, and it shall include data to substantial its accuracy. Each item in the Schedule of Values shall include its proper share of overhead and profit in this schedule, including breakdown of values, requires the approval of the Architect and Owner and shall be used only as a basis for the Contractor's request for payment.

#### 1.10 MANUFACTURER'S INSTRUCTIONS

- A. Submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for all products.
- B. All work shall comply with the "manufacturer's recommendations".

#### 1.11 CERTIFICATES OF COMPLIANCE

- A. Submit certificates of compliance together with the associated Shop Drawings, Product Data and Samples required for the Product.

- B. Submit on 8-1/2 in. x 11 in. white paper.
- C. Submit one copy.
- D. The Architect will retain the certificates of compliance; no approval reply is intended.

#### 1.12 PATTERNS AND COLORS

- A. Submit accurate color charts and pattern charts to the Architect for his/her review and selection whenever a choice of color or pattern is available in a specified product, unless the exact color and pattern of a product are indicated in the Contract Documents. Submit actual cured samples of all materials for color approval.

#### 1.13 RECORD DRAWINGS

- A. At the completion of the project, the Contractor shall prepare a complete set of reproducible record drawings and AutoCAD Files, latest version on compact discs showing all systems as actually installed.

#### 1.14 SUBMITTAL TRANSMITTAL FORM

- A. All submittals shall be presented with the submittal transmittal form attached, completely filled out. Submittals without the attached form will be returned without review.

END OF SECTION

# SUBMITTAL TRANSMITTAL

From:

(Contractor's Company Information)

To:

SOCOTEC AE Consulting, LLC  
250 Dorchester Ave.  
Boston, MA 02127

Project: \_\_\_\_\_

Contractor's Project #: \_\_\_\_\_

Architect's Project #: \_\_\_\_\_

C.C.: \_\_\_\_\_

Date: \_\_\_\_\_

Submittal  
Number: \_\_\_\_\_

We are sending for your  Approval  Review the following items:

Specification Number:    Specification Title: \_\_\_\_\_

Subcontractor/Supplier: \_\_\_\_\_

	Copies:	Date:	Description	Size:
Product Data Sheet				
MSDS Sheets				
Shop Drawings				
Warranties				
Qualifications				
Samples				

Deviations from Contract Documents: \_\_\_\_\_

Designer's Stamp

Contractor's Stamp



**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 35 13**

**SPECIAL PROJECT PROCEDURES**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 BIDDERS EXAMINATION AND INSPECTION OF EXISTING BUILDING AND SITE

- A. All bidders must inspect the existing site and make their own assessment of the work required to achieve the complete, finished conditions specified in the Contract Documents.
- B. Failure to adequately inspect the site and/or correctly assess existing conditions shall not be cause for additional payment.
- C. Every contractor will be bound by the scope of work of the Contract Documents and shall make the inspections necessary to assure that the bid price includes the complete scope.

1.03 HOURS OF WORK

- A. Work may be performed Monday – Friday, from 7:00AM to 5:00PM. Work may be allowed on Saturdays and/or Sundays with prior approval by the Town of Hull.

- B. The contractor shall be completely and fully responsible for the security and safety of the job site at all times.

#### 1.04 CONTRACTOR USE OF THE BUILDINGS, ACCESSIBILITY AND SCHEDULES FOR WORK

- A. The work of the Contractor and all Subcontractors shall be performed during the hours of operation as specified herein and in and around areas of the building. The Contractor shall execute the Work with the least possible disturbance to the use and continuous functioning of the adjacent sites and buildings. The Contractor and each Subcontractor take all necessary measures to assure the safety of the general public. The General Contractor is solely responsible for safety on the job site including securing and making safe all construction areas during construction hours as well as during non-construction hours.
- B. Schedule of Work and Site Use
  1. The Contractor shall schedule the work of this Contract so as to perform and complete the Work of the Contract according to the following schedule. The Contractor shall within seven (7) days of the Notice of Contract Award, submit a schedule to the Owner and Architect for review.
  2. Between the time period of the general bid due date and Construction Commencement, the Contractor shall take all necessary preliminary measures to complete the Work of this Contract. It is expected that the Contractor utilize the time period between the bid date and construction start date to schedule and coordinate the work and work sequence, prepare shop drawings and submittals for approval and order materials. If the work is not complete by the completion date, the Contractor will be subject to liquidated damages.
  3. The Contractor shall be responsible for providing any and all measures and/or temporary construction required to control the transmission of dust, particles, and fumes from construction activities.
  4. The Contractor shall be responsible on a daily basis for informing the designated Owner's representative of all persons on-site that day associated with the Work. The Contractor shall establish a daily reporting system of all activities which is acceptable to the Owner.
  5. The Construction schedule shall indicate the dates for start and completion of each work item or task required with all milestones using a Bar Chart subject to approval by the Architect.
  6. The Awarding Authority's review of the project construction schedule shall not extend to the accuracy or other matters dealt with in the schedule,

including but not limited to whether work is omitted, whether duration of activity is reasonable, the level of labor, materials or equipment, the Contractor's means, methods, techniques, procedures or sequence of construction, or whether the sequence and timing for work remaining are practical. The accuracy, correctness of all work, sequencing, and schedules shall remain the sole responsibility of the Contractor. Neither the Awarding Authority's review of a schedule nor a statement of resubmittal not required shall relieve the Contractor for the responsibility for complying with the contract schedule, adhering to sequences of work, or from completing any omitted work with the Contract Time.

7. The Contractor shall provide, erect and maintain barricades with any required egress, access doors, lighting, ventilation, guard rails and all other appurtenances required to protect the general public, visitors, staff, and workers while construction is in progress. Safety is the sole responsibility of the Contractor on the job site.
8. Provide 6'-0" tall min. chain link fencing around all materials, equipment, and activities on site.

#### 1.05 HOUSEKEEPING AND PROTECTION OF EXISTING CONDITIONS

- A. Maintain the premises in a safe, orderly condition at all times. Protect construction, furnishings, equipment and other items.
- B. All routes for equipment and material delivery shall be coordinated in advance with the City.
- C. Property Protection: The General Contractor shall take all measures necessary to protect the Owner's property.
- D. Security: The General Contractor shall take every possible precaution to maintain the security of the buildings and site. The Contractor shall cooperate with the Owner fully and follow the Owner's directions as issued. The Contractor shall control and restrict access to areas of work to prevent injury to persons and property.
- E. The Contractor shall properly cover, protect and maintain floor and finished surfaces to prevent damage. Replace protective coverings which become wet, torn or ineffective.
- F. Roof and Finished Surfaces Protection:
  1. The Contractor shall restrict traffic on roofs and finished surfaces to that required to perform the work of this Contract and permit traffic only required to properly complete the Work.

2. Effectively protect surfaces to prevent damages to existing substrates, new finishes, and to finished roofing work. Provide temporary walkways and work platforms as needed.
3. Load distribution: The Contractor and any Subcontractor shall not load or permit any part of the structure to be loaded in any manner that will damage the existing structure or endanger the safety of persons or property. Such loads shall include live and dead loads and all moving, vibratory, temporary and impact loads.

G. Correction by the Contractor

1. At no additional cost to the Owner, the General Contractor shall immediately correct all deficiencies, including damages to the building, site and site surfaces, damages to furnishings, damages to equipment or systems, damage to adjacent properties, and all other damage caused by the General Contractor or its Subcontractors during the execution of the Work of this Contract. Any and all damages resulting from inadequate, insufficient or defective temporary protections installed by the Contractor during the work of this Contract, shall be corrected by the General Contractor at no additional cost to the Owner.

1.06 REQUIREMENTS RELATED TO BUILDING USERS' FURNISHINGS, EQUIPMENT AND OTHER ITEMS

- A. The General Contractor is responsible for protecting all furnishings, equipment and items from damage (including construction generated dust) during the entire construction period.
- B. The General Contractor shall be responsible for moving and re-setting up all furniture, fixed and movable equipment, file and storage cabinets, recreation equipment, boxes, and all other items to accomplish the work of both the General Contractor and the Subcontractors in its entirety.

1.07 DUST, DIRT, AND FUME CONTROL

- A. The Contractor shall take all necessary precautions and provide all necessary temporary construction to effectively contain dust, dirt and fumes within the areas of work and within the work limits. Temporary construction shall be provided to effectively prevent dust and dirt from entering areas of the buildings or adjacent buildings, satisfying all City, State and Federal laws, codes, and requirements.

1.08 RUBBISH REMOVAL

- A. The Contractor shall remove all rubbish, waste, tools, equipment and appurtenances caused by and used in the execution of the Work; but this shall in



no way be construed to relieve the Contractor of his primary responsibility for maintaining the building and Project site clean and free of debris, leaving all work in a clean condition and satisfactory to the Official.

- B. Immediately after unpacking, the Contractor shall collect and remove from the building and Project site all packing materials, case lumber, excelsior, wrapping and other rubbish.
- C. Rubbish removal shall occur daily as there is no location on site for placement of a dumpster.

#### 1.09 SITE DRAINAGE AND PUMPING

- A. The Contractor shall be responsible at all times for proper and sufficient site drainage and shall maintain such drainage during the life of the Contract in a manner acceptable to the Owner and so as not to adversely affect the adjacent areas or adjacent properties.
- B. The Contractor shall provide and maintain all pumps, suction and discharge lines, and power in sufficient number and capacity to keep all excavations, pits, trenches, foundations and the entire property area free from accumulation of water from any source whatsoever at all times and under way and all circumstances and contingencies that may arise.

#### 1.10 SNOW AND ICE REMOVAL

- A. The Contractor shall promptly remove all snow and ice which may impede the work, damage the finishes or materials, be detrimental to all/any crafts or trade, or impede trucking, delivery or moving of materials at the site, or prevent adequate drainage of the site or adjoining areas.

#### 1.11 WINTER CONSTRUCTION

- A. The Contractor shall provide protection against damage to materials and work installed in freezing weather, including special heat and coverings to prevent damage by the elements. Therefore, the Contractor is completely responsible for any and all winter conditions protection, including but not limited to: The ground surface, under footings, under pipe lines, under masonry, under concrete, and other work subject to damage shall be protected against freezing or ice formations and to provide proper temperatures required for the various repair and construction activities.
- B. Refer to SECTION 01 50 00 --TEMPORARY FACILITIES, for additional requirements applicable to winter construction.

#### 1.12 BROKEN GLASS

- A. The Contractor shall be held responsible at all times prior to Substantial Completion of the Work, or occupancy by the City, whichever occurs first, for all broken or scratched glass, or glass which had been damaged as a result of the Work, or otherwise. And, when so directed by the Official, the Contractor shall replace at no increase in Contract Price or Contract Time, all such glass broken, missing, or damaged prior to Substantial Completion.

#### 1.13 CLEANING AND POLISHING

- A. The Contractor shall at all times keep the building and Project site free from accumulation of waste materials or rubbish.
- B. Immediately prior to final inspection, the entire building and surrounding Project areas shall be thoroughly cleaned by the Contractor including, without limitation:
1. All construction facilities, tools, equipment, surplus materials, debris and rubbish shall be removed from the Project site and the entire Work shall be left broom clean.
  2. All finished surfaces shall be left in perfect condition, free of stains, spots, marks, dirt, and other defects. The Contractor shall be responsible for the cleaning and polishing of the Work of all trades, whether or not cleaning by such trades is included in their respective Selection of the Specifications.
  3. All glass in the building shall be washed and polished on both sides.
  4. All metals, hardware, fixtures, and equipment shall be left in undamaged, bright, polished condition.
  5. Plenums, duct spaces and furred spaces shall be protected at all times from fumes, particles and other air-borne construction effects. These building spaces shall be left clean of debris and decayable materials.
  6. Equipment and building systems located in areas of construction shall be cleaned and tested and made perfectly operational to the satisfaction of the Owner prior to Substantial Completion or partial Substantial Completion of that area of work.
- C. In cleaning items having manufacturer's finish, or items previously finished by a Subcontractor, care shall be taken not to damage such finish. In cleaning glass and finish surfaces, care shall be taken not to use cleaning agents which may stain or damage any finish materials. Any damage to finishes caused by cleaning

operations shall be corrected and repaired by the Contractor at no increase in Contract Price.

#### 1.14 OR-EQUAL

- A. Where materials, equipment, apparatus, or other products are specified by Manufacturer, brand name, type or catalog number, such designation is to establish standards or performance, quality, type and style.
- B. If the General or Subcontractor wishes to use materials or equipment other than these specifically designated herein, as being equal to those so specifically designated, he shall submit the proposed substitution before purchasing and/or fabrication in accordance with the requirement of the General Conditions for approval.
- C. It is the responsibility of the Contractor to submit all back-up material and data needed to prove that the proposed product is an “or-equal”. The Architect will not review an alternative product without proper documentation. Alternative products and assemblies will be rejected immediately without proper documentation.
- D. The schedule of the project is not subject to the availability of products submitted as “or approved equal” or the review and approval process needed to certify an “or approved equal” product.

#### 1.15 PERMITS AND POLICE DETAILS

- A. The contractor is responsible for procuring and paying for all applicable permits and police details throughout the entire project.

#### 1.16 COORDINATION

- A. The Contractor shall coordinate locations of all items to be installed with the Architect. If an item is not dimensioned, for height or location, contact the Architect for the installation information. Installation of items without the proper dimensional information may result in reinstallation at no additional charge by the contractor.

#### 1.17 CHANGES TO THE CONTRACT

- A. All additional work (other than work that is included as a Unit Price in the Contract) shall be subject to the following requirements:
  - 1. All change orders shall be approved in advance and in writing by the Owner. All Change Order Requests shall be brought to the attention of the Owner, Owner’s Representative and Architect’s attention in a timely

manner and with sufficient notice so as to allow for the proper review, evaluation and approval.

2. Any change order work that is performed by a Contractor or Subcontractor, without prior written authorization by the Owner, shall be at the Contractor's sole risk and approval or payment of said work may be denied or withheld by the Owner at their sole discretion.
3. Subcontractors shall be allowed 10% Overhead and 5% Profit; both shall be calculated based on the subtotal of all labor, materials and equipment and Profit shall not be applied to the Overhead mark up. Subcontractors shall not be entitled to apply the costs of bonds.
4. The General Contractor shall be allowed 10% Overhead and 5% Profit; both shall be calculated based on the subtotal of all labor, materials, equipment and the Subtotal (before Overhead and Profit are applied) to the work of Subcontractors; General Contractor's Profit shall not be applied to the General Contractor's Overhead. Bond costs shall be applied to the Subtotal, including all mark ups for Overhead and Profit. All bond costs in excess of 2% shall be subject to verification by the Owner, provided by the General Contractor in a format acceptable to the Owner and may include, but not be limited to, a letter from the General Contractor's Bond Agent.
5. All costs for Labor Burden in excess of 25% shall be subject to verification by the Owner, in a format acceptable to the Owner.
6. Project Management, Supervision and General Conditions costs (including but not limited to temporary facilities, temporary site protections, utility costs, temporary toilets, etc.) shall not be applied to change orders unless the work of said change order is required to be performed outside the anticipated contract duration, normal work hours, or in special circumstances approved in advance by the Owner.
7. Overtime pay shall not be included in change orders, unless approved in writing in advance by the Owner and, in such cases, shall apply only to hours worked in excess of 40 hours per week, not 8 hours per day. All overtime rates shall be calculated at one and one half times the base rate of pay (not including fringe benefits), and shall be subject to prior written approval by the Owner. Overtime shall not be applied for Project Management or Supervision staff.
8. Change order rates of pay for workers shall be based on the, then current, prevailing wage rate for the classification of work required to complete the work of the change order, not an actual rate of pay (if higher than the then

current prevailing wage rate), unless otherwise approved in advance in writing, by the Owner.

9. The Owner reserves the right to evaluate all change order pricing utilizing the approved Schedule of Values for the project, prior billings, prior approved Change Orders, or any other method deemed appropriate by the Owner.
  10. All change order requests shall include such sufficient breakdown and back up, as determined by the Owner and Architect, to be evaluated by the Owner and Architect including, but not limited to, number of man hours, rates of pay per classification and/or trade, current quotes or invoices for materials and current quotes or invoices for equipment; this shall apply to the General Contractor and all Filed Sub-subcontractors, subcontractors and sub-subcontractors.
  11. All change order requests that include a request for additional time to the contract duration shall be accompanied by an updated Critical Path Schedule clearly indicating the impact of the work on the critical path of the overall project. A reservation of rights by the General Contractor to later request additional time will not be approved except in circumstances specifically approved by the Owner in writing. Delays in the work caused by not providing timely pricing or pricing that is not in an acceptable will not be considered as justification of a time extension request.
  12. All Time and Materials work shall be approved in advance in writing by the Owner and shall be subject to verification by the Owner, Architect or Owner's On-Site Representative. Any Time and Materials work that is concealed without the verification of the Owner, Architect or Owner's On-Site Representative, is at the Contractor's risk and, if requested by the Owner, shall be uncovered for visual observation and verification at no additional cost to the Owner.
- B. The Owner reserves the right to waive any of the above requirements, on a case by case situation; the Owner's right to waive one or more of the above requirements shall not be construed as precedent for subsequent change order requests.

#### 1.18 GENERAL NOTES

- A. Contractor shall be responsible for checking and coordinating all dimensions with architectural drawings. In case of conflict, the architect shall be notified and shall resolve the conflict.
- B. In any case of conflict between the drawings and the project specifications, the more stringent requirements shall govern.

- C. The contractor shall make no deviation from design drawings without prior review by the architect.
- D. Work not indicated on a part of the drawings but reasonably implied to be similar to that shown at corresponding places shall be repeated.
- E. All work shall comply with applicable codes and local laws and regulations.
- F. General contractor shall coordinate locations of openings, pits, boxes, sumps, trenches, sleeves, depressions, grooves, and chamfers, with mechanical, electrical and plumbing trades.
- G. The structural design of the building is based on the full interaction of all its component parts. No provisions have been made for conditions occurring during construction. It is the sole responsibility of the contractor to make proper and adequate provisions for stability of, and all stresses to the structure due to any cause during construction.
- H. Contractor shall not scale drawings. Contractor shall request all dimensions or information required to perform the work from the architect. Work completed by the contractor without dimensions or information shall be done at their own risk and, if deemed incorrect by the architect, shall be removed and reinstalled to the specifications of the architect at no additional cost to the owner.
- I. Codes: the project is based on the requirements of the Massachusetts State Building Code – Ninth Edition.
- J. The plans were compiled from various sources. The contractor is responsible for verifying all existing conditions and dimensions.

#### 1.19 INSURANCE

- A. The Contractor shall purchase and maintain, at his expense all insurance required by the Contract. Documents and all insurance required by the applicable laws of Massachusetts, including but not limited to, General Laws, Chapter 146, in connection with all hoisting equipment.
- B. For all the insurance limit requirements, refer to Article 13 in the *Contract of Construction Services and General Conditions*.
- C. The Contractor shall purchase and maintain such insurance as will protect him from claims under workmen's compensation acts and from claims for damages because of bodily injury, including death and all property damage including, without limitation, damage to buildings and adjoining the site of construction which might arise from and during operations under this contract, whether such

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SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
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Fax: (617) 464-2971

operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them.

- D. Town of Hull and SOCOTEC AE Consulting, LLC shall be listed as Additional Insured with a Waiver of Subrogation on the insurance policy for this project.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION





**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 40 00**

**CONDUCT OF THE WORK**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 PROJECT MANAGEMENT

- A. The Contractor's attention is directed to the General Conditions.
- B. The Building will be occupied during construction. The Contractor will have complete control of the job site and is solely responsible for safety and security on the job site. The Contractor shall take all necessary precautions to ensure the public safety and convenience of the visitors during construction.
- C. The work must be completed in a continuous uninterrupted operation. The Contractor must use sufficient personnel and adequate equipment to complete all the necessary work requirements within a minimum period of time.
- D. The Contractor is responsible for the security and stability of partially completed work until the project is accepted by the Owner.

1.03 SHUTDOWN OF SERVICES

- A. If site utility services to the neighborhood are cut by the contractor, he shall supply all labor, materials or whatever may be required to supply said temporary utility

services at no extra cost to the neighborhood and in accordance with the state and local regulations on health and safety, working around the clock, until they are reinstated. The contractor shall also repair the damaged utility immediately at no cost to the owner.

#### 1.04 COORDINATION

- A. The Contractor shall submit for approval to the Owner a detailed operational plan showing the sequence of operations prior to commencement of any work at the site. Any changes to this operational plan must be approved by the Owner.
- B. The Contractor must retain on the Work during its progress a competent full time representative, satisfactory to the Owner. This representative shall not be changed, except with the consent of the Owner. The representative shall be in full charge of the work and all instructions given to this person by the Architect shall be binding.
- C. The Contractor must supply to the Owner the cell telephone number of a responsible person who may be contacted during non-work-hours for emergencies on the Project.

#### 1.05 OWNER'S COOPERATION

- A. The Owner shall assist the Contractor to perform the Work in accordance with the approved operational plan.
- B. The Contractor shall provide:
  - 1. Notification to the Owner two (2) weeks before any work is scheduled at the site/building.
  - 2. An updated schedule monthly with the application for payment. Payments will not be authorized until the updated schedule is received and approved.

END OF SECTION

**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 42 00**

**DEFINITIONS & STANDARDS**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that the equipment to be furnished complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 DELIVERY AND STORAGE

- A. Materials shall be delivered dry, in their original, unopened containers, clearly labeled with manufacturer's name, brand name, and such identifying numbers as are appropriate. Materials shall be stored as required by the Manufacturer's specifications.
  - 1. All materials shall be stored flat, or in the case of rolls, standing on end, elevated from the ground or deck, and protected with approved waterproof covers to keep the materials dry and protected from sunlight and moisture, and ventilated to prevent excessive temperature.
  - 2. Flammable materials shall be stored in a cool, dry area away from sparks and open flames.
  - 3. Damaged or deteriorated materials shall not be used and shall be removed from the job site.
  - 4. All cardboard containers shall be stored in dry areas or on pallets. Packing materials shall be collected so as not to blow around the site.

5. All materials shall be stored in temperatures specified by the manufacturer. Submit proposed storage arrangements regarding temperature to the Architect and the materials manufacturer for review.
6. All firestopping shall be performed by each respective trade.

#### 1.03 JOB CONDITIONS

- A. Do not deliver to site or install any material or system that has not been approved. Materials installed without approval may be required to be removed and replaced at no additional cost to the owner.
- B. Materials which have a temperature other than the application temperature of the manufacturer shall not be applied.
- C. All materials shall be installed according to manufacturer's specifications and shall be compatible with the existing materials used on site.
- D. Remove only as much existing roofing as can be replaced and made weathertight each day, including all flashing work.
- E. All surfaces to receive the new materials shall be thoroughly dry. Should surface moisture such as dew exist, the Contractor shall provide the necessary equipment to dry the surface prior to application.

#### 1.04 CONDITIONS, DIMENSIONS AND QUANTITIES

- A. All conditions, dimensions and quantities shall be determined or verified by the Contractor. The Plans and details have been compiled from various sources and may not reflect the actual condition at the moment of construction. The Contractor is cautioned to take all precautions and make all investigations necessary to install the proposed work. The Owner will not consider unfamiliarity with the job conditions as a basis for additional compensation.

#### 1.05 DEFINITION OF "CONSULTANT"

- A. Any reference to "Designer", "Engineer" or "Architect" in this Project Manual, Specification or on the drawings shall refer to SOCOTEC AE Consulting, LLC, 250 Dorchester Avenue, Boston, Massachusetts 02127, (617) 268-8977, Stephen McDermott, Project Manager or Wayne Lawson, Project Structural Engineer/ Principal-in-Charge.

#### 1.06 DEFINITION OF "OWNER"

- A. Any reference to the Owner shall be the Town of Hull.

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#### 1.07 MINIMUM REQUIREMENTS

- A. It is the intent of these contract documents to, in some cases, exceed the minimum requirements of the manufacturer. The new work shall be bid and installed as detailed.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION



**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 45 00**

**QUALITY CONTROL**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that the equipment to be furnished complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 PULL-OUT TESTS

- A. The Contractor shall perform pull-out tests to determine the length and type of fastener required to provide adequate withdrawal resistance from every substrate.
- B. A minimum of two pull out tests shall be performed per section to be fastened. More tests shall be performed if required by the structural engineer or the material manufacturer.
- C. Submit a report from the fastener supplier and the product manufacturer describing the pull out tests, the recommend fasteners, and that they are covered under the warranty.

1.03 INSPECTION AND TESTING

- A. An independent inspector and/or testing laboratory may be engaged and paid for by the Owner to perform the inspection and testing of the new work.
- B. The Contractor shall cooperate with the inspector and/or testing laboratory, furnish materials and labor as may be required and provide for convenient access to all parts of the work for purposes of inspection and testing.

- C. The Contractor shall accept as final the results of all such inspection and testing.
- D. The inspector shall have the authority to delay the commencement of work, or to stop the work at any time, for any reason which he deems necessary.
- E. The inspector and/or testing laboratory reserves the right to require the Contractor to perform removal of materials installed by the Contractor. Make all cuts in accordance with the recognized standard practices. Remove materials only in the presence of the inspector.
  - 1. Immediately after removing each material sample identify each by number and exact location by gummed label attached to a smooth surface of the cut sample.
  - 2. Submit the cut samples directly to the inspector after applying identification.
  - 3. Replace the cut with new materials, matching those removed, immediately after each removal, and insure that the replacement is completely watertight.
- F. The removal cuts shall be subjected to various tests, including moisture content, density, thickness, compressive strength, composition, conformance with ASTM specifications where applicable, conformance with the recommendations of the manufacturers whose materials were used.
- G. Bear all costs for tests where materials or systems have been found unacceptable and all costs for replacement required due to such unacceptability.
- H. If any replacement work is required, such work will also be subject to the terms of this SPECIFICATION.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION



**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 50 00**

**TEMPORARY FACILITIES**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that the equipment to be furnished complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 GENERAL

- A. The Contractor shall be responsible for providing and maintaining all temporary facilities until Substantial Completion. Removal of such prior to Substantial Completion must be with the concurrence of the Architect. The Contractor bears full responsibility for re-providing any facility removed prior to Substantial Completion
- B. Removal of all temporary facilities shall be a condition precedent to Substantial Completion unless directed otherwise by the Architect or specifically noted in the specifications.
- C. The Contractor must comply with all safety laws and regulations of the Commonwealth of Massachusetts, the United States Government, and local government agencies applicable to Work under this contract. The Contractor's attention is directed to the Commonwealth of Massachusetts, Department of Labor and Industries Regulation 454 CMR.
- D. Safety is the sole responsibility of the contractor on the job site. Contractor is notified that the building will NOT be occupied during construction. The Architect does not have control of the job site or means and methods in any way.

### 1.03 TEMPORARY TELEPHONES

- A. No telephone service will be provided by the Owner.
- B. Provide 24-hour emergency phone numbers for the Contractor's Project Manager and Superintendent.

### 1.04 TEMPORARY TOILETS

- A. Portable, temporary toilets shall be provided by the contractor and shall be located as directed by the owner.
- B. The Contractor:
  - 1. Assumes full responsibility for the use of the temporary toilets
  - 2. Pays all costs for operation, maintenance and cleaning.
- C. The Contractor shall not have use of sanitary toilet facilities within the building and must provide portable sanitary toilets for the use of their forces for the entire duration of the work. Toilets shall be cleaned and emptied twice weekly (minimum) and as directed by the Owner.

### 1.05 TEMPORARY CONSTRUCTION FENCE

- A. The Contractor shall be responsible for providing and maintaining temporary fencing and barricades around the construction as may be necessary to assure the safety of all persons authorized or unauthorized. Such protective measures shall also be located and constructed as required by local, state, and federal ordinances, laws, codes, or regulations.

### 1.06 TEMPORARY STRUCTURES AND MATERIAL HANDLING

- A. The Contractor shall provide such secure storage sheds, temporary buildings, or trailers as required for the performance of the Contract.
- B. Materials shall be handled, stored, installed, cleaned, and protected in accordance with the best practice in the industry and, except where otherwise specified in the Contract Documents, in accordance with manufacturer's specifications and directions.
- C. The Contractor must obtain the permission of the Owner for the placement of any storage facilities on site, and the Owner assumes no responsibility for articles stored.

### 1.07 TEMPORARY STAGING, STAIRS, CHUTES

- A. The General Contractor shall provide hoisting and staging/vertical access to perform their own work and for all areas above 8'-0" in height above grade for all filed sub-bidders. Below 8'-0", each filed sub-bidder shall be responsible for all hoisting and staging/vertical access. Provide access to the Architect at any time.
- B. If the project is new construction permanent stairs shall be erected as soon as possible, for which the Contractor shall provide temporary protective treads, risers, handrails, and shaft protection.
- C. The General Contractor and each File Sub-Bidder shall furnish, install, maintain, and remove their own covered chutes from the work area. Such shall be in convenient locations and permit disposal of rubbish directly into trucks or disposal units.
- D. Debris shall not be allowed to fall freely from upper levels of the building. Materials shall not be thrown or dropped from open windows or the roof.
- E. Each individual File Sub-Bidder as well as the General Bidder shall provide any and all additional protection required to keep the building from being damaged by the staging, hoisting, or any construction work. Protect parapets and roof edges with plywood at all swing staging. Protect landscaping from mechanical lifts. Cover and protect all roof surfaces with plywood as well.

#### 1.08 HOISTING FACILITIES

- A. Except as otherwise specified, the General Contractor each File Sub-Bidder shall provide, operate, and remove their own material hoists, cranes, and other hoisting as required for the performance of the Work.

#### 1.09 UTILITIES – (Need to review with town).

- A. The contractor will be able to use without charge, electrical power and water. It is the responsibility of the Contractor to make provisions to extend the utility from the nearest service outlet designated by the Owner to the point of use. Any misuse will be cause for discontinuance of the utility whereupon the Contractor shall provide the service at his/her own expense. Electrical energy shall not be used for temporary heating purposes. Do not include any cost for use of electric power or water that may be supplied by the Owner in the Basic Construction Proposal. All work shall comply with all applicable codes as well as OSHA requirements.

#### 1.10 TEMPORARY WATER

- A. The Contractor may make use of the available water supply at the site for construction purposes, provided the permission of the Owner is obtained beforehand and only as long as the water is not used wastefully.

- B. The Contractor shall provide all necessary piping and hoses to utilize the available sources of water.
- C. The Contractor shall provide an adequate supply of cool drinking water with individual drinking cups for personnel on the job.

#### 1.11 TEMPORARY ELECTRICITY

- A. The Contractor may make use of the electricity available at the site, metered and paid for by the Owner, provided that the Contractor shall supply proper adapters and extension cords.
  - 1. Where heavy duty electric equipment drawing current in excess of 15 amperes is involved, the Contractor shall provide temporary service to supply the power.
  - 2. The temporary electric service shall include, but not be limited to labor, materials, and equipment necessary to supply temporary power of adequate capacity for the project.
  - 3. Transformers and meters, when required by the power company, will be furnished by the power company and the contractor shall pay the costs thereof.
- B. Temporary electrical Work shall be performed under the direct supervision of at least one master electrician, who will be present on the project at all times when such work is being performed.
- C. The Contractor shall furnish, install, and maintain lamps in operating condition. The Contractor, and each Subcontractor, shall furnish their own extension cords and additional lamps as may be required for their work. Temporary work of a special nature, not otherwise specified hereunder, shall be provided, maintained, and paid for the trade requiring same.
- D. All lamps installed in permanent lighting fixtures and used as temporary lights during the construction period shall be removed and replaced shortly before Substantial Completion by the set of lamps required to be provided under the Electrical section of the specifications.
- E. All temporary work shall be provided in conformity with the National Electric Code, State laws, and requirements of the power company. Particular attention is called to Commonwealth of Massachusetts, Department of Labor and Industries Regulation, 454 CMR.

#### 1.12 WEATHER PROTECTION

- A. The Contractor shall provide temporary enclosures and heat to permit work to be

carried on during the months of November through March in compliance with MGL c.149 §44G (d). Without limitation this includes such items as excavation, pile driving, steel erection, erection of certain exterior wall panels, masonry, sealants, waterproofing, sheet metal work, roofing, and similar operations.

- B. "Weather Protection" means the temporary protection of that Work adversely affected by moisture, wind, and cold by covering, enclosing, and/or heating. This protection shall provide adequate working areas during the months of November through March as determined by the Owner and consistent with the construction schedule to permit the continuous progress of all Work necessary to maintain an orderly and efficient sequence of construction operations. The Contractor shall furnish and install "Weather Protection" material and be responsible for all costs, including heating required to maintain a minimum of 40 degrees F. at the working surface. This provision does not supersede any specific requirements for methods of construction, curing of materials, or the applicable conditions set forth in the Contract Documents with added regard to performance obligations of the Contractor.
- C. Within 30 calendar days after award of the Contract, the Contractor shall submit in writing, to the Architect for approval, three (3) copies of the proposed methods for "Weather Protection".
- D. The Contractor shall assume the entire responsibility for weather protection during construction (until Substantial Completion) and shall be liable for any damage to any Work caused by failure to supply proper weather protection and proper ventilation.
- E. Work damaged by frost shall be removed and replaced by and at the Contractor's expense and as directed by the Architect.
- F. It is to be specifically understood that the Contractor shall do no work under any conditions deemed unsuitable by the Contractor to the execution of the Work. This provision shall not constitute any waiver, release, or lessening of the Contractor's obligation to bring the Work to Substantial Completion within the period of time set forth in the Contract Documents.

### 1.13 PROTECTION

- A. Weather protection shall be provided for; weather conditions occurring or anticipated, the extent of the existing structure exposed, or any other possible hazard. Remove only as much roofing and sealant as can be completely replaced and made watertight in one day.
- B. Dust control, pedestrian protection, and traffic control measures shall be provided during the course of the work.

- C. Schedule and execute all work without exposing the sensitive building areas to the effects of inclement weather. Protect the existing structure and its contents against all risks, and repair or replace all damage to the Owner's satisfaction. Protect all exterior building surfaces, roofing, lighting, landscape areas, and pavement from damage.
- D. All new and temporary construction, including equipment and accessories, shall be secured from wind damage or blow-off.
- E. The Contractor shall provide all necessary temporary protection and barriers to segregate the work area and to prevent damage to adjacent areas. Also provide plywood protection for roofing adjacent to construction. Areas damaged because of inadequate protection will be repaired at no additional cost to the owner, as per these specifications and the recommendations of the Architect.
- F. Provide temporary barricades and other forms of protection as required to protect Owner's personnel, students, and general public from injury due to the work.
- G. Any deteriorated substrate which is discovered shall be promptly reported to the Architect.
- H. Safety on the job site is the sole responsibility of the contractor. The Contractor shall ensure that all Local, State, Federal, OSHA or other applicable safety requirements are strictly accorded to. All OSHA safety requirements regarding items such as scaffolding, temporary protections, lift trucks, cranes, removal of debris, dust control, cleaning solvents, and high-pressure water washing, sandblasting and equipment shall be ensured by the Contractor.

#### 1.14 DEBRIS

- A. The Contractor will be responsible for the removal of all construction debris from the job site.
- B. Upon completion of each day and each phase of the work the Contractor shall leave the premises free of all debris and waste, in broom-clean condition. Overnight storage of material on site will be as approved by the Owner. The Contractor shall be responsible for keeping the site free of rubbish and debris, and in a neat and orderly condition at all times. The Contractor shall clean up and remove all accumulated rubbish and debris daily.
- C. The Owner's representative shall inspect the site daily. If it is determined that the site has not been cleaned of construction debris on a particular day the Contractor may be assessed \$100.00 for that day to be used to have the site cleaned by in house personnel. This shall be prepared by the Architect as a deduct change order to the contract.

- D. Debris resulting from the new work shall be placed in covered containers provided by the Contractor and legally disposed of. Burning will not be permitted on site. Dumpster locations shall be approved by the Owner.

#### 1.15 TEMPORARY NOISE AND POLLUTION CONTROL

- A. All work performed under the Contract shall conform to the requirements of Chapter 111, Sections 31C and 142D of the General Laws, Commonwealth of Massachusetts, Department of Public Health, and Metropolitan Boston Air Pollution Control District regulations.

#### 1.16 CONSTRUCTION PARKING CONTROL

- A. The Contractor shall control trucks and worker's vehicles to prevent unnecessary congestion in the neighborhood of the project. See Site Plan for allowable on site parking area.
- B. The schedule and location of all deliveries of materials must be coordinated and approved by the Owner.
- C. The garage is currently unsafe for vehicular access. Therefore, parking within the garage is prohibited. All parking will be at the direction of the Owner.

#### 1.17 TEMPORARY SITE STORAGE

- A. The Owner shall designate an area for temporary site storage on the site. All materials shall be stored in locked storage trailers or container boxes.
- B. Storage of materials will be permitted within the building but the locations of which must be coordinated in advance with the Town of Hull.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION





**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 51 00**

**PROTECTION**

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 PROTECTION OF PERSONS & PROPERTIES

- A. The site will not be occupied during construction. The contractor shall have complete control of the job site. The Contractor shall take all necessary precautions to ensure the public safety and convenience of visitors during construction. Safety is the sole responsibility of the contractor, regardless of what is set forth in this document. The architect does not have control of the job site, or means and methods, in any way.
- B. Any damage to buildings, roads, (public and private), concrete walks, bituminous concrete areas, fences, rails, lawn areas, trees, shrubbery, poles, underground utilities, etc. shall be made good by and at the Contractor's own expense, all to the satisfaction of the Owner.
- C. The Contractor shall patch, repair and/or replace all adjacent materials and surfaces damaged after the installation of new work to the complete satisfaction and at no expense to the Owner. All repair and replacement work shall match the existing in kind and appearance.

### 1.03 TEMPORARY PROTECTION

- A. The Contractor shall:
1. Protect excavations, trenches, buildings, and materials at all times from rain water, ground water, backing-up, or leakage of sewers, drains, or other piping, or from water damage of any origin. Provide all pumps, piping, coverings, and other materials and equipment as required by job conditions to accomplish this requirement.
  2. In addition to the weather protection during the months of November to March specified elsewhere, provide temporary watertight enclosures for openings in exterior walls and in roof decks when and as required to protect the Work from damage by inclement weather. Temporary enclosures shall be provided with adequate means of ventilation to prevent accumulation of moisture in the buildings.
  3. Provide temporary wood doors for exterior entrances and elsewhere when required. Permanent door enclosures shall not be used as temporary enclosures.
  4. Protect sills, jambs, and heads of openings through which materials are handled.
  5. Protect decks and slabs to receive work by other trades from any soiling which will prevent proper adhesion of subsequent Work. Decks and slabs shall be left clean and free of blemishes at the time other trades begin the application of their work.
  6. Protect concrete slabs to remain exposed and finished floors against mechanical damage, plaster droppings, oil, grease, paint, or other material which will stain the floor finish. Install and maintain adequate strips of building paper or other protection on finished floors in rooms where future Work will be done by other trades.
  7. Protect all surfaces to receive work by other trades from any soiling which will prevent proper execution of subsequent work
  8. Protect other areas, furniture, and private property of the resident and the Owner. Any areas damaged by the Contractor shall be restored to the original condition or compensated at the Contractor's expense.
- B. Roof surfaces and waterproofed surfaces shall not be subjected to traffic nor shall they be used for storage of materials. Where some activity must take place in order to carry out the Work, adequate protection must be provided.

- C. After the installation of the Work by any Subcontractor is completed, the Contractor shall be responsible for its protection and for repairing, replacing, or cleaning any such Work which has been damaged by other trades or by any other cause, so that all Work is in first class condition at the time of Substantial Completion.

#### 1.04 ACCESS

- A. The Contractor shall, at all times, leave an unobstructed way along walks and roadways, and shall maintain barriers and lights for the protection of all persons and property in all locations where materials are stored, or work is in progress.

#### 1.05 SECURITY

- A. The Contractor shall be responsible for providing all security precautions necessary to protect the Contractor's and Owner's interests.
- B. Where excavation is involved, the Contractor shall be responsible for providing continuous watchmen service as necessary, to insure adequate protection of the general public.

#### 1.06 NOISE AND DUST CONTROL

- A. The Contractor shall take special measures to protect the residents, neighbors, and general public from noise, dust, and other disturbances by:
  - 1. Keeping common pedestrian and vehicular circulation areas clean and unobstructed;
  - 2. Insulating work area from occupied portions as far as possible; and
  - 3. Sealing dust and fumes from contaminating occupied spaces.

#### 1.07 FIRE PROTECTION

- A. The Contractor shall take necessary precautions to insure against fire during construction. The Contractor shall be responsible to insure that the area within contract limits is kept orderly and clean and that combustible rubbish and construction debris is promptly removed from the site.
- B. Installation of equipment suitable for fire protection shall be done as soon as possible after commencement of the Work. The Contractor's attention is directed to the requirements of the Commonwealth of Massachusetts, Department of Labor and Workforce Development Regulation 454 CMR.

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1.08 WIND PROTECTION

- A. Should high wind warnings be issued by the U.S. Weather Bureau, the Contractor shall take every precaution to minimize danger to persons, to the Work, and to the adjacent property.

1.09 WEATHER PROTECTION

- A. The Contractor shall provide Weather Protection as required by Specification Section 015000 Temporary Facilities and any other specific requirements of the Contract Documents.

END OF SECTION

**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 52 00**

**CLEANING UP**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.
- E. This section supplements the General Conditions.
- F. Consult the individual sections of the specifications for cleaning of Work installed under those sections.

1.02 CLEANING DURING CONSTRUCTION

- A. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
  - 1. Do not burn or bury rubbish and waste materials on the site.
  - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
  - 3. Do not dispose of wastes into streams or waterways.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. Do not allow materials and rubbish to drop free or be thrown from upper floors, but remove by use of a material hoist or rubbish chutes.

- D. Maintain the Site free from accumulations of waste, debris, and rubbish.
- E. Provide on-site containers for collection of waste materials and rubbish.
- F. At the end of each day, remove and legally dispose waste materials and rubbish from site.
- G. Disposal of materials shall be in compliance with all applicable laws, ordinances, codes, and by-laws.

### 1.03 FINAL CLEANING

- A. Prior to submitting a request to the Architect to certify Substantial Completion of the Work, the Contractor shall inspect all interior and exterior spaces and verify that all waste materials, rubbish, tools, equipment, machinery, and surplus materials have been removed, and that all sight-exposed surfaces are clean. Leave the Project clean and ready for occupancy.
- B. Unless otherwise specified under other sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.
- C. Cleaning shall include all surfaces, interior and exterior, which the Contractor has had access to, whether new or existing.
- D. Employ experienced workmen or professional cleaners for final cleaning.
- E. Use only cleaning materials recommended by the manufacturer of the surface to be cleaned.
- F. Use cleaning materials which will not create a hazard to health or property and which will not damage surfaces.
- G. All broken or defective glass caused by the Contractor's Work shall be replaced at the expense of the Contractor.
- H. Remove grease, mastic, adhesive, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior surfaces. This includes cleaning of the Work of all finishing trades where needed, whether or not cleaning by such trades is included in their respective specifications.
- I. Clean and polish all new and existing glass and plastic glazing (if any) throughout the building(s), on both sides. Clean plastic glazing in accordance with the manufacturer's directions. This cleaning shall be completed by qualified window cleaners at the expense of the Contractor just prior to acceptance of the Work.
- J. Wash and polish all mirrors.

- K. Repair, patch, and touch up marred surfaces to the specified finish, to match adjacent surfaces.
- L. Polish glossy surfaces to a clear shine.
- M. Do the final cleaning of resilient floors and wood floors as specified under the respective sections of the Specifications.
- N. Leave all architectural metals, hardware, and fixtures in undamaged, polished conditions.
- O. Leave pipe and duct spaces, plenums, furred spaces and the like clean of debris and decayable materials.
- P. In cleaning items with manufacturer's finish or items previously finished by a Subcontractor, care shall be taken not to damage such manufacturer's or Subcontractor's finish. In cleaning glass and finish surfaces, care shall be taken not to use detergents or other cleaning agents which may stain adjoining finish surfaces. Any damage to finishes caused by cleaning operations shall be repaired at the Contractor's expense.
- Q. Broom clean exposed concrete surfaces and paved surfaces. Rake clean other surfaces of grounds.
- R. Ventilating systems - Replace filters and clean ducts, blowers, and coils if units were operated during construction.
- S. Owner's responsibility for cleaning commences at Substantial Completion.

END OF SECTION





**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 70 00**

**PROJECT CLOSEOUT**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that the equipment to be furnished be complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 COMPLETION OF WORK

- A. The site shall be cleaned of all debris resulting from the work and areas damaged during the course of the work restored to the satisfaction of the architect and the Owner.
- B. The Contractor shall notify the Architect and Owner that the work is completed and Project Manual requirements have been met. The Architect shall review the completed work with the Contractor within seven (7) calendar days of notification. Any deficiencies observed at the time will be conveyed directly to the Contractor with a written confirmation, after which the Contractor shall correct the stated deficiencies to the satisfaction of the Architect within fourteen (14) calendar days prior to demobilization from the site.
- C. After satisfactory completion of the above, the work shall be considered complete with notification by the Architect to the Owner.
- D. The Contractor shall submit all lien waivers and warranties at this time of final payment.

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- E. All guarantees, as required in any Section of the Project Manual shall be submitted for approval prior to final payment.
- F. Contractor shall maintain and record all changes to the plans throughout the entire project and shall submit as-built drawings of the entire project prior in CAD to final payment. As-built drawings must be in electronic form on Auto-CAD – latest version.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

**DIVISION 01**

**GENERAL REQUIREMENTS**

**SECTION 01 72 00**

**SURVEYS AND RECORD DRAWINGS**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.01 RECORD DRAWINGS

- A. Record Drawings shall consist of all the Contract Drawings.
- B. From the sets of drawings furnished by the Owner, the Contractor shall reserve one set for record purposes. From this set, the Contractor shall detach and furnish, at no charge to the Subcontractors the drawings of their portion of the Work for the same purpose.
- C. The Contractor and the above Subcontractors shall keep their marked up As Built set on the site at all times and note on it in colored ink or pencil, neatly and accurately, at the end of each working day, the exact location of their work as actually installed. This shall include the location and dimensions of underground and concealed Work, and any architectural, mechanical, or electrical variations from the Contract Drawings. All changes, including those issued by Addendum, Change Order, or instructions by the Architect shall be recorded. Marked up As Built drawings shall be prepared for the entire project and include all Work, including but not limited to:

1. The location of all underground utilities and appurtenances referenced to permanent surface improvements, both horizontally and vertically at ten (10) foot intervals and at all changes of direction.
2. The location of all internal utilities and appurtunces, concealed by finish materials, including but not limited to valves, coils, dampers, vents, cleanouts, strainers, pipes, junction boxes, turning vanes, variable and constant volume boxes, ducts, traps, and maintenance devices.
  - a. The location of these, items shall be shown by offsets to structure and drawing grid lines.
  - b. The tolerance for the actual location of these items on the marked up As Built Drawings shall be plus or minus two (2) inches.
  - c. Each item shall be referenced by showing a tag number, areas served, and function on the marked up As Built drawing
- D. The Architect may periodically inspect the marked up As Built drawings at the site. The proper and current maintenance of the information required on these drawings shall be a condition precedent to approval of the monthly applications for payment.
- E. At Substantial Completion the Contractor shall submit the complete set of marked up As Built drawings to the Architect. The Contractor shall check all marked up As-Built drawings prepared by subcontractors and certify in writing on the title sheet of the drawings that they are complete and correct, prior to submission to the Architect.
- F. The Architect shall review the marked up As Built drawings and verify by letter to the Owner that the Work is complete.
- G. The Contractor may make a written request for copies of the completed Record Drawings. The Contractor shall reimburse the Owner directly for the cost of printing of any requested Record Drawings.
- H. Contractor shall maintain and record all changes to the plans throughout the entire project and shall submit as-built drawings of the entire project prior to final payment. As-built drawings must be in electronic form in CAD on Auto-CAD - latest.

END OF SECTION

**DIVISION 02**

**EXISTING CONDITIONS**

**SECTION 02 41 19**

**SELECTIVE DEMOLITION**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

- A. Provide all the Selective Demolition work required to complete the work of the contract including all the Selective Demolition work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Selective Demolition work with all the other trades for the project. Provide all demolition and disposal work to complete the Selective Demolition work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-Contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.
- B. Selective Demolition work by the General Contractor includes, but is not limited to the following:

1. Saw cut perimeter of areas of deteriorated concrete, carefully excavate, and prepare surfaces for concrete repair of existing slabs, precast elements, and structure.
  2. Prepare existing concrete for gravity fed epoxy.
  3. Remove all exterior and interior sealants noted and prepare surfaces for new sealants to be completed by Waterproofing Filed Sub-Bidder.
  4. Remove existing concrete sidewalk apron at around Tower Base.
  5. Cutting existing mortar joints to accommodate pointing shall be completed by Masonry File Sub-Bidder.
  6. Careful cutting and removal of existing individual bricks for replacement shall be completed by Masonry File Sub-Bidder.
  7. Removal, repair, and painting of existing ornamental iron fencing by Miscellaneous Metals File Sub-Bidder.
  8. Removal and replacement of existing exterior lighting by the Electrical File Sub-Bidder who will make safe.
  9. Removal of deteriorated concrete.
  10. Completely remove the existing interior concrete stair.
  11. Roofing File Sub-Bidder shall remove and replace existing 'slate roofing'.
  12. Waterproofing filed sub-bidder to remove all loose coating and prepare all exterior surfaces to install high performance coating at exterior masonry and concrete surfaces.
- C. This Section also includes the removal of Electrical systems and equipment by its Filed Subcontractor, including all disconnections, shut offs and drop to floor. The General Contractor is responsible for the disposal of all demolition waste.
- D. Related Sections include the following:
1. Section 03 30 00 "Structural Concrete"
  2. Section 03 31 10 "Concrete Repair" for concrete repairs.
  3. Section 04 21 00 "Brick Masonry Restoration"
  4. Section 05 50 00 "Metal Fabrications"
  5. Section 05 51 00 "Metal Stairs"
  6. Section 05 52 13 "Pipe and Tube Railings"
  7. Section 07 18 00 "Traffic Coatings"

8. Section 07 30 00 "Steep Slope Roofing"
9. Section 07 92 00 "Joint Sealants"
10. Section 09 90 00 "Painting"
11. Section 26 00 00 "Electrical"
12. Section 31 10 00 "Site Clearing"
13. Section 31 23 00 "Excavation and Fill for Utilities and Pavement."
14. Section 32 13 13 "Concrete Paving"

### 1.03 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

### 1.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property.
  1. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

### 1.05 PRE-DEMOLITION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site to comply with requirements in Section 01 20 00 "Project Meetings." Review methods and procedures related to selective demolition including, but not limited to, the following:
  1. Inspect and discuss condition of construction to be selectively demolished.
  2. Review structural load limitations of existing structure.
  3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  4. Review requirements of work performed by other trades that rely on substrates

exposed by selective demolition operations.

5. Review areas where existing construction is to remain and requires protection.

#### 1.06 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
  1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure safety of residents of the adjacent apartment building when near the site.
  2. Interruption of utility services. Indicate how long utility services will be interrupted.
  3. Coordination for shutoff, capping, and continuation of utility services.
  4. Locations of means of egress.
  5. Coordination of continuing occupancy of adjacent buildings.
  6. Means of protection for items to remain and items in path of waste removal from building.
- C. Predemolition Photographs or Video: Submit before Work begins.

#### 1.07 CLOSEOUT SUBMITTALS

- A. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

#### 1.08 PROJECT CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials: Hazardous materials are present in construction to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
  1. If unidentified hazardous materials are encountered during the work, do not disturb hazardous materials or items suspected of containing hazardous materials. Stop all

### **SELECTIVE DEMOLITION**



work on the project and immediately notify Architect.

- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

## PART 2 - PRODUCTS

### 2.01 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with notification, hauling and disposal regulations of authorities having jurisdiction.
  - 1. Comply with demolition notification requirements of the Massachusetts Department of Environmental Protection (MassDEP), 310 CMR 7.09, using MassDEP's BWP AQ 06 Notification Prior to Construction or Demolition form.
  - 2. Comply with waste ban regulations of the Massachusetts Department of Environmental Protection (MassDEP), 310 CMR 19.017, for disposal of asphalt pavement, brick, concrete, metal, and wood.
- B. Standards: Comply with ANSI A10.6 and NFPA 241.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify that utilities have been disconnected, capped, and made safe.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction

### **SELECTIVE DEMOLITION**

photographs.

1. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

### 3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
  1. Comply with requirements for existing services/systems interruptions specified in Section 01 01 00 "Summary."
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
  3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
    - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
    - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Comply with requirements for access and protection specified in Section 01 50 00 "Temporary Facilities."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition areas and to and from the building.
  - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00 "Temporary Facilities."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
  - 1. Strengthen or add new supports when required during progress of selective demolition.
  - 2. Safety is the sole responsibility of the Contractor.

### 3.04 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding,

- not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations. Provide Fire Watch.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly.

B. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

### 3.05 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Saw cut concrete to a depth of at least 3/4 inch at junctures with construction to remain, using power-driven saw. Carefully dislodge concrete from reinforcement at perimeter of areas being demolished, using the appropriate equipment, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

### 3.06 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property. Separate, salvage, recycle, and legally dispose of materials in accordance with the Commonwealth of Massachusetts Waste Ban, 310 CMR 19.017.
  - 1. Include cost of all transportation and disposal.
  - 2. Provide verification of all disposal trips.
  - 3. Hazardous materials are to be handled and disposed of in accordance with all State, Local, and Federal regulations.

### 3.07 CLEANING

Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION



**SECTION 02 82 13**

**ASBESTOS ABATEMENT**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Limited Hazardous Building Materials Inspection Report prepared by Fuss & O'Neill, Inc. (August 2020).
- C. Section 024100 - Selective Demolition.
- D. Section 028433 – Presumed Polychlorinated Biphenyl Removal and Disposal.
- E. Demolition Drawings prepared by SOCOTEC AE Consulting, LLC.

**1.02 SCOPE OF WORK**

- A. Work outlined in this Section includes all work necessary for the removal, packaging, transporting, and disposing of asbestos-containing materials (ACM) and asbestos-containing waste materials (ACWM) impacted during the Fort Revere Water Tower restoration project (the “Work”) to occur in Hull, Massachusetts (the “Site”).
- B. Work shall be performed by a MADLS-licensed Asbestos Contractor (the “Contractor”) with certified Asbestos Workers and Asbestos Supervisor(s). Training shall be in accordance with MADLS Regulation 454 CMR 28.00.
- C. This scope of work includes all necessary selective demolition to access ACM scheduled for abatement.

**1.03 PROJECT DESCRIPTION**

- A. The Base Bid includes removal, packaging, transporting, and disposing of ACM and ACWM, as identified herein, conducted by workers meeting the requirements of OSHA Title 29 CFR, Part 1926.1101 for Class I and II work. This shall include all necessary demolition to access ACM for abatement.
- B. Materials, as discovered outside of those listed (either above or below), will be measured and paid or credited by unit prices to be negotiated prior to commencement of the Work. The quantities are estimates only and should be field verified by the Contractor. Asbestos bulk sampling shall be conducted by the Consultant, only. At no point shall the Asbestos Contractor collect bulk samples for asbestos analysis.
- C. The following table summarizes the locations of the Base Bid work with estimated ACM quantities. Note quantities provided below are order-of-magnitude estimates only. Refer to the Demolition Drawings for specific locations.

**BASE BID - ASBESTOS**

MATERIAL TYPE	LOCATION	QUANTITY	NOTES
Window Glazing Compound	Window Systems	3 EA	1,2

EA = Each

Notes:

1. Denotes material type contains, or is presumed to contain, regulated concentrations of polychlorinated biphenyls.
2. Denotes whole-component window system removal and disposal as required for replacement including, but not limited to, frames, glazing, and all associated sealants down to bare openings.

- D. A portion of the Work may be performed in multiple mobilizations, at different periods of time, in conjunction with other trades (i.e., other trades work, demolition work, etc.).
- E. Safety Data Sheets (SDS) for chemicals to be used during the project must be submitted to the Consultant prior to chemicals being delivered to the Site.
- F. The Contractor shall be responsible for providing temporary water, power, and heat (as needed) at the Site to perform the Work. Temporary lighting within the work areas must be connected to ground-fault circuit interrupter (GFCI) power panels installed by a Commonwealth of Massachusetts-licensed electrician (permitted as required) and located outside of the work areas.

1.04 DEFINITIONS

- A. The following definitions relative to this Section (028213 - Asbestos Abatement) apply:
  1. Abatement: Procedures to control fiber release from ACM; includes removal, encapsulation, and enclosure.
  2. ACM: Asbestos-containing material(s).
  3. Air Monitoring: The process of measuring the total airborne fiber concentration of an area or a person.
  4. Amended Water: Water to which a surfactant (wetting agent) has been added.
  5. Architect: SOCOTEC AE Consulting, LLC.
  6. Asbestos: The name given to a number of naturally occurring, fibrous silicates. This includes the serpentine and the amphiboles forms, and includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, or any of these forms, which have been chemically altered.
  7. Asbestos Abatement: Any activity to control fiber release from ACM; includes removal, encapsulation, enclosure, and repair.



8. Asbestos Abatement Project: All activities, including site preparation and clean-up, associated with asbestos abatement, from the time of initial arrival of the contractor on-site through obtaining an acceptable final clearance air sampling in the abatement areas(s) and/or removal of all abated ACM from the project site, whichever is later.
9. Asbestos-Containing Waste Material (ACWM): Any friable ACM removed during a demolition/renovation project, and anything contaminated in the course of a demolition/renovation project including asbestos waste from control devices, bags or containers that previously contained asbestos, contaminated clothing, materials used to enclose the work area during the demolition/renovation operation, and demolition/renovation debris.
10. Asbestos Felt: A product made by saturating felted asbestos with asphalt, or other suitable bindery, such as a synthetic elastomer.
11. Asbestos Fibers: Those particles with a length greater than five (5) microns and a length to diameter ratio of 3:1 or greater.
12. Asbestos Project Designer: The MADLS-certified Asbestos Project Designer for this project is Mr. Dustin Diedricksen (Certification No. AD000037).
13. Asbestos Supervisor: Any employee of a MADLS-licensed Asbestos Contractor who possesses a valid MADLS certification and EPA accreditation as an Asbestos Supervisor.
14. Asbestos Work Area: A regulated area, as defined by OSHA Title 29 CFR, Part 1926.1101, where asbestos abatement operations are performed, which is isolated by physical barriers to prevent the spread of asbestos dust, fibers, or debris. The regulated area shall comply with requirements of regulated areas for demarcation, access, respirators, prohibited activities, competent persons and exposure assessments and monitoring.
15. Asbestos Worker: Any employee of a MADLS-licensed Asbestos Contractor who possesses a valid MADLS certification and EPA accreditation as an Asbestos Worker.
16. Caulking: Resilient mastic compound often having a silicone bituminous or rubber base; used to seal cracks, fill joints, and prevent leakage.
17. Clean Room: An uncontaminated area or room, which is a part of the worker decontamination enclosure system with provisions for storage of worker street clothes and protective equipment.

18. Competent Person: As defined by OSHA Title 29 CFR, Part 1926.1101, a Site representative who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure. The Competent Person has authority to take prompt corrective measures and to eliminate such hazards during asbestos removal. The Competent Person shall be properly trained in accordance with EPA's Model Accreditation Plan (MAP).
19. Consultant: Fuss & O'Neill, Inc.
20. Containment: An enclosure which surrounds the location where ACM and/or other toxic or hazardous substance removal is conducted and establishes a controlled work area.
21. Contractor: Any person, firm, corporation, or other entity who has a valid Asbestos Contractor license issued by MADLS for the purpose of entering into, or engaging in, asbestos abatement work.
22. Curtained Doorway: A device to allow ingress and egress from one area to another while permitting minimal air movement between the areas. Two curtained doorways spaced a minimum of three feet apart can form an airlock.
23. Dampproofing: Application of water-impervious materials to a surface (such as a wall) to prevent penetration of moisture, typically associated with below-grade surfaces and veneers.
24. Decontamination Enclosure System (Decon): A series of connected areas, with curtained doorways between adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.
25. Encapsulant: A liquid material which can be applied to ACM, that controls the possible release of asbestos fibers either by creating a membrane over the surface (bridging encapsulant), or penetrating the material and binding its components together (penetrating encapsulant).
26. EPA: The United States Environmental Protection Agency.
27. Equipment Room: Any contaminated area or a room that is part of the worker decon with provisions for storage of contaminated clothing and equipment.
28. Fixed Object: Unit of equipment or furniture in the work areas that cannot be removed from the work area.
29. Friable ACM: Any material that contains greater than one percent (> 1%) asbestos as determined using the method specified in Title 40 CFR, Part 763, Appendix A, Subpart F, Section 1, via PLM, or is presumed to contain asbestos, that can be crumbled, pulverized, or reduced to powder by hand pressure (when dry).
30. Glazing Compound: Any compound used to hold glass in-place, also referred to as glazing putty.

31. HEPA Filter: High-Efficiency Particulate Air (HEPA) filter in compliance with ANSI Z9.2 1979.
32. HEPA-Filtered Work Area Ventilation System: A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas) and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.
33. HEPA-Vacuum Equipment: Vacuum equipment where all the air drawn into the machine is expelled through a HEPA filter with none of the air leaking past it and with a HEPA-filter as the last filtration stage.
34. MADLS: The Commonwealth of Massachusetts Department of Labor Standards.
35. MassDEP: The Commonwealth of Massachusetts Department of Environmental Protection.
36. Movable Object: Unit of equipment of furniture in the work area that can be removed from the work area.
37. NESHAP: National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.
38. Non-Friable ACM: Any material that contains > 1% asbestos as determined using the method specified in EPA Title 40 CFR, Part 763, Appendix A, Subpart F, Section 1, via PLM, or is presumed to contain asbestos, that cannot be crumbled, pulverized, or reduced to powder by hand pressure (when dry).
39. NPE: Negative Pressure Enclosure.
40. OSHA: The Occupational Safety and Health Administration.
41. Owner: Town of Hull, Massachusetts.
42. Permissible Exposure Limit (PEL): The maximum total airborne fiber concentration to which an employee is allowed to be exposed. The new limit established by OSHA Title 29 CFR, Part 1926.1101 is 0.1 fibers/cc as an eight (8)-hour time-weighted average (TWA), and 1.0 fibers/cc averaged over a sampling period of thirty (30) minutes as an Excursion Limit. The Contractor shall be responsible for maintaining work areas in a manner that this standard is not exceeded.
43. Project Monitor: A professional capable of conducting air monitoring and analysis of schemes. This individual should be an industrial hygienist, an environmental scientist, or a Consultant with experience in asbestos air monitoring, personal protection equipment, and abatement procedures. This individual should have demonstrated proficiency in conducting air sample collection in accordance with OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101.
44. RCRA: The Resource Conservation and Recovery Act (EPA Title 40 CFR, Parts 260 - 265).

45. Regulated Area: An area established by the employer to demarcate where Class I, II, and III asbestos work is conducted and any adjoining area where debris and waste from such asbestos work accumulate, and a work area, within which, total airborne fiber concentrations exceed, or there is a reasonable possibility that they may exceed, the PEL.
46. Shower Room: A room between the Clean Room and the Equipment Room in the decon with hot and cold running water suitably arranged for employee showering during decontamination. The Shower Room is located in an airlock between the contaminated area and the clean area.
47. Site: Fort Revere Water Tower located in Hull, MA.
48. Surfactant: A chemical wetting agent added to water to improve penetration into ACM.
49. Totally-Enclosed Manner: A manner that will ensure no exposure of human beings or the environment to a concentration of asbestos.
50. Transport Vehicle: A motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (e.g., trailer, railroad freight car) is a separate transport vehicle.
51. TWA: Time-Weighted Average.
52. Waterproofing: Material, usually a membrane or applied compound (tar/mastic), used to make a surface impervious to water, includes concealed conditions (applications around doors, windows, and in wall cavities). Sometimes combined with felts.

#### 1.05 CONSULTANT

- A. The Owner/Architect shall retain a third-party, industrial hygiene firm (the "Consultant") for the purposes of project management and monitoring during Asbestos Abatement activities. At the discretion of the Owner/Architect, the Consultant will represent the aforementioned during the abatement project. The Contractor will regard the Consultant's direction as authoritative and binding, as provided herein, in matters particularly, but not limited to the following:
  1. Work area approval.
  2. Monitoring results review.
  3. Completion of the various work segments.
  4. Final abatement completion.
  5. Data submission.
  6. Daily field punch list items.
- B. The Commonwealth of Massachusetts Department of Labor Standards (MADLS) Asbestos Consultant - Project Designer for this Asbestos Abatement Project is Mr. Dustin Diedricksen (Certification No. AD000037).

#### 1.06 USE OF THE CONTRACT DOCUMENTS

- A. It shall be incumbent upon the Contractor to visit the Site and determine what exists, its condition, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the Site and understand the existing conditions.
- B. All work shall comply with the Contract Documents and with applicable codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern the Work.
- C. It is not intended that this Section show every detail of the Work, but the Contractor shall be required to furnish, within the Contract Sum, all material and labor necessary for the completion of the Work in accordance with the intent of this Section.
- D. In case of ambiguity among the Contract Documents, the more stringent requirement, as determined by the Consultant, shall prevail.
- E. The Work includes making modifications as necessary, subject to approval by Owner in consultation with the Consultant, to correct any conflicts.
- F. All items not specifically mentioned in the Contract Documents, but implied by trade practices to complete the Work, shall be included.

#### 1.07 SITE EXAMINATION

- A. It is understood that the Contractor has examined the Site and made their own estimates of the facilities and difficulties attending the execution of the Work and has based their price thereon.
- B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing conditions at the Site.

#### 1.08 CONTRACTOR QUALIFICATIONS

- A. The Contractor shall submit a record of prior experience in asbestos abatement projects, listing no less than three completed projects in the past year of similar size and scope. The Contractor shall list the experience and training of the Asbestos Supervisor and the Asbestos Workers. The information that should be included is as follows:
  - 1. Project Name and Address
  - 2. Owner's Name and Address
  - 3. Architect's Name
  - 4. Consultant's Name
  - 5. Contract Amount

6. Date of Completion
7. Extras and Changes
- B. The Contractor selected must currently hold a valid MADLS Asbestos Contractor license.
- C. Submit a written statement regarding whether the Contractor has ever been cited for non-compliance with federal, state, or local asbestos regulations pertaining to worker protection, removal, transport, or disposal.

#### 1.09 ADDITIONAL GENERAL REQUIREMENTS

- A. The Contractor shall employ a competent, MADLS-certified Asbestos Supervisor with at least three years of experience on projects of similar scope and magnitude, who shall be responsible for all work involving asbestos abatement as described in the Contract Documents and defined in applicable regulations and have full-time, daily supervision of the same. The Supervisor shall be the competent person as defined by Occupational Safety and Health Administration (OSHA) regulations.
- B. If required by federal, state, local, or any other authorities having jurisdiction over such work, the Contractor shall allow the Work of this contract to be inspected. The Contractor shall immediately notify the Owner, Architect, and Consultant and shall maintain written evidence of such inspection for review by the aforementioned parties.
- C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.
- D. The Contractor shall immediately notify the Owner, Architect, and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or of occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of who issued, and shall cause them to be displayed to the aforementioned parties for verification and recording.

#### 1.10 SUBMITTALS

- A. The Contractor shall submit the following to the Consultant, in one complete package, prior to the pre-construction meeting and at least ten (10) business days before the start of the Work:
  1. Submit a schedule to the Owner/Architect and the Consultant that defines a timetable for executing and completing the project, including work area preparations, removal, cleanup, decontamination, and final clearance air monitoring (if applicable).

2. Submit copies of all notifications, permits, applications, licenses and like documents required by federal, state, or local regulations obtained or submitted in proper fashion.
3. Submit the name and address of the hauling contractor and the landfill to be used. Also, submit current, valid operating permits and certificates of insurance for the transporter and landfill.
4. Submit photographic or video documentation showing the building conditions prior to the start of work. The Contractor shall be held responsible for all damage to the building and its contents not shown on the pre-construction documentation. The Contractor shall note if this does not apply since the documentation was collected by others (i.e., General Contractor).
5. Submit a detailed, site-specific work plan including, but not limited to, decon construction, work area isolation, and removal methods.
6. Submit the training, medical, and respirator fit test records as well as a current, valid MADLS certification of each employee who may be on the Site.
7. If the Contractor's MADLS-certified Asbestos Supervisor is not conducting OSHA-required employee exposure monitoring, submit the name, address, and qualifications of the air sampling professional that the Contractor proposes to use on this project for this task. The Contractor shall note if this does not apply.
8. Submit the name, address, and qualifications of proposed laboratories intended to be utilized for Contractor personal air sampling analysis as required by this Section.
9. Submit detailed product information on all materials and equipment proposed for asbestos abatement work on this project. This includes all SDS for products and chemicals that may be used on the project.
10. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project, as well as a list of past projects completed.
11. Submit a chain-of-command for the project. The chain-of-command should include the name, title, and contact number for each person listed.
12. Submit a site-specific Emergency Action Plan for the project. The Emergency Action Plan may include emergency procedures to be followed by Contractor personnel to evacuate the building, hospital name and phone number, most direct transportation route from the Site, emergency telephone numbers, etc. If this information is contained within an Emergency Action Plan prepared by the Site's General Contractor, a copy shall be submitted for review.

13. Submit a written, site-specific Respiratory Protection Program for employees undertaking the Work, including make, model, and National Institute of Occupational Safety and Health (NIOSH) approval numbers of respirators to be used at the Site. The Contractor shall note if the Respiratory Protection Program is not required at the Site and why.
14. Submit the proposed electrical safeguards to be implemented by a Commonwealth of Massachusetts-licensed electrician, including but not limited to: location of transformers, GFCI outlets, lighting, and power panels necessary to safely perform the Work, including a description of electrical hazards and a safety plan for common practices in the work area. This may also include a safety plan for temporary lighting, extension cords, and other powered equipment used in the work area (locations, daily inspections, etc.).
15. Submit the proposed worker orientation plan that, at a minimum, includes a description of asbestos hazards and abatement methodologies, a review of worker protection requirements, and the outline of safety procedures.

Refer to Section 028433 – Presumed Polychlorinated Biphenyls Removal and Disposal for additional submittal requirements.

No work on the Site will be allowed to begin until the Owner/Architect and the Consultant approve the Pre-Construction Submittals. Any delay caused by the Contractor's refusal or inability to submit this documentation in a timely manner does not constitute a cause for change order or a time extension.

- B. The Contractor shall submit the following to the Consultant during the Work:
  1. Copies of training, MADLS certifications, respirator fit test records, and medical records for new employees to start work 24 hours in advance of the new employee arriving at the Site.
- C. The Contractor shall submit the following to the Owner at the completion of the Work. The Owner reserves the right to retain payment(s) until all items are received in completion:
  1. Original final completed copies of the Waste Shipment Records (WSR), signed by all transporters and the designated disposal site owner/operator.
  2. Original final completed copies of weight tickets, recycling tickets, and manifests for all specified materials.
  3. Contractor's logs (daily activity logs, daily sign in sheets, containment sign-in sheets), and all worker training, MADLS certifications, medical records, and respirator fit test records.
  4. Copies of all OSHA personal monitoring results.



#### 1.11 REGULATIONS AND STANDARDS

- A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state, and local regulations and guidelines pertaining to asbestos abatement. Specifically, the Contractor shall comply with the requirements of the following:
1. EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP) Regulations (Title 40 CFR, Part 61, Subpart M).
  2. EPA Asbestos Hazards Emergency Response Act (AHERA) Regulations (Title 40 CFR, Part 763, Subpart E).
  3. OSHA Asbestos Regulations (Title 29 CFR, Parts 1910.1001 and 1926.1101).
  4. Department of Transportation (DOT) Hazardous Waste Transportation Regulations (Title 49 CFR, Parts 170 - 180).
  5. MassDEP Asbestos Regulations (310 CMR 7.00 and 7.15).
  6. MADLS “The Removal, Containment or Encapsulation of Asbestos” Standards for Asbestos Abatement (454 CMR 28.00).
  7. Life Safety Code, National Fire Protection Association (NFPA).
  8. Local health and safety codes, ordinances or regulations pertaining to asbestos remediation and all national codes and standards including American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), and Underwriter’s Laboratories (UL).

#### 1.12 EXEMPTIONS

- A. Any deviations from the Contract Documents require the written approval and authorization from the Owner and Consultant. Any deviations that may impact the bid cost shall be delineated with the bid for the Owner to review.
- B. Any modifications from the standard work practices identified in MADLS Regulations 454 CMR 28.00 or MassDEP Regulations 310 CMR 7.00 and 7.15 must be requested in writing and approved in writing by both regulatory agencies. If the Contractor intends to request a Non-Traditional Asbestos Work Plan (NTWP) for this project, the nature of the NTWP shall be disclosed in the Bid Documents, and the cost savings associated with said NTWP shall be provided for Owner’s consideration. A NTWP shall not be filed without prior Owner and Consultant approval.
1. Cost of NTWP Development and associated filing fees are the responsibility of the Contractor.
  2. If full-time monitoring by an Asbestos Project Monitor is required by the NTWP, the cost associated shall be the responsibility of the Contractor.

#### 1.13 NOTIFICATIONS, POSTINGS, SUBMITTALS, AND PERMITS

A. The Contractor shall make the following notifications and provide the submittals to the following agencies prior to the start of work. Submissions may be made electronically on eDEP File. This notification is required ten (10) calendar days prior to the start of the abatement project.

1. Commonwealth of Massachusetts Department of Environmental Protection  
Asbestos Program  
P.O. Box 4062  
Boston, MA 02211
2. Commonwealth of Massachusetts Department of Labor Standards  
100 Cambridge Street, Suite 500  
Boston, MA 02114

B. The minimum information included in the notification to these agencies includes:

1. Building Owner/Operator Name and address.
2. Building location.
3. Building size, age, and use.
4. Amount of asbestos to be removed.
5. Asbestos Supervisor Name and Certification Number.
6. Laboratory Analytical Name and License Number.
7. Work schedule, including proposed start and completion date.
8. Asbestos removal procedures to be used.
9. Name and location of disposal site for generated asbestos waste, residue, and debris.

#### 1.14 WORK SITE SAFETY PLAN

A. The Contractor shall establish a set of emergency procedures and shall post them in a conspicuous place at the Site. The safety plan should include provisions for the following:

1. Injured worker evacuation.
2. Emergency and fire exit routes from all work areas.
3. Emergency first aid treatment.
4. Local telephone numbers for emergency services including ambulance, fire, and police.
5. A method to notify building occupants in the event of a fire or other emergency requiring building evacuation.

B. The Contractor shall be responsible for training all workers in these procedures.

1.15 INDEPENDENT AIR SAMPLING AND ASBESTOS ABATEMENT MONITORING

- A. This Subsection describes independent air sampling work being performed on behalf of, and paid for by, the Owner. This Subsection describes air monitoring conducted by the Consultant to verify that the building, beyond the work area, and the outside environment remains uncontaminated. Personal air monitoring required by OSHA is work to be performed by the Contractor and is within the Contract Sum. A negative exposure assessment will not be reviewed and/or approved by the Consultant; it shall be the Contractor's responsibility to determine its validity.
- B. The purpose of the Consultant's air monitoring is to verify proper engineering controls in the work areas including, but not limited to:
  - 1. Building contamination outside the work area by airborne fibers.
  - 2. Filtration failure or differential pressure system rupture.
  - 3. Air contamination outside the building envelope by airborne fibers.
- C. If any of the above occurs, the Contractor shall immediately cease Asbestos Abatement activities until the fault is made correct. Do not recommence work until authorized by the Consultant.
- D. The Consultant may monitor total airborne fiber concentrations outside the work area. The purpose of this air monitoring will be to detect total airborne fiber concentrations outside the NPE, which may challenge the effectiveness of the work area isolation procedures to protect the ambient areas inside and at the exterior of the Site.
- E. To determine if the elevated total airborne fiber concentrations encountered during abatement operations have been reduced to an acceptable level, the Consultant will sample and analyze ambient air in accordance with final clearance air sampling requirements.
- F. The Consultant may perform on-site monitoring throughout the project, as follows:
  - 1. All work procedures may be monitored by the Consultant to assure that areas outside the designated work areas will not be contaminated.
  - 2. Prior to work on any given day, the Contractor's designated "competent person" shall discuss the day's work schedule with the Consultant to evaluate job tasks with respect to safety procedures and requirements specified to prevent contamination of the Site or the employees. This includes a visual inspection of the work area and the decon.

1.16 CONTRACTOR'S AIR SAMPLING RESPONSIBILITY

- A. The Contractor shall independently retain an air-sampling professional, or the MADLS-certified Asbestos Supervisor shall monitor total airborne fiber concentrations in the worker breathing zones to establish conditions and work procedures for maintaining compliance with OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101.
- B. The Contractor's air sampling professional shall document all air sampling results and provide a report to the Consultant within 48 hours after sample collection.
- C. All air sampling shall be conducted in accordance with methods described in OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101.

1.17 PROPER WORKER PROTECTION

- A. This Subsection describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.
- B. All workers are to be accredited as Abatement Workers as required by the EPA AHERA Title 40 CFR, Parts 763 Appendix C to Subpart E, February 3, 1994.
- C. The Contractor is required to be certified and accredited as required by MADLS.
- D. In accordance with OSHA Title 29 CFR, Part 1926, all workers shall receive a training course covering the dangers inherent in handling asbestos, the dangers of breathing asbestos dust, proper work procedures, and proper worker protective measures. This course must include, but is not limited to the following:
  - 1. Methods of recognizing asbestos
  - 2. Health effects associated with asbestos
  - 3. Relationship between smoking and asbestos in producing lung cancer
  - 4. Nature of operations that could result in exposure to asbestos
  - 5. Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
    - a. Engineering controls
    - b. Work Practices
    - c. Respirators
    - d. Housekeeping procedures
    - e. Hygiene facilities
    - f. Protective clothing
    - g. Decontamination procedures
    - h. Emergency procedures
    - i. Waste disposal procedures
  - 6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by OSHA Title 29 CFR, Part 1910.134
  - 7. Appropriate work practices for the work

8. Requirements of medical surveillance program
  9. Review of OSHA Title 29 CFR, Part 1926
  10. Pressure Differential Systems
  11. Work practices including hands on or on job training
  12. Personal Decontamination procedures
  13. Air monitoring, personal and area
- E. The Contractor shall provide medical examinations for all workers who may encounter a total airborne fiber concentration of 0.1 fibers/cc or greater for an 8-hour TWA. In the absence of specific airborne fiber data, provide medical examinations for all workers who will enter the work area for any reason. Examination shall, at a minimum, meet OSHA requirements as set forth in Title 29 CFR, Part 1926. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.
- F. The Contractor shall maintain control of and be responsible for access to all work areas to ensure the following requirements:
1. Non-essential personnel are prohibited from entering the work area.
  2. All authorized personnel entering the work area shall read the "Worker Protection Procedures" that are posted at the entry points to the enclosure system and shall be equipped with properly fitted respirators and protective clothing.
  3. All personnel who are exiting from the decon shall be properly decontaminated.
  4. Asbestos waste that is removed from the work area must be properly bagged and labeled in accordance with these Specifications. Asbestos waste removed from a NPE must be immediately transported off-site or immediately placed in locked, posted temporary storage on-site, and removed within 24 hours of the project conclusion.
  5. Any materials, equipment, or supplies that are removed from the decon shall be thoroughly cleaned and decontaminated by wet-cleaning methods and/or HEPA vacuuming of all surfaces.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Deliver all materials in the original packages, containers, or bundles bearing the brand name, manufacturer name, and product technical description.
- B. The Contractor shall have a sufficient inventory of, or dated purchase orders for, materials necessary for the Work (e.g., protective clothing, respirators, respirator filter cartridges, polyethylene (poly) sheeting of proper size and thickness, tape, spray adhesive, air filters, etc.).

- C. Damaged or deteriorating materials are not permitted for use and shall be removed from the premises. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as ACWM.
- D. Poly sheeting (packaged in a roll to minimize the frequency of joints) shall be delivered to the Site with factory label indicating four (4) or six (6)-mil thickness.
- E. Poly disposable bags shall be 6-mil with OSHA-required pre-printed labels (OSHA Title 29 CFR, Part 1926.1101(k)(8)(iii)).
- F. Tape or adhesive spray shall be capable of sealing joints in adjacent poly sheeting and shall be able to attach poly sheeting to finished or unfinished surfaces of dissimilar materials. Tape and adhesive spray shall also be capable of adhering under both dry and wet conditions (including use of amended water).
- G. Surfactant (wetting agent) shall consist of fifty percent (50%) polyoxyethylene ether and 50% polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of 1 ounce surfactant to 5 gallons of water, or as directed by manufacturer.
- H. Removal encapsulant shall be non-flammable, factory-prepared penetrating chemical encapsulant deemed acceptable by the Consultant. Usage shall be in accordance with manufacturer's printed technical data.
- I. The Contractor shall have spray equipment capable of mixing wetting agent with water. Spray equipment shall be capable of generating sufficient pressure and volume; the hose length must reach all areas within the work area.
- J. Impermeable containers shall be used to receive and retain any asbestos-containing or contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with OSHA Title 29 CFR, Part 1926.1101(k)(8)(iii) [June 1, 2015, requirements]. Containers must be airtight and watertight.
- K. Labels and signs, as required by OSHA Title 29 CFR, Part 1926.1101, will be used. When applicable, signage requirements of Section 028433 – Presumed Polychlorinated Biphenyls Removal and Disposal also apply.
- L. Encapsulant shall be bridging or penetrating type which has been deemed acceptable by the Consultant. Usage shall be in accordance with manufacturer's printed technical data.

## 2.02 TOOLS AND EQUIPMENT

- A. The Contractor shall provide all clean tools and equipment necessary for asbestos abatement activities.

- B. The Contractor's air monitoring professional or Abatement Supervisor shall have air-monitoring equipment of type and quantity to monitor operations and conduct personnel exposure surveillance per OSHA requirements. The equipment shall function properly and air samples shall be calibrated with a recently calibrated (within 6 calendar months) rotameter.
- C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the Work, including protective clothing, respirators, respirator filter cartridges, poly sheeting of proper size and thickness, tape, spray adhesive, and air filters.
- D. The Contractor shall provide (as needed) temporary electrical power panels, electrical power cables, and/or electrical power sources (e.g., generators, etc.). Any electrical-connection work affecting the building electrical power system shall be performed by a Commonwealth of Massachusetts-licensed electrician, permitted as required.
- E. The Contractor shall be responsible for coordinating electrical and water services, and shall pay for these services for the duration of the project (if applicable).
- F. The Contractor shall assist the Consultant by providing necessary tools and equipment (e.g., coveralls, ladders, extension cords, lighting, etc.) for the Consultant to perform project monitoring activities (e.g., final visual inspection(s), in-progress and final clearance air sampling, etc.). The Consultant reserves the right to reject such items that are deemed unsafe and/or do not function properly, and may request items be replaced with adequate replacements. The work areas must be safe to enter/occupy by the Consultant at all times.
- G. The Contractor shall have available shower stalls and plumbing, including sufficient hose length and drain system, or an acceptable alternate.
- H. If required, HEPA-filtered work area ventilation systems shall contain HEPA filter(s) and be capable of sustaining sufficient air exhaust to create a minimum negative air pressure of -0.02 inches of water column within NPE with respect to the outside area. Digital monometers shall be supplied for Class 1 work. Equipment shall be checked for proper operation by smoke tubes or differential pressure gauge before the start of each shift and at least twice during the shift. Adequate exhaust air shall be provided for a minimum of 4 air changes per hour within the NPE. No air movement system or air-filtering equipment shall discharge unfiltered air outside the work area. The Contractor will have reserve units so that system will operate continuously.
- I. HEPA-Vacuum Equipment, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97% of all mono-dispersed particles of 0.3 micrometers in diameter or larger.

### PART 3 - EXECUTION

#### 3.01 PRE-CONSTRUCTION MEETING

- A. A pre-construction meeting may be scheduled prior to the start of Work. The Contractor must attend this meeting (as required by the Owner); the assigned Asbestos Supervisor must also attend this meeting.
- B. The Contractor shall present a detailed project schedule and project submittals at the pre-construction meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and the Consultant will inform the Contractor of any scheduling adjustments for this project.
- C. Following the pre-construction meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

#### 3.02 WORK AREA PREPARATION – EXTERIOR WINDOW SYSTEM ABATEMENT

- A. This Subsection only applies to exterior window caulking/glazing compounds pursuant to MassDEP Regulation 310 CMR 7.15(11). All other ACM abatement work area preparations must follow 310 CMR 7.15(7), unless a NTWP is submitted to, and approved by, MassDEP.
- B. Work is to be conducted from the building exterior. Completely seal all openings including, but not limited to, windows, doors, ventilation openings, drains, grilles, diffuser grates, and any other penetration into the work areas with 2 layers of 6-mil poly sheeting completely sealed with tape and spray adhesive.
- C. Window openings shall be isolated from the building interior on the interior side using 2 layers of 6-mil poly sheeting sealed with tape and spray adhesive.
- D. Provide 2 layers of 6-mil poly sheeting on exterior ground surface extending to a minimum of ten (10) feet from the building perimeter where ACM and/or ACWM are to be removed. Poly sheeting shall be attached to the building foundation with tape and spray adhesive.
- E. Movable lifts or staging platforms to be used during abatement shall be protected with 2 layers of 6-mil poly sheeting.
- F. Pre-clean fixed objects within the work areas using HEPA-vacuum equipment and wet-cleaning methods, as appropriate, and enclose with 6-mil poly sheeting sealed with tape.
- G. Clean the proposed work areas using HEPA-vacuum equipment and wet-cleaning methods, as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.



- H. Post asbestos warning signs, in accordance with OSHA Title 29 CFR, Part 1926.1101, at all approaches to the work area. Signs shall be conspicuously posted to permit a person to read them and take precautionary measures to avoid exposure to asbestos. When applicable, signage requirements of Section 028433 – Presumed Polychlorinated Biphenyls Removal and Disposal also apply.
- I. Maintain emergency and fire exits from the work area or establish alternative exits satisfactory to fire officials.

### 3.03 DECONTAMINATION ENCLOSURE SYSTEM (DECON)

- A. The Contractor shall establish a three-chamber remote decon consisting of (in-series) equipment room, shower room, and clean room at the perimeter of the regulated work area. The only access between contaminated and uncontaminated areas shall be through this decon. If it is not feasible to erect a contiguous decon, the Contractor shall establish a remote decon in as close proximity to the work area as is feasible. Use of a remote decon shall be specified on the Contractor's Asbestos Notification Form (ANF-001).
- B. Access between rooms in the decon shall be through double-flap, curtained openings. The clean room, shower room, and equipment room within the decon shall be completely sealed ensuring that the sole source of airflow through this area originates from uncontaminated areas outside the work area.
- C. If feasible, the Contractor shall establish, contiguous with the work area, an equipment decon consisting of 2 totally-enclosed chambers divided by a double-flapped, curtained opening. No personnel are permitted to enter or exit through this unit.
- D. Construct the decon with wood or metal framing, cover both sides with 2 layers of 6-mil poly sheeting, completely sealed with spray adhesive, and taped at the joints.
- E. Lockers/containers for personal gear shall be provide within or adjacent to the clean room.
- F. The clean room shall have a 6-mil waste bag inside that will be changed at the end of each day.

### 3.04 ASBESTOS REMOVAL PROCEDURE - GENERAL

- A. Prior to the removal of ACM, the Contractor shall ensure that work area preparations have been conducted in accordance with applicable Subsections of this Section.
- B. The Contractor shall have a MADLS-licensed Asbestos Supervisor on the Site at all times to ensure establishment of a proper NPE and proper work practices throughout project.

- C. If a Consultant is retained for pre-abatement services, abatement work shall not commence until authorized by the Consultant.
- D. The Contractor shall properly coordinate abatement work with other trades, new construction, and Site use. The Contractor shall be responsible for addressing any concerns to the Owner and/or Consultant.
- E. With a fine mist, spray ACM/ACWM with amended water using airless spray equipment or apply an approved removal wetting agent to reduce the release of fibers during removal operation.
- F. Remove wet ACM/ACWM in manageable sections to keep fiber concentrations to a minimum. Material drop shall not exceed 8 feet. For heights up to 15 feet, provide inclined chutes or scaffolding to intercept drop.
- G. Remove ACM/ACWM by standard methods, as appropriate. Fill disposal containers as removal proceeds; seal filled containers and clean containers before removal to equipment decon. Wet clean each container thoroughly, double bag, and apply caution labels, if required.
- H. After completion of stripping work, all surfaces from which ACM/ACWM have been removed shall be wet brushed, using a nylon brush, wet-wiped, and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are prohibited). During this work, the surfaces being cleaned shall be kept wet.
- I. Remove and containerize all visible accumulations of ACM and ACWM. During cleanup, utilize brooms, non-metal dustpans, and rubber squeegees to minimize damage to floor covering. Non-porous materials (i.e., metal) to be removed from the work area during abatement activities for recycling/disposal as solid waste shall be cleaned and visually inspected by an Asbestos Project Monitor prior to removal from work areas.
- J. Sealed disposal containers, and all equipment used in the work area, shall be included in the cleanup and shall be removed from work areas via the equipment decon at an appropriate time in the cleaning sequence. All asbestos waste in 6-mil poly disposal bags shall be double-bagged in the equipment decon before removal from the Site.
- K. At any time during asbestos removal, should the Consultant suspect contamination of areas outside the work area(s), they shall cause all abatement work to stop until the Contractor takes the necessary steps to decontaminate these areas and eliminate the causes of such contamination. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections verify decontamination.
- L. After completion of the initial final cleaning procedure, including removal of the inner layers of poly sheeting but prior to encapsulation, a pre-sealant inspection shall be conducted by the Consultant. The pre-sealant inspection shall verify that ACM and residual dust has been removed from the work area.

3.05 ASBESTOS REMOVAL PROCEDURES – EXTERIOR WINDOW SYSTEMS

- A. Work shall be conducted from the building exterior pursuant to MassDEP Regulation 310 CMR 7.15(11) - Requirements for Window Painting and/or Repair Work that Result in the Disturbance of Asbestos-Containing Glazing and/or Caulking Compounds.
- B. It will be at the discretion of the Consultant to determine if removal procedures will render ACM friable, thus requiring additional dust-control measures to prevent airborne asbestos fiber concentrations and/or environmental contamination.
- C. Spray ACM with amended water using airless spray equipment or apply an approved wetting agent to reduce fiber release during removal operations.
- D. Window sashes with asbestos-containing glazing compound shall be removed and wrapped in 2 layers of 6-mil poly sheeting for disposal as ACWM. Note: Material is also presumed to contain regulated concentrations of PCBs. Refer to Section 028433 – Presumed Polychlorinated Biphenyls Removal and Disposal for additional disposal requirements.
- E. Asbestos-containing exterior caulking shall be wet-misted and removed from window frames. Asbestos caulking shall be placed in double 6-mil poly disposal bags. Note: Material is also presumed to contain regulated concentrations of PCBs. Refer to Section 028433 – Presumed Polychlorinated Biphenyls Removal and Disposal for additional disposal requirements.
- F. Asbestos-containing caulking shall be removed from rough openings including masonry, lintels, and sills by wet-misting. Caulking may be covered with non-asbestos silicone-type caulking that must be removed to completely access and abate asbestos-containing caulking from window systems. All debris shall be placed in double 6-mil poly disposal bags for disposal as ACWM.
- G. Upon removal, caulking, glazing compound, and/or window system frames to be disposed of shall be wrapped in 2 layers of 6-mil poly sheeting or placed in double 6-mil poly disposal bags and properly labeled for disposal as ACWM.
- H. Surrounding surfaces, such as exterior brick/block, remaining window surfaces, etc. shall be thoroughly cleaned with HEPA-vacuum equipment and wet-wiped to remove all visible dust and debris.
- I. Once the Consultant completes their final visual inspection, the Contractor shall remove the protective poly sheeting by rolling in all 4 corners towards the center.
- J. Check all ground surfaces in work areas after removal is complete and the protective ground poly drop cloths have been removed. Remove and dispose of any suspect ACM observed on the ground.

### 3.06 CONSULTANT'S AIR SAMPLING RESPONSIBILITIES

- A. If required or retained for this service, air sampling will be conducted by the Consultant's Asbestos Project Monitor to determine the effectiveness of the work area controls in preventing asbestos contamination. Independently, the Contractor shall monitor air quality within the work area to comply with OSHA regulations for worker safety.
- B. The Consultant's Asbestos Project Monitor will collect and analyze air samples during the following period:
  - 1. Removal Period: If required or retained for this service, the Consultant's Asbestos Project Monitor will provide continual evaluation of the building air quality during removal, using their best professional judgment in respect to the MADLS guidance level of 0.010 fibers/cc and the background airborne fiber concentration, if established during the pre-abatement period.
    - a. If the Consultant's Asbestos Project Monitor determines that the building air quality has become contaminated from the abatement project, they shall immediately inform the Contractor to cease all removal operations and implement a work stoppage cleanup procedure. The Contractor shall conduct a thorough cleanup of the building areas designated by the Consultant. No further removal work may occur until the Asbestos Project Monitor has determined through air sample collection and analysis that the airborne fiber concentrations are at or below the MADLS re-occupancy standard.

### 3.07 CONSULTANT'S INSPECTION RESPONSIBILITIES

- A. The Consultant's Asbestos Project Monitor may conduct inspections throughout the progress of the abatement project. Inspections will be conducted to document the abatement work progress, as well as the Contractor's procedures and practices.
- B. The Consultant's Asbestos Project Monitor may perform the following inspections during abatement activities:
  - 1. Pre-Commencement Inspection: If required or retained for this service, pre-commencement inspections shall be performed at the time requested by the Contractor. The Consultant shall be informed 24 hours prior to the time the inspection is needed. If deficiencies are noted during the pre-commencement inspection, the Contractor shall perform the necessary adjustments to obtain compliance.

2. Work Area Inspections: If required or retained for this service, work area inspections shall be conducted on a daily basis, at the discretion of the Consultant. During the work inspections, the Consultant's Asbestos Project Monitor shall observe the Contractor's removal procedures, verify barrier integrity, monitor HEPA-filtered work area ventilation systems, assess project progress, and, if deficiencies are noted, inform the Contractor of specific remedial activities.
- C. The Consultant's Asbestos Project Monitor shall perform the following inspections after removal activities are completed:
1. Final Visual Inspection: When abatement is complete, the Consultant's Asbestos Project Monitor will conduct a final visual inspection inside each regulated work area. The Consultant shall be informed 24 hours prior to the time that the inspection is needed. Following the removal of the inner layer of poly sheeting, but prior to final clearance air sampling, the Consultant's Asbestos Project Monitor will conduct a final visual inspection inside the work area. If residual dust or debris is identified during the final inspection, the Contractor shall re-clean to meet the "no visible, suspect dust or debris" standard.

### 3.08 ASBESTOS DISPOSAL

- A. ACM and/or ACWM disposal (including supplies, rags, disposable clothing, respirator filter cartridges, etc.) shall be completed in accordance with MassDEP and EPA regulations. Waste receptacles (bags, drums, etc.) shall be labeled in accordance with the most current OSHA regulations (Title 29 CFR, Parts 1910.1001 and 1926.1101) and contain the following:

DANGER  
CONTAINS ASBESTOS FIBERS  
MAY CAUSE CANCER  
CAUSES DAMAGE TO LUNGS  
DO NOT BREATHE DUST  
AVOID CREATING DUST

Note some materials are presumed to contain regulated concentrations of PCBs. Refer to Section 028433 – Presumed Polychlorinated Biphenyls Removal and Disposal for additional disposal requirements.

- B. Disposal site approvals shall be obtained and accepted prior to the start of asbestos removal activities.
- C. A copy of the signed disposal authorization shall be provided to the Owner, Consultant, and any required federal, state, or local agencies.

FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

- D. Copies of all WSR shall be provided to the Owner no later than 35 calendar days from when the waste was removed from the Site for inclusion in the project file. The Contractor shall document the specific amount of waste on each WSR, portion/location of the Site building it was generated from, and the type of waste. Upon receipt of the ACM waste, the landfill operator shall sign the WSR so the quantity of asbestos debris leaving the Site and arriving at the landfill is documented for the Owner.
- E. All wash water and shower water shall be collected and filtered through a five-micron filter before discharge to a sanitary sewer with prior appropriate permitting or publicly owned treatment works (POTW) approval. Alternately, wash and shower water can be used to moisten ACWM.
- F. All ACWM shall be transported in covered sealed vans, boxes, or dumpsters which are physically isolated from the driver by an airtight barrier. All vehicles must be properly licensed to meet Commonwealth of Massachusetts and United State Department of Transportation (DOT) requirements.
- G. Any vehicles used to store or transport ACWM will either be removed from the Site at night, or securely locked and posted to prevent disturbance.
- H. Any incident and/or accident that may result in spilling or exposure of ACWM outside the containment, on and off the property, and all related issues shall be the sole responsibility of the Contractor.

END OF SECTION

**SECTION 028310**

**LEAD-BASED PAINT AWARENESS**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Limited Hazardous Building Materials Inspection Report prepared by Fuss & O'Neill, Inc. (August 2020).
- C. Section 024100 - Selective Demolition.
- D. Section 028213 - Asbestos Abatement.
- E. Section 028433 – Presumed Polychlorinated Biphenyl Removal and Disposal.
- F. Demolition Drawings prepared by SOCOTEC AE Consulting, LLC.

**1.02 SUMMARY OF WORK**

- A. Work of this section includes requirements for worker protection and waste disposal related to demolition involving lead-based paint (LBP)-coated building components and surfaces (the “Work”) during the Fort Revere Water Tower restoration project to occur in Hull, Massachusetts (the “Site”).
- B. A LBP screening was conducted at the Site utilizing X-ray fluorescence (XRF). Not every coated building component was tested. The screening results indicated none of the painted building components were determined to be coated with LBP (greater than or equal to one milligram of lead per square centimeter [ $\geq 1.0$  mg/cm<sup>2</sup>]). However, detectable levels of lead ( $> 0.1$  mg/cm<sup>2</sup>, but less than [ $<$ ] 1.0 mg/cm<sup>2</sup>) were identified on screened painted surfaces.
- C. Work impacting LBP-coated components may result in dust and debris exposing workers to levels of lead above the Occupational Safety and Health Administration’s (OSHA) Action Level. Worker protection, training, and engineering controls referenced herein shall be strictly followed, until completion of exposure assessment with results indicating exposures below the “Action Level”. This Section does not involve lead abatement, but identified worker protection requirements for trades involved in the demolition and disposal procedures if LBP is involved in the demolition waste stream.
- D. Construction activities disturbing surfaces coated with LBP that are likely to be employed, such as demolition, sanding, grinding, welding, cutting, and burning, have been known to expose workers to levels of lead in excess of the OSHA Permissible Exposure Limit (PEL). All work specified in the Contract Documents shall also be in conformance with this Section.

### 1.03 DEFINITIONS

- A. The following definitions relative to this Section (028310 – Lead-Based Paint Awareness) shall apply:
1. Action Level (AL): The allowable employee exposure, without regard to use of respiratory protection, to an airborne concentration of lead over an eight (8)-hour time-weighted average (TWA) as defined by OSHA. The current action level is thirty micrograms per cubic meter (30 µg/m<sup>3</sup>) of air.
  2. Architect: SOCOTEC AE Consulting, LLC.
  3. Area Monitoring: The sampling of lead concentrations, which is representative of the airborne lead concentrations that may reach the breathing zone of personnel potentially exposed to lead.
  4. Biological Monitoring: The analysis of a person's blood and/or urine, to determine the level of lead concentration in the body.
  5. CDC: The Center for Disease Control.
  6. Change Room: An area provided with separate facilities for clean protective work clothing and equipment and for street clothes, which prevents cross-contamination.
  7. Competent Person: A person employed by the Contractor who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions, and who has authorization to take prompt corrective measures to eliminate them as defined by OSHA.
  8. Consultant: A company, retained by the Owner, to provide services enumerated in this Section.
  9. EPA: The United States Environmental Protection Agency.
  10. Exposure Assessment: An assessment conducted by an employer to determine if any employee may be exposed to lead at or above the AL.
  11. High-Efficiency Particulate Air (HEPA): A type of filtering system capable of filtering out particles of 0.3 microns diameter from a body of air at 99.97% efficiency or greater.
  12. HUD: The United States Housing and Urban Development.
  13. Lead: Refers to metallic lead, inorganic lead compounds, and organic lead soaps. Excluded from this definition are other organic lead compounds.
  14. Lead Work Area: An area enclosed in a manner to prevent the spread of lead dust, paint chips, or debris resulting from LBP disturbance.



15. Lead-Based Paint: Refers to paints, glazes, and other surface coverings containing a toxic level of lead.
16. MSHA: The Mine Safety and Health Administration.
17. NARI: The National Association of the Remodeling Industry.
18. NIOSH: The National Institute of Occupational Safety and Health.
19. OSHA: The Occupational Safety and Health Administration.
20. Owner: Town of Hull.
21. Permissible Exposure Limit (PEL): The maximum allowable limit of exposure to an airborne concentration over an 8-hour TWA, as defined by OSHA. The current PEL for lead is fifty (50)  $\mu\text{g}/\text{m}^3$  of air. Extended workdays lower the PEL by the formula: PEL equals 400 divided by the number of hours of work.
22. Personal Monitoring: Sampling of lead concentrations within the breathing zone of an employee to determine the 8-hour TWA concentration in accordance with OSHA Title 29 CFR, Parts 1910.1025 and 1926.62. Samples shall be representative of the employee's work tasks. Breathing zone shall be considered an area within a sphere with a radius of eighteen (18) inches and centered at the nose or mouth of an employee.
23. Resource Conservation and Recovery Act (RCRA): RCRA establishes regulatory levels of hazardous chemicals. There are 8 heavy metals of concern for disposal: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Six (6) of the metals are typically in paints, excluding selenium and silver.
24. SDS: Safety Data Sheets.
25. Site: Fort Revere Water Tower located in Hull, MA.
26. Toxic Level of Lead: A level of lead, when present in dried paint or plaster, contains more than 0.50% lead by dry weight as measured by atomic absorption spectrophotometry (AAS) or 1.0 milligram per square centimeter ( $\text{mg}/\text{cm}^2$ ) as measured by on-site testing utilizing an x-ray fluorescence analyzer.

27. Toxicity Characteristic Leaching Procedure (TCLP): The EPA required sample preparation and analysis method for determining the hazard characteristics of a waste material. Waste must be disposed of as Hazardous Waste if a TCLP analytical result indicates leaching greater than or equal to five milligrams per liter ( $\geq 5.0$  mg/L).
28. TWA: Time-Weighted Average.

#### 1.04 REGULATIONS AND STANDARDS

- A. All applicable regulations, standards, and ordinances of federal, state, and local agencies are applicable and made a part of this Section. This includes, but is not limited to, the following:
  1. American National Standards Institute (ANSI)
    - a. ANSI 288.2 - 1980 Respiratory Protection
  2. Code of Federal Regulation (CFR)
    - a. Title 29 CFR, Part 1910.134 - Respiratory Protection
    - b. Title 29 CFR, Part 1910.1025 - Lead
    - c. Title 29 CFR, Part 1910.1200 - Hazard Communication
    - d. Title 29 CFR, Part 1926.55 - Gases, Vapors, Fumes, Dusts, and Mists
    - e. Title 29 CFR, Part 1926.57 - Ventilation
    - f. Title 29 CFR, Part 1926.59 - Hazard Communication in Construction
    - g. Title 29 CFR, Part 1926.62 - Lead in Construction Interim Final Rule
    - h. Title 40 CFR, Parts 124 and 270 - Hazardous Waste Permits
    - i. Title 40 CFR, Part 172 - Hazardous Materials Tables and Communication Regulations
    - j. Title 40 CFR, Part 178 - Shipping Container Specifications
    - k. Title 40 CFR, Part 260 - Hazardous Waste Management Systems: General
    - l. Title 40 CFR, Part 261 - Identification and Listing of Hazardous Waste
    - m. Title 40 CFR, Part 262 - Generators of Hazardous Waste
    - n. Title 40 CFR, Part 263 - Transporters of Hazardous Waste

- o. Title 40 CFR, Part 264 - Owner and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
  - p. Title 40 CFR, Part 265 - Interim Statutes for Owner and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
  - q. Title 40 CFR, Part 268 - Lead Disposal Restrictions
  - r. Title 49 CFR, Parts 170 - 180 Hazardous Wastes
3. Underwriters Laboratories, Inc. (UL)
- a. UL586 – 1990 High Efficiency Particulate Air Filter Units

#### 1.05 QUALITY ASSURANCE

##### A. Hazard Communication Program

- 1. The Contractor shall establish and implement a Hazard Communication Program as required by OSHA Title 29 CFR, Part 1926.59.

##### B. Compliance Plan (Site Specific)

- 1. The Contractor shall establish a written compliance plan, which is specific to the Site, to include the following:
  - a. A description of work activity involving LBP disturbance including equipment used, material included, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices.
  - b. Engineering controls used to control lead exposure.
  - c. The proposed technology the Contractor will implement in meeting the PEL.
  - d. Air monitoring data documenting the source of lead emissions.
  - e. A detailed schedule for implementing the program, including documentation of appropriate supply of equipment, etc.
  - f. Proposed work practice which establishes proper protective work clothing, housekeeping methods, hygiene facilities, and practices.
  - g. Worker rotation schedule (if proposed), to reduce TWA.
  - h. A description of methods for informing workers of potential lead exposure.

##### C. Hazardous Waste Management

- 1. The Contractor shall establish a Hazardous Waste Management Plan, which shall comply with applicable regulations and address the following:
  - a. Hazardous waste identification.

- b. Estimated waste disposal quantity.
  - c. Names and qualifications of each subcontractor who will be transporting, storing, treating, and disposing of wastes.
  - d. Disposal facility location and 24-hour point of contact.
  - e. Establish EPA state hazardous waste and identification numbers, if applicable.
  - f. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.
  - g. List of waste handling equipment to be used in performing the work to include cleaning, volume reduction, if applicable, and transport equipment.
  - h. Qualifications of laboratory to be utilized for TCLP sampling and analysis, if applicable.
  - i. Spill Prevention, Control, and Countermeasure (SPCC) Plan.
  - j. Work plan and schedule for waste containment, removal, treatment, and disposal.
- D. Medical Examinations
- 1. Before exposure to lead-contaminated dust, provide workers with a comprehensive medical examination as required by OSHA Title 29 CFR, Parts 1910.1025 and 1926.62.
  - 2. The examination shall not be required if adequate records show that employees have been examined as required by OSHA Title 29 CFR, Part 1926.62 within the last year.
  - 3. Medical examination shall include, at a minimum, biological monitoring and approval to wear respiratory protection.
- E. Training
- 1. The Contractor shall ensure that workers are trained to perform LBP disturbing activities and disposal operations prior to the start of work, in accordance with OSHA Title 29 CFR, Part 1926.62.
- F. Respiratory Protection Program
- 1. The Contractor shall furnish each employee required to wear a negative pressure respirator with a respirator fit test at the time of initial fitting and at least once every 6 months thereafter, as required by OSHA Title 29 CFR, Part 1926.62.
  - 2. The Contractor shall establish a Respiratory Protection Program in accordance with ANSI Z88.2 and OSHA Title 29 CFR, Parts 1910.134 and 1926.62.

## 1.06 SUBMITTALS

- A. The Contractor shall submit the following to the Consultant, in one complete package, prior to the pre-construction meeting and at least ten (10) business days before the start of the Work:
1. Submit a schedule to the Owner and the Consultant, which defines a timetable for executing and completing the project, including work area preparations, removal, cleanup, and decontamination.
  2. Submit a current, valid certificate of insurance.
  3. Submit the name and address of the hauling contractor and location of the landfill to be used. Also, submit current valid operating permits and certificates of insurance for the transporter and landfill.
  4. Submit the plans and construction details for the decontamination systems and the isolation of the work areas as may be necessary for compliance with this Section and applicable regulations.
  5. Submit copies of medical records for each employee to be used on the project, including results of biological monitoring and a notarized statement by the examining physician that such an examination occurred.
  6. Submit valid training certificates for each employee to be used on the project.
  7. Submit a successful respirator fit testing record performed by a qualified individual within the previous six months for each employee to be used on this project. The employee's name and social security number must be provided with each record.
  8. Submit the name and address of the Contractor's blood lead testing lab, OSHA CDC listing, and state certification.
  9. Submit detailed product information on all materials and equipment proposed for demolition work on this project.
  10. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project, as well as a list of past projects completed.
  11. Submit a chain-of-command for the project.
  12. Submit a site-specific Emergency Action Plan for the project.
  13. Submit a written, site-specific Respiratory Protection Program for employees, including make, model, and NIOSH approval numbers of respirators to be used at the Site (if applicable).

No work on the Site will be allowed to begin until the Owner and the Consultant, as listed herein, accept the Pre-Construction Submittals. Any delay caused by the Contractor's refusal or inability to submit this documentation accurately, completely, and in a timely manner does not constitute a cause for change order or a time extension.

B. The following shall be submitted to the Consultant during the Work:

1. Personal air sampling results.
2. Training and medical records for new employees to start Site work (24 hours in advance).

C. The following shall be submitted to the Consultant at the completion of the Work:

1. Copies of all air sampling results.
2. Contractor logs.
3. Copies of manifests and receipts acknowledging disposal of all waste material from the project showing delivery date, quantity, and appropriate signature of authorized landfill representative.

#### 1.07 PERSONAL PROTECTION

A. Exposure Assessment

1. The Contractor shall determine if any worker will be exposed to lead at or above the AL.
2. The exposure assessment shall identify the level of exposure a worker would be subjected to without respiratory protection.
3. The exposure assessment shall be achieved by obtaining personal air monitoring samples representative of a full shift, at least an 8-hour TWA.
4. During the period of the exposure assessment, the Contractor shall institute the following procedures for worker protection:
  - a. Protective clothing shall be utilized
  - b. Respiratory protection
  - c. Change areas shall be provided
  - d. Hand washing facilities and shower shall be provided
  - e. Biological monitoring
  - f. Worker training

B. Respiratory Protection

1. The Contractor shall furnish appropriate NIOSH/MSHA-approved respirators for use in atmospheres containing lead dust.
2. Respirators shall comply with the requirements of OSHA Title 29 CFR, Part 1926.62.

3. Workers shall be instructed in all aspects of respiratory protection.
4. The Contractor shall have an adequate supply of HEPA-filter cartridges and spare parts on-site for all types of respirators in use.
5. The following minimum respirator protection for use during paint removal or demolition of components and surfaces with LBP shall be the half-face, air-purifying respirator with a minimum of dual P100 filter cartridges (for exposures not in excess of 500  $\mu\text{g}/\text{m}^3$  or 10 x PEL).

C. Protective Clothing

1. Personal protective clothing shall be provided for all workers, supervisors, and authorized visitors entering the work area.
2. Each worker shall be provided daily with a minimum of two (2) complete disposable coverall suits.
3. Removal workers shall not be limited to 2 coveralls, and the Contractor shall supply additional coveralls as necessary.
4. Under no circumstances shall anyone entering the abatement area be allowed to re-use a contaminated disposable suit.
5. Disposable suits (Tyvek™ or equivalent) and other personal protective equipment (PPE) shall be donned prior to entering a lead work area. A change room shall be provided for workers to don suits and other PPE with separate areas to store street clothes and personal belongings.
6. Eye protection for personnel engaged in lead operations shall be furnished when the use of a full-face respirator is not required.
7. Goggles with side shields shall be worn when working with power tools, a material that may splash or fragment, or if protective eye wear is specified on the SDS for a particular product to be used on the project.

1.08 PERSONAL MONITORING

A. General

1. The Contractor shall be required to perform the personal air sampling activities during LBP disturbing work. The results of such air sampling shall be posted, provided to individual workers, and submitted to the Client, as described herein.

B. Air Sampling

1. Air samples shall be collected for the duration of the work shift or for 8 hours, whichever is less. If working conditions remain unchanged, personal air samples need not be collected every day after the first day; however, they must be collected each time there is a change in removal operations, either in terms of the location, or in the type of work. Sampling will be used to determine the 8-hour TWA. The Contractor shall be responsible for personal air sampling as outlined in OSHA Title 29 CFR, Parts 1910.1025 and 1926.62.
2. Air sampling results shall be reported to individual workers, in written form, no more than 48 hours after the completion of a sampling cycle. The reporting document shall list each sample's result, sampling time and date, personnel monitored and their social security numbers, flow rate, sample duration, sample yield, cassette size, and analyst's name and company, and shall include an interpretation of the results. Air sample analysis results will be reported in  $\mu\text{g}/\text{m}^3$ .

C. Testing Laboratory

1. The Contractor's testing lab shall be currently participating in AIHA's Environmental Lead Laboratory Accreditation Program (ELLAP). The Contractor shall submit to the Consultant for review and acceptance, the name and address of the laboratory, certification(s) of AIHA participation, a listing of relevant experience in air lead analysis, and presentation of a documented Quality Assurance and Quality Control Program.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Any substitution in materials, equipment, or methods to those specified shall be approved by the Owner and Consultant prior to use. Any requests for substitution shall be provided in writing to the Owner and Consultant. The request shall clearly state the rationale for the substitution.
- B. Submit to the Owner and Consultant product data for all materials and equipment and material samples to be considered as an alternate.
- C. Product data shall consist of manufacturer catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, SDS, and other standard descriptive data. Submittal data shall be clearly marked to identify pertinent materials, products, or equipment and show performance characteristics and capacities.
- D. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.



## 2.02 MATERIAL AND PRODUCTS

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.
- B. Damaged or deteriorating materials shall not be used and shall be removed from the premises.
- C. The Contractor shall have a sufficient inventory of, or dated purchase orders for, materials necessary for the work (e.g., protective clothing, respirators, respirator filter cartridges, polyethylene (poly) sheeting of proper size and thickness, tape, spray adhesive, air filters, etc.).
- D. Materials
  - 1. Poly sheeting in a roll size to minimize the frequency of joints shall be delivered to the Site with factory label indicating 6-mil.
  - 2. Poly disposable bags shall be 6-mil. Tie wraps for bags shall be plastic, five (5)-inches long (minimum), pointed and looped to secure filled poly bags.
  - 3. Tape or spray adhesive will be capable of sealing joints in adjacent poly sheets and for attachment of poly sheeting to finished or unfinished surfaces of dissimilar materials and capable of adhering onto both dry and wet conditions, including use of amended water.
  - 4. Impermeable containers are to be used to receive and retain any lead-containing or lead-contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with EPA and DOT standards.
  - 5. HEPA-filtered exhaust systems shall be used during powered dust-generating removal operations. Using powered equipment without HEPA exhaust systems in-place on this Site is prohibited.

## 2.03 TOOLS AND EQUIPMENT

- A. Provide suitable tools for all LBP disturbing operations.
- B. The Contractor shall provide (as needed) temporary electrical power panels, electrical power cables, and/or electrical power sources (e.g., generators, etc.). Any electrical-connection work affecting the building electrical power system shall be performed by a Commonwealth of Massachusetts-licensed electrician, permitted as required.
- C. HEPA-Vacuum Equipment, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97% of all mono-dispersed particles of 0.3 micrometers in diameter or larger.

### PART 3 - EXECUTION

#### 3.01 PRE-CONSTRUCTION MEETING

- A. At least one week prior to the start of work, a Pre-Construction Meeting will be scheduled and must be attended by the Contractor and any Subcontractors. The assigned Contractor Site Supervisor must attend this meeting.
- B. The Contractor shall present a detailed project schedule and project submittal package at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.
- C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

#### 3.02 WORKER PROTECTION/TRAINING

- A. The Contractor shall provide appropriate training, PPE, and biological monitoring for each worker and ensure proper usage during potential lead exposure and the initial exposure assessment.

#### 3.03 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall be responsible for establishing and maintaining controls referenced herein to prevent lead contamination outside the lead work area.
- B. The Contractor shall also be responsible for conducting work with applicable federal, state, and local regulations as referenced herein.

#### 3.04 WORK HYGIENE PRACTICES (REQUIRED DURING INITIAL EXPOSURE ASSESSMENT AND IF RESULTS IF AIR SAMPLING ARE ABOVE OSHA AL)

- A. Work Area Entry
  - 1. Workers shall don PPE, including respiratory protection, disposable coveralls, gloves, headgear, and footwear, prior to entering the work area.
- B. Work Area Departure
  - 1. While leaving respirators on, workers shall remove all gross contamination, debris, and dust from disposable coveralls and proceed to change room to remove coveralls and footwear and place in hazardous waste disposal container.
- C. Hand-Washing Facilities
  - 1. All workers must wash their hands and faces upon leaving the work area.
- D. Equipment

1. All equipment used by workers inside the work area shall be wet-wiped or bagged for future decontamination before removal from the work area.
  - E. Prohibited Activities
    1. Under no circumstances shall workers eat, drink, smoke, chew gum or tobacco, apply cosmetics, or remove their respirators in the work area.
  - F. Shock Hazards
    1. The Contractor shall be responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by ground-fault circuit interrupters (GFCI).
- 3.05 LEAD WORK AREA (REQUIRED DURING INITIAL EXPOSURE ASSESSMENT AND IF RESULTS OF AIR SAMPLING ARE ABOVE OSHA AL)
- A. The Contractor shall place lead warning signs at all entrances and exits from the work area. Signage shall be a minimum of 20" x 14" and shall state the following:

**WARNING  
LEAD WORK AREA  
POISON  
NO SMOKING OR EATING OR DRINKING  
UNAUTHORIZED ENTRY PROHIBITED**
  - B. The Contractor shall designate a change room as specified in this Section. The change room shall consist of 2 layers of 6-mil poly sheeting on the floor surface adjacent to the lead work area. The change room shall have separate storage facilities for street clothes to avoid cross-contamination.
  - C. The Contractor shall provide potable water for hand and face washing.
  - D. The Contractor shall place 6-mil poly sheeting on floor/ground surfaces prior to beginning removal work to facilitate clean-up.
- 3.06 WORK AREA CLEAN-UP
- A. The Contractor shall remove all loose chips and debris from floor surfaces and place in hazardous waste disposal bags.
  - B. The Contractor shall clean adjacent surfaces using HEPA-vacuum equipment to remove dust and debris.
  - C. Poly sheeting shall be cleaned and properly disposed of as general construction and demolition waste.

FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

3.07 WASTE DISPOSAL

- A. The Contractor's contractual liability shall be the proper disposal of all wastes generated at the Site in accordance with all applicable federal, state, and local regulations as referenced herein.
  - 1. The Contractor shall be responsible for collecting a waste characterization sample for TCLP analysis, as is required by the designated disposal site. Results of the TCLP analysis shall be forwarded by the Contractor to the Consultant prior to the waste being transported off-Site.

3.08 CONSULTANT

- A. The Owner may retain a Consultant for the purpose of construction administration and project monitoring during demolition work at the Site.
- B. The Consultant will represent the Owner in all tasks of the project at the discretion of the Owner.

END OF SECTION

**SECTION 028433** **PRESUMED PCBs REMOVAL AND DISPOSAL**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Limited Hazardous Building Materials Inspection report prepared by Fuss & O'Neill, Inc. (August 2020).
- C. Section 024100 – Selective Demolition
- D. Section 028213 – Asbestos Abatement
- E. Demolition Drawings prepared by SOCOTEC AE Consulting, LLC

**1.02 SCOPE OF WORK**

- A. Work outlined in this Section includes all work necessary for the removal and disposal of the presumed greater than or equal to ( $\geq$ ) 50 parts per million (ppm) polychlorinated biphenyls (PCB)-containing material (i.e., PCB Bulk Product Waste) impacted during the Fort Revere Water Tower restoration project (the “Work”) located in Hull, Massachusetts (the “Site”). The removal and disposal of presumed PCB Bulk Product Waste will be performed in accordance with 40 CFR 761.62(b) as Performance Based Disposal.
- B. Work outlined in this Section includes all work necessary for the removal and disposal of PCB Remediation Waste in the form of containment barriers, personal protective equipment, cleaning supplies, and wastewater generated during the Work at the Site. The removal and disposal of PCB Remediation Waste will be performed in accordance with 40 CFR 761.62 (b) as Performance Based Disposal.
- C. The Work of this Section includes the following:
  - 1. Site preparation and controls to facilitate performance-based disposal of PCB Bulk Product Waste. Containment procedures for materials referenced for the PCB Work Zone must be utilized for PCB Bulk Product Waste removal and Asbestos Abatement (Section 02 82 13).
  - 2. Health and Safety in accordance with Occupational Safety and Health Administration (OSHA) requirements.
  - 3. Removal, packaging, transportation, and disposal of presumed PCB-containing materials as PCB Bulk Product Waste at a facility permitted to accept PCB Bulk Product Waste (EPA Title 40 CFR, Part 761.62).

4. Removal, packaging, transportation, and disposal of containment barriers, personal protective equipment (PPE), cleaning materials and supplies, and waste generated during removal of PCB Bulk Product Waste as PCB Remediation Waste at a facility permitted to accept PCB Remediation Waste.
5. Cleaning of the Work Zones following complete removal of PCB Bulk Product Waste and PCB Remediation Waste (EPA Title 40 CFR, Part 761.61).
6. Recordkeeping and distribution as required in accordance with EPA Title 40 CFR, Part 761.

1.03 PROJECT DESCRIPTION

- A. The Base Bid includes the removal, packaging, transporting, and disposing of the presumed PCB Bulk Product Waste and PCB Remediation Waste, as identified herein, conducted by workers in accordance with OSHA and EPA regulations. The Base Bid will include the cost for removing, packaging, transporting, and disposing PCB Bulk Product Waste and PCB Remediation Waste.
- B. Materials, as discovered outside of those listed (either above or below), will be measured and paid or credited by unit prices. The quantities are estimates only and should be verified by the Contractor.
- C. The following table summarizes the locations of the base bid work with estimated material quantities. Note quantities provided below are order-of-magnitude estimates only. Refer to Demolition Drawings for specific locations.

**BASE BID – PRESUMED PCB BULK PRODUCT WASTE**

MATERIAL TYPE	LOCATION	QUANTITY	NOTES
Window Glazing Compound	Window Systems	3 EA	1,2

EA = Each

Notes:

1. Denotes material type contains asbestos.
2. Denotes whole-component window system removal and disposal as required for replacement, including, but not limited to, frames, glazing, and all associated sealants down to bare openings.

**BASE BID – PRESUMED PCB REMEDIATION WASTE**

MATERIAL TYPE	LOCATION	QUANTITY
Containment, PPE, Cleaning Materials & Supplies, & Waste Generated During Removal of PCB Bulk Product Waste	Throughout	ALL

- D. A portion of the Work may be performed in multiple mobilizations, at different periods of time, in conjunction with other trades (i.e., other trades work, demolition work, etc.).
- E. Safety Data Sheets (SDS) for chemicals to be used during the project must be submitted to the Consultant prior to Site delivery.
- F. The Contractor shall be responsible for providing temporary water, power, and heat as needed at the Site. Temporary lighting within the Work Zones must be connected to Ground Fault Circuit Interrupter (GFCI) power panels, installed by a Commonwealth of Massachusetts-licensed electrician, permitted as required, and located outside the Work Zone.

1.04 DEFINITIONS

- A. The following definitions related to this Section (Section 02 84 33 - Presumed Polychlorinated Biphenyl Removal and Disposal) shall apply:
  1. Architect: SOCOTEC AE Consulting, LLC.
  2. Air Monitoring: The process of measuring PCB concentrations of an area or exposure of a person.
  3. CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act (Title 42 CFR, Parts 9601-9657).
  4. Chemical Waste Landfill: A landfill at which protection against risk of injury to health or the environment from PCB migration to land, water, or the atmosphere is provided from PCBs and PCB items deposited therein by locating, engineering, and operating the landfill as specified in EPA Title 40 CFR, Part 761.75.
  5. Cleanup Site: The full contamination extent and all suitable areas in very close proximity to the contamination necessary for implementation of a PCB Remediation Waste cleanup, regardless of whether the Site was intended for management of waste.
  6. Competent Person: As defined by OSHA, a representative of the Contractor who is capable of identifying existing PCBs hazards in the workplace and selecting the appropriate control strategy for PCB exposure. Person who has authority to take prompt corrective measures to eliminate such hazards during PCB removal.
  7. Consultant: Fuss & O’Neill, Inc.

8. Containment: An enclosure which establishes a contaminated area by surrounding the location where PCB and/or other toxic or hazardous substance removal is performed and establishing a Controlled Work Zone.
9. Decontamination Enclosure System (Decon): A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.
10. Designated Facility: An off-site disposer or commercial storer of PCB-containing waste designated on the manifest as the facility that will receive a manifested shipment of PCB-containing waste.
11. Disposal: An intentional or accidental act of discarding, throwing away, completing, or terminating the useful life of PCBs and PCB-containing items. Disposal includes spills, leaks, and other uncontrolled discharges of PCBs, as well as actions related to containing, transporting, destroying, degrading, decontaminating, or confining PCBs and PCB items.
12. DOT: The United States Department of Transportation.
13. EPA Identification Number: The 12-digit number assigned to a facility by EPA upon notification of PCB waste activity under EPA Title 40 CFR, Part 761.205.
14. Excluded PCB Product: A PCB-containing material which is determined by laboratory analysis to contain concentrations of PCBs less than 50 ppm, and meets the requirements of EPA Title 40 CFR, Part 761.3.
15. Fixed Object: Mechanical equipment, electrical equipment, fire detection systems, alarms, or all other fixed equipment, fixtures, or items which cannot be removed from the Work Zone.
16. Generator of PCB Waste: Any person who acts, processes, or produces PCBs that are regulated for disposal under EPA Title 40 CFR, Part 761, Subpart D, whose act first causes PCBs or PCB-containing items to become subject to the disposal requirements of EPA Title 40 CFR, Part 761, Subpart D, or who has physical control over the PCBs when a decision is made that the use of the PCBs has been terminated, and is therefore subject to the disposal requirements of EPA Title 40 CFR, Part 761, Subpart D. Unless another provision of EPA Title 40 CFR, Part 761 specifically requires a site-specific meaning, "Generator of PCB Waste" includes all of the PCB waste generation sites owned or operated by the person who generates PCB waste.
17. GFCI: Ground-Fault Circuit Interrupter.
18. HEPA: High-Efficiency Particulate Air.
19. HEPA Filter: Filter in compliance with ANSI Z9.2 1979.
20. HEPA Vacuum Equipment: Vacuum equipment where all the air drawn into the machine is expelled through a HEPA filter with none of the air leaking past it and with a HEPA-filter as the last filtration stage.



21. High-Occupancy Area: Any area where PCB Remediation Waste has been disposed of on-site and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: 840 hours or more (an average of 16.8 hours or more per week) for non-porous surfaces and 335 hours or more (an average of 6.7 hours or more per week). Examples might include a residence, school, day care center, sleeping quarters, a single or multiple occupancy, 40-hours per week work station, a school classroom, a cafeteria in an industrial facility, a control room, or a work station at an assembly line.
22. Incinerator: An engineered device using controlled flame combustion to thermally degrade PCBs and PCB Items. Examples of devices used for incineration include rotary kilns, liquid-injection incinerators, cement kilns, and high-temperature boilers.
23. Laboratory: A facility that analyzes samples for PCBs and is unaffiliated with any entity whose activities involve PCBs.
24. Large PCB Mark (PCB M<sub>L</sub>): Mark that includes letters and striping on a white or yellow background, and shall be sufficiently durable to equal or exceed the life (including storage for disposal) of the PCB Article, PCB Equipment, or PCB Container. The size of the mark shall be at least six inches (6") on each side. If the PCB Article or PCB Equipment is too small to accommodate this size, the mark may be reduced in size proportionately down to a minimum of two inches (2") on each side.
25. Liquid PCBs: A homogenous, flowable material containing PCBs, and no more than 0.5 percent by weight of non-dissolved material.
26. Low-Occupancy Area: Any area where PCB Remediation Waste has been disposed of on-site, and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: less than 840 hours (an average of 16.8 hours per week) for non-porous surfaces and less than 335 hours (an average of 6.7 hours per week). Examples might include an electrical substation or a location in an industrial facility where a worker spends small amounts of time per week (such as an un-occupied area outside a building, an electrical equipment vault, or in the non-office space in a warehouse where occupancy is transitory).
27. Manifest: The shipping document EPA form 8700-22, and any continuation sheet attached to EPA form 8700-22, originated and signed by the Generator of PCB Waste.
28. Mark: The descriptive name, instructions, cautions, or other information applied to PCBs, PCB Items, or other objects.
29. Marked: The marking of PCB Items, PCB storage areas, and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets the requirements of the EPA Title 40 CFR, Part 761.
30. Movable Object: Unit of equipment or furniture in the Work Zone that can be removed from the Work Zone.

31. Municipal Solid Waste: Garbage, refuse, sludges, wastes, and other discarded materials resulting from residential and non-industrial operations and activities, such as household activities, office functions, and commercial housekeeping wastes.
32. Negative Air Pressure Equipment: A portable, local exhaust system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas), and capable of maintaining a constant, low-velocity air flow into regulated areas from adjacent unregulated areas.
33. Non-Liquid PCBs: Materials containing PCBs that, by visual inspection, do not flow at room temperature (25°C or 77°F), or from which no liquid passes when a 100 gram or 100 milliliter representative sample is placed in a mesh number 60 ±5 percent paint filter and allowed to drain at room temperature for five minutes.
34. Non-Porous Surface: A smooth, unpainted solid surface that limits penetration of PCB-containing liquid beyond the immediate surface. Examples include smooth uncorroded metal, natural gas pipe with a thin, porous coating originally applied to inhibit corrosion, smooth glass, smooth glazed ceramics, impermeable polished building stone such as marble or granite, and high-density plastics, such as polycarbonates and melamines, which do not absorb organic solvents.
35. On-Site: Within the boundaries of a contiguous property unit.
36. Owner: Town of Hull, Massachusetts.
37. PCB(s): A chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances that contain such substance. Refer to EPA Title 40 CFR, Part 761.1(b) for applicable concentrations of PCBs. PCB and PCBs as contained in PCB Items are defined in EPA Title 40 CFR, Part 761.3.
38. PCB Article: A manufactured article, other than a PCB Article Container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. Includes capacitors, transformers, electric motors, pumps, pipes, and other manufactured item which (1) is formed to a specific shape or design during manufacture, (2) has end use function(s) dependent in whole or in part upon its shape or design during end use, and (3) has either no change of chemical composition during its end use, or only those changes of composition that have no commercial purpose separate from that of the PCB Article.
39. PCB Article Container: A package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB Articles or PCB Equipment, and whose surface(s) has not been in direct contact with PCBs.

40. PCB Bulk Product Waste: A waste derived from manufactured products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal is greater than or equal to ( $\geq$ ) 50 ppm PCBs. Does not include PCBs or PCB Items regulated for disposal under EPA Title 40 CFR Parts 761.60(a)-(c), 761.61, 761.63, or 761.64. PCB Bulk Product Waste is further defined in EPA Title 40 CFR, Part 761.3.
41. PCB Capacitor: A capacitor that contains PCBs at concentration  $\geq$  500 ppm. Concentration assumptions applicable to capacitors appear under EPA Title 40 CFR, Part 761.2.
42. PCB Equipment: A manufactured item, other than a PCB Article Container, which contains a PCB Article or other PCB Equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures.
43. PCB Item: A PCB Article, PCB Article Container, PCB Container, PCB Equipment, or anything that deliberately or unintentionally contains, or has as a part of it, any PCBs.
44. PCB Remediation Waste: Waste containing PCBs in concentrations  $\geq$  1 ppm as a result of a spill, release, or other unauthorized disposal. This includes wastes generated during PCB removal including containment barriers (polyethylene sheeting, tape, etc.), PPE, waste/decontamination water, used decontamination disposables (e.g., towels, cloths), and other disposables used and generated during PCB removal work. **PCB Remediation Waste must be disposed of as a hazardous waste.**
45. PCB Waste(s): PCBs and PCB Items that are subject to the disposal requirements of EPA Title 40 CFR, Part 761, Subpart D.
46. Performance-Based Disposal: Disposal of PCB Bulk Product presumed to contain  $\geq$  50 ppm PCBs.
47. Porous Surface: A surface that allows PCBs to penetrate or pass into itself including, but not limited to, paint or coating on metal, corroded metal, fibrous glass or glass wool, unglazed ceramics, ceramics with a porous glaze, porous building stone such as sandstone, travertine, limestone, or coral rock, low-density plastics such as Styrofoam™ and low-density polyethylene (poly), coated (varnished or painted) or uncoated wood, concrete or cement, plaster; plasterboard, wallboard, rubber, fiberboard, chipboard, asphalt, or tar paper. For purposes of cleaning and disposing of PCB Remediation Waste, porous surfaces have different requirements than non-porous surfaces.
48. RCRA: The Resource Conservation and Recovery Act (EPA Title 40 CFR, Parts 260 - 265).
49. Regulated Work Zone: An area established by the employer to demarcate where PCB removal is conducted and any adjoining area where debris, and waste from such PCB removal work, accumulates.
50. Site: Fort Revere Water Tower located in Hull, MA.

51. Storage for Disposal: Temporary storage area for PCBs that have been designated for disposal.
52. SW-846: The document having the title “SW-846, Test Methods for Evaluating Solid Waste.”
53. Totally-Enclosed Manner: A manner that will ensure no exposure to human beings, or the environment, to a concentration of PCBs.
54. Transfer Facility: A transportation-related facility including loading docks, parking areas, and other similar areas where shipments of PCB waste are held during normal transportation. Transport vehicles are not transfer facilities under this definition, unless they are used for the storage of PCB waste, rather than for actual transport activities. Storage areas for PCB waste at transfer facilities are subject to the storage facility standards of EPA Title 40 CFR, Part 761.65, but such storage areas are exempt from the approval requirements of EPA Title 40 CFR, Part 761.65(d) and the recordkeeping requirements of EPA Title 40 CFR, Part 761.180, unless the same PCB waste is stored there for a period of more than 10 consecutive days between destinations.
55. Transporter of PCB Waste: For the purposes of Title 40 CFR, Part 761, Subpart K, any person engaged in the transportation of regulated PCB waste by air, rail, highway, or water for purposes other than consolidation by a generator.
56. Transport Vehicle: A motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (e.g., trailer, railroad freight car) is a separate transport vehicle.
57. TSCA: The Toxic Substances Control Act (15 U.S.C. 2601 et seq.).

#### 1.05 CONSULTANT

A. The Owner shall retain a third-party, environmental hygiene firm (the “Consultant”) for the purposes of project management and monitoring during presumed Polychlorinated Biphenyl (PCB) Bulk Product Waste remediation. The Consultant will represent the Owner in all phases of the remediation project at the discretion of the Owner. The Asbestos Contractor and/or Demolition Contractor (collectively the “Contractor”) shall regard the Consultant’s direction as authoritative and binding (as provided herein) in matters particularly, but not limited to, the following:

1. Work Zone approval
2. Monitoring results review
3. Various segments of work completion
4. Final visual inspection
5. Data submission review

#### 1.06 USE OF THE CONTRACT DOCUMENTS

- A. It shall be incumbent upon the Contractor to visit the Site and determine what exists, its condition, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the Site and understand the existing conditions.
- B. All work shall comply with the Contract Documents and with applicable codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern the Work.
- C. It is not intended that the Specifications show every detail of the Work, but the Contractor shall be required to furnish, within the Contract Sum, all materials and labor necessary for the completion of the Work in accordance with the intent of the Specifications.
- D. In case of ambiguity among the Contract Documents, the more stringent requirement, as determined by the Consultant, shall apply.
- E. The Work of this Contract includes making modifications as necessary, subject to approval by the Owner in consultation with the Consultant, to correct any conflicts between Contract Documents.
- F. All items, not specifically mentioned in the Specifications, but implied by trade practices to complete the Work, shall be included.

#### 1.07 SITE EXAMINATION

- A. It is understood that the Contractor has examined the Site and made their own estimates of the Site facilities and difficulties attending to the execution of the Work and has based their bid price thereon.
- B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing Site conditions.

#### 1.08 CONTRACTOR QUALIFICATIONS

- A. All bidders shall submit a record of prior experience in PCB Bulk Product Waste (or similar) projects, listing no less than three completed projects in the past year, with all projects of similar size and scope. The Contractor shall list the experience and training of the project supervisor and all on-site personnel. The information to be included is as follows:
  - 1. Project Name and Address
  - 2. Owner's Name and Address
  - 3. Architect/Consultant
  - 4. Contract Amount
  - 5. Completion Date
  - 6. Extras and Changes

- B. Submit a written statement regarding whether the Contractor and/or any employees have ever been cited for non-compliance with federal or state regulations pertaining to worker protection, removal, transport, or disposal related to PCBs or other hazardous materials.

#### 1.09 CONSTRUCTION PROGRESS SCHEDULE

- A. To ensure adequate planning and execution of the Work and to assist the Consultant in reviewing the justification for the Contractor's applications for payment, the Contractor shall prepare and maintain a detailed Progress Schedule.
- B. The Contractor shall supervise and direct all work of theirs and other trades using their best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract.
- C. Due to the nature of this construction work, the scheduling or phasing of work under this Contract may be adjusted by the Owner. If the scope of work is not altered, adjustments to the project phasing shall have no effect on the contract price.
- D. The Contractor and any Subcontractors shall attend a pre-construction meeting with the Owner and their Consultant. The assigned Supervisor must attend this meeting.

#### 1.10 TESTING LABORATORY SERVICES

- A. The Contractor shall submit to the Consultant the name, address, and qualifications of proposed laboratories intended to be utilized for sample analysis, as required by this Section.
- B. Bulk sample collection by the Contractor shall be prohibited without prior written consent of the Owner or their Consultant.
- C. If representative composite samples of the anticipated waste stream must be collected and analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) for disposal purposes, the Contractor shall seek written approval from the Owner and the Consultant. The Owner or the Consultant may elect to have the testing provided by a third-party, environmental-hygiene firm of their choosing at the Contractor's expense.

#### 1.11 ADDITIONAL GENERAL REQUIREMENTS

- A. The Contractor shall employ a competent Supervisor with at least three years of experience on projects of similar scope and magnitude, who shall be responsible for all work involving presumed PCB-containing materials removal and disposal, as described in this Section and defined in applicable regulations, and have full-time, daily supervision of the same. The Supervisor shall be the competent person as defined by OSHA regulations.

- B. The Contractor shall furnish all labor, materials, facilities, equipment, installation services, employee training, permits, licenses, certifications, agreements, and incidentals necessary to perform the specified work. Work shall be performed in accordance with the Contract Documents, the latest regulations from OSHA, the United State Environmental Protection Agency (EPA), and all other applicable federal, state, and local agencies. Whenever the requirements of the above references conflict or overlap, the more stringent provision shall apply.
- C. All project personnel engaged in the work covered under this Section shall be trained in accordance with OSHA Title 29 CFR, Parts 1910.1000 and 1910.1200.
- D. This Section specifies the procedures for disposal of existing materials presumed to contain PCBs at concentrations of  $\geq 50$  ppm. Note that these materials may also contain asbestos.
- E. This Section also specifies the procedures for removal and disposal of PCB Bulk Product Waste generated during PCB Bulk Product removal. **This includes disposal of containment barriers, PPE, cleaning materials, and supplies as PCB Remediation Waste.**
- F. Subsequent cleaning of all adjacent surfaces upon completion of Work is also included in this Section.
- G. Disturbance or removal of PCB-containing material may cause a health hazard to workers and building occupants. The Contractor shall disclose to workers, supervisory personnel, subcontractors, and consultants at the Site the seriousness of the hazard and proper work procedures that must be strictly followed.
- H. During performance of the Work, workers, supervisory personnel, Subcontractors, or consultants who may encounter, disturb, or otherwise function in the immediate vicinity of the PCB-containing material, shall take continuous measures, as necessary, to protect workers from the hazard of exposure. Such measures shall include the procedures and methods described in this Section, OSHA regulations, EPA regulations, and local requirements, as applicable.
- I. If requested or required by local, state, federal, and any other authorities having jurisdiction over such work, the Contractor shall allow the Work of this Contract to be inspected. The Contractor shall immediately notify the Owner and the Consultant, and shall maintain written evidence of such inspection for review by the Owner and the Consultant.
- J. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance during the Work, as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance, or negligence.

- K. The Contractor shall immediately notify the Owner and Consultant when all permits, licenses, certificates of inspection, of approval, or of occupancy, etc. are delivered. The Contractor shall also immediately notify the Owner and Consultant of any other such instruments required under codes by authorities having jurisdiction, regardless of issuer, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

#### 1.12 SUBMITTALS

- A. The Contractor shall submit the following to the Consultant, in one complete package, prior to the pre-construction meeting, and no later than 10 business days prior to the anticipated start of the Work:

1. Site-Specific Health and Safety Plan (HASP): The Contractor shall prepare a site-specific HASP plan for protection of workers and control of the work site in accordance with OSHA regulatory requirements located at Title 29 CFR, Part 1910.120. The HASP shall govern all work conducted at the Site during removal of PCB-Containing Materials and related debris, waste handling, sampling, waste management, and waste transportation. At a minimum, the HASP shall address the requirements set forth in OSHA Title 29 CFR, Part 1910.120, as further outlined below:
  - a. Health and Safety Organization
  - b. Site Description and Hazard Assessment
  - c. Training
  - d. Medical Surveillance
  - e. Work Zones
  - f. Personal Protective Equipment
  - g. Personal Hygiene and Decontamination
  - h. Standard Operating Procedures and Engineering Controls
  - i. Emergency Equipment and First Aid Provisions
  - j. Equipment Decontamination
  - k. Air Monitoring
  - l. Telephone List
  - m. Emergency Response and Evacuation Procedures and Routes
  - n. Site Control
  - o. Permit-Required Confined Space Procedures (if applicable)
  - p. Spill Prevention Control and Countermeasure (SPCC) Plan
  - q. Heat and Cold Stress
  - r. Recordkeeping
  - s. Community Protection Plan
2. Employee Training, Medical, and Respirator Fit Test Documentation: The Contractor shall submit the following documentation:



- a. Submit documentation of OSHA 40-Hour HAZWOPER training for workers and additional 8-Hour HAZWOPER Supervisor Training for the designated on-site Supervisor for the abatement work. All workers shall have required training for other materials, if required, such as asbestos, and a minimum of awareness training for PCBs, consistent with OSHA requirements for hazard communication.
  - b. Medical clearance and respirator fit test records of each employee who may be on the Site.
3. PCB and/or other Toxic or Hazardous Substances Disposal Plan: A written plan that details the Contractor's plan for transportation and disposal of PCB Bulk Product Waste, PCB Remediation Waste, or other Toxic or Hazardous Substance wastes generated during the project. The Disposal Plan shall identify:
- a. The Contractor's insurance certificate and each landfill's (PCB Bulk Product Waste and PCB Remediation Waste) operating permits and insurance certificates.
  - b. Waste packaging, labeling, placarding, and manifesting procedures.
  - c. The name, address, and 24-hour contact number for the proposed treatment or disposal facility, or facilities to which waste generated during the project will be transported.
  - d. The name, address, contact person(s), and state-specific permit numbers for proposed waste transporters, and EPA and DOT identification number for firms that will transport PCB Bulk Product Waste and PCB Remediation Waste.
  - e. The license plate numbers of vehicles to be used in transporting of the waste from the Site to each disposal facility.
  - f. The route(s) by which the waste will be transported to the designated disposal facility and states or territories through which the waste will pass.
4. Safety Data Sheets (SDS): SDS and manufacturer's information shall be provided for all chemicals and materials to be used during the project including, but not limited to, specialty cleaners and chemical stripping products.
5. Air Sampling Professional Qualifications: The qualifications of the air sampling professional that the Contractor proposed to use for this project to perform OSHA-required employee exposure monitoring.

No work on the Site will be allowed to begin until the Owner/Architect and the Consultant, as listed herein, approve the Pre-Construction Submittals. Any delay caused by the Contractor's refusal or inability to submit this documentation in a timely manner does not constitute a cause for change order or a time extension.

- B. The following documents shall be submitted to the Consultant within 30 working days following removal of waste from the Site:
1. Waste Profile Sheets
  2. Pre-Disposal Analysis Test Results (if required by disposal facility)
  3. Waste Manifests signed by the disposal facility
  4. Tipping Receipts provided by the disposal facility
  5. Certification of Final Treatment/Disposal signed by the responsible disposal facility official.
- C. The following shall be submitted to the Consultant at the completion of the Work:
1. Disposal Site Receipts: Copy of waste shipment record(s) and disposal site receipt(s) that indicate that PCB Bulk Product Waste, PCB Remediation Waste or other Toxic or Hazardous Substances materials have been properly disposed of.
  2. Product Data: Catalog sheets, specifications, and application instructions for any removal products, if used.

#### 1.13 REGULATIONS AND STANDARDS

- A. The Contractor shall be solely responsible for conducting the Work and supervising all work in a manner that will be in conformance with all federal, state, and local regulations and guidelines pertaining to presumed PCB removal and disposal. Specifically, the Contractor shall comply with the requirements of the following:
1. EPA TSCA (Title 40 CFR, Part 761);
  2. OSHA HAZWOPER Regulations (Title 29 CFR, Part 1910.120);
  3. OSHA Respiratory Protection Standard (Title 29 CFR, Part 1910.134)
  4. OSHA Hazard Communication (Title 29 CFR, Part 1910.1200)
  5. DOT Hazardous Waste Transportation Regulations (Title 49 CFR, Parts 170 - 180).
  6. Current International Building Code and all amendments;
  7. Life Safety Code (National Fire Protection Association [NFPA]);
  8. Local health and safety codes, ordinances or regulations pertaining to PCB remediation and all national codes and standards including ASTM, ANSI, and Underwriter's Laboratories.

#### 1.14 POSTING AND RECORD MAINTENANCE REQUIREMENTS

- A. The following items shall be conspicuously displayed proximate, but outside of, removal Work Zones:
1. Exit Routes: Emergency exit procedures and routes.

2. Emergency Phone Numbers: A list indicating the telephone numbers and locations of the local hospital(s), the local emergency squad, the local fire department, the local police department, the Poison Control Center, Chemical Emergency Advise (CHEMTREC), the Department of Health's local office, the Contractor (on-site and after-hours numbers), and the Consultant (on-site and after hours contact numbers).
3. Warning Signs: Warning signs shall be in English and the language of any workers on-site who do not speak English, and be of sufficient size to be clearly legible and display the following or similar language in accordance with OSHA Title 29 CFR, Part 1910.1200:

**WARNING  
HAZARDOUS WASTE WORK ZONE  
PCBs-POISON  
NO SMOKING, EATING OR DRINKING  
AUTHORIZED PERSONNEL ONLY  
PROTECTIVE CLOTHING IS REQUIRED IN THIS AREA**

4. In addition, all entrances to Work Zones shall be posted with a PCB ML.
  5. Posting requirements of Section 028213 - Asbestos Abatement are required as well when the material being removed also contains asbestos.
- B. The Contractor shall maintain the following items on-site and have copies available for review by all employees and authorized visitors:
1. Contractor's Site-Specific HASP.
  2. Training, Medical Clearance, and Respirator Fit Test Record Documentation for all employees and the project Supervisor.
  3. Codes, Standards, and Publications.
  4. SDS for all chemicals used during the project.
  5. Contractor's written hazard communication, respiratory protection, and confined space entry programs.
- C. Fees, Permits, and Licenses: The Contractor shall pay all licensing fees, royalties, and other costs necessary for the use of any copyrighted or patented product, design, invention, or processing in the performance of the work specified in this Section.
1. The Contractor shall be solely responsible for costs, damages, or losses resulting from any infringement of these patent rights or copyrights. The Contractor shall hold the Owner and the Consultant harmless from any costs, damages, and losses resulting from any infringement of these patent rights or copyrights.
  2. The Contractor shall be responsible for securing all necessary permits for work under this Section, including hauling, removal, and disposal, fire, and materials usage, or any other permits required to perform the specified work.

#### 1.15 MINIMUM REQUIREMENTS FOR WORKER HEALTH AND SAFETY

- A. The Contractor is responsible and liable for the health and safety of all on-site personnel and the off-site community affected by the Work. All on-site workers or other persons entering the Work Zones, decontamination areas, or waste handling and staging areas shall be knowledgeable of and comply with the requirements of the site-specific HASP at all times. The Contractor's HASP shall comply with all applicable federal, state, and local regulations protecting human health and the environment from the hazards posed by the Work.
- B. Consistent disregard for the provisions of the HASP shall be deemed as sufficient cause for immediate stoppage of work and termination of the Contract or any Subcontracts without compromise or prejudice to the rights of the Owner or Consultant.
- C. Any discrepancies between the Contractor's HASP and these Specifications or federal, state, and local regulations shall be resolved in favor of the more stringent requirements that provide the highest degree of protection to the project personnel, the surrounding community, and the environment.
- D. In addition to exposure concerns relating to the presence of PCBs, other health and safety considerations will apply to the Work. The Contractor shall be responsible for recognizing such hazards and shall be responsible for the health and safety of the Contractor's employees at all times. It is the Contractor's responsibility to comply with all applicable health and safety regulations.
- E. The HASP shall be reviewed by all personnel prior to entry into the PCB removal, decontamination, or waste staging areas. This includes representatives of the Contractor, Owner, Consultant, Subcontractor(s), Waste Transporter, or Federal, State, or Local Regulatory Agencies. Such review shall be acknowledged and documented by the Contractor's Site Supervisor by obtaining the name, signature, and affiliation of all personnel reviewing the HASP.
- F. The HASP shall be maintained so as to be readily accessible and reviewable by all site personnel throughout the duration of the PCB remediation project, and until all waste materials are removed from the Site and disposed of at the appropriate disposal facility.
- G. The Contractor's Site Supervisor shall be responsible for ensuring that project personnel and site visitors are informed of and comply with the provisions of the HASP.

#### 1.16 WORK ZONES AND ZONES

- A. The Contractor shall demarcate and clearly identify Work Zones at the Site. Access by equipment, site personnel, and the general public to the Work Zones shall be limited as follows:

1. Work Zone: The work zone(s) shall consist of all areas where removal of Bulk Products and other Toxic or Hazardous Substances, and waste handling and staging activities are on-going and the immediately surrounding locale or other areas where contamination could occur. For PCB Bulk Product removal purposes or other Toxic or Hazardous Substances for disposal, work shall be performed in each work zone within a regulated work zone (as defined in subsequent Subsections) to demarcate work zones from non-work zones. The regulated Work Zone shall be visibly delineated with appropriate warning signs at all approaches to the area (including a PCB ML), and be restricted from access by all personnel except those directly necessary for the completion of the respective PCB Bulk Product removal and disposal tasks. The Work Zones shall be relocated and delineated, as necessary, as work progresses from one portion of the Site to another, to limit access to each area and to minimize risk of exposure to Site workers and the general public. Access shall be controlled at the periphery of the Work Zones to regulate the flow of personnel and equipment into and out of each zone and to help verify that proper procedures for entering and exiting are followed. All persons within the Work Zones shall wear the appropriate level of PPE established in the Contractor's HASP.
2. Decontamination Zone: The Decontamination Zone is the transition zone between the Work Zone and the clean Support Zone of the Site, and is intended to reduce the potential for contaminants from being dispersed from the Work Zone to clean areas of the Site. The Decontamination Zone shall consist of a buffer area surrounding each Work Zone through which the transfer of equipment, materials, personnel, and containerized waste products will occur, and in which decontamination of equipment, personnel, and clothing will occur. The Decontamination Zones shall be constructed as a three-chambered decon for workers and a two-chambered equipment room for waste load out, as detailed in subsequent Subsections. All emergency response and first aid equipment shall be readily maintained in this zone. All PPE and clothing shall be removed or decontaminated in the Decontamination Zone prior to exiting to the Support Zone. If PPE, clothing, and equipment cannot be decontaminated, it shall be segregated as PCB Remediation Waste and disposed of as such.
3. Support Zone: The Support Zone shall consist of the area outside the Decontamination Zones and the remainder of the Site. Administrative and any support activities that by nature need not be conducted in the Work or Decontamination Zone related to the project shall occur in the Support Zone. Access to the Work and Decontamination Zones shall be controlled by the Contractor's Site Supervisor and limited to those persons necessary to complete the Work, and who have reviewed and signed the Contractor's HASP.

#### 1.17 PERSONNEL PROTECTIVE EQUIPMENT

- A. The Contractor shall provide all employees with the appropriate safety equipment and protective clothing to ensure an appropriate level of protection for each task, taking into consideration the chemical, physical, ergonomic, and biological hazards posed by the Site and the Work.
- B. The Contractor shall establish criteria for PPE selection and use in the HASP.
- C. The PPE to be utilized for the project shall be selected based upon the potential hazards associated with the Site and the Work. Appropriate PPE shall be worn at all times within the Work Zone.
- D. The Contractor shall provide the appropriate level of respiratory protection to all field personnel engaged in activities where respiratory hazards exist, or where there is a potential for such hazards to exist.
- E. The Contractor shall provide, as necessary, protective coveralls, disposable gloves, and other protective clothing for all personnel that will be actively involved in waste handling activities, or otherwise present in the Work Zones. Coveralls shall be Tyvek™ or equivalent material. Should the potential for exposure to liquids exist, splash-resistant disposable suits shall be provided and utilized.
- F. Protective coveralls and other protective clothing shall be donned and doffed within the Decontamination Zone and shall be disposed of as PCB Remediation Waste at the end of each day. Ripped coveralls shall be immediately replaced after appropriate decontamination has been completed to the satisfaction of the Contractor's Site Supervisor. Protective clothing shall not be worn outside of the Decontamination Zone.
- G. Hard hats, protective eyewear, rubber boots, and/or other non-skid footwear shall be provided by the Contractor as required for workers and authorized visitors.
- H. All contaminated protective clothing, respirator cartridges, and disposable protective items shall be placed into proper containers to be provided by the Contractor for transport and proper disposal as PCB Remediation Waste in accordance EPA regulations.

#### 1.18 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

- A. At a minimum, the Contractor shall provide and maintain at the Site the following Emergency and First Aid Equipment:
  - 1. Fire Extinguishers: A minimum of one fire extinguisher shall be supplied and maintained at the Site by the Contractor throughout the duration of the Work. Each extinguisher shall be a 20-pound Class ABC dry fire extinguisher minimum with Underwriters Laboratory approval per OSHA Title 29 CFR, Part 1910.157.

2. First Aid Kit: A minimum of one first aid kit meeting the requirements of OSHA Title 29 CFR, Part 1910.151 shall be supplied and maintained at the Site by the Contractor throughout the duration of the Work.
  3. Communications: Telephone communications (either cellular or land line) shall be provided by the Contractor for use by site personnel at all times during the Work.
- B. The Contractor's Site Supervisor shall be notified immediately in the event of personal injury, potential exposure to contaminants, or other emergency. The Contractor's Site Supervisor shall then immediately notify the Owner and Consultant.

1.19 STANDARD SAFETY AND HEALTH PROCEDURES AND ENGINEERING CONTROLS

- A. The following provisions shall be employed to promote overall safety, personnel hygiene, and personnel decontamination:
1. Each Contractor or Subcontractor shall ensure that all safety equipment and protective clothing to be utilized by its personnel is maintained in a clean and readily-accessible manner at the Site.
  2. All prescription eyeglasses in use on this project shall be safety glasses conforming to ANSI Standard Z87.1. No contact lenses shall be allowed on the Site.
  3. Prior to exiting the delineated Decontamination Zone(s), all personnel shall remove protective clothing, and place disposable items in appropriate disposal containers to be dedicated to that purpose. Following removal of PPE, personnel shall thoroughly wash and rinse their face, hands, arms, and other exposed areas with soap and tap water wash and subsequent tap water rinse. A fresh supply of tap water shall be provided at the Site on each workday by the Contractor for this purpose.
  4. All PPE used on-site shall either be decontaminated (in accordance with EPA Title 40 CFR, Part 761.79), or containerized at the end of each workday (to be disposed of as PCB Remediation Waste). Discarded PPE shall be placed in sealed, DOT-approved 55-gallon drums for off-site disposal.
  5. Respirators shall be dedicated to each employee and not interchanged between workers without cleaning and sanitizing.
  6. Eating, drinking, chewing gum or tobacco, smoking, and any other practice that increases the likelihood of hand-to-mouth contact shall be prohibited within the delineated Work Zones. Prior to performing these activities, each employee shall thoroughly cleanse their face, hands, arms, and other exposed areas.
  7. All personnel shall thoroughly cleanse their face, hands, arms, and other exposed areas prior to using toilet facilities.

8. No alcohol, illicit drugs, or firearms will be allowed on the Site at any time.
  9. Contact with potentially contaminated surfaces should be avoided, if possible. Field personnel should minimize walking through standing water/puddles, mud, or other wet or discolored surfaces, kneeling on the ground, and placing equipment, materials, or food on the ground, or other potentially contaminated surface.
  10. The use of the "Buddy System" shall be employed at all times while conducting work at the Site. Each employee shall frequently monitor other workers for signs of heat stress, chemical exposure, or fatigue by periodically examining others' PPE for signs of wear or damage, routinely communicate with others, and notify the Contractor's Site Supervisor in the case of an emergency.
- B. Workers must wear protective suits, protective gloves, eye protection, and a minimum of half-face, air-purifying respirator with dual HEPA-filter cartridges (P100). Respiratory protection shall be in accordance with OSHA Title 29 CFR, Part 1910.134 and ANSI Z88.2.
- C. Workers must be trained per OSHA requirements, have medical clearance, and must have recently received a pulmonary function test (PFT) and a respirator fit test by a trained professional.
1. A personal air sampling program shall be in place, as required by OSHA.
  2. The use of respirators must also follow a complete written respiratory protection program as specified by OSHA.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name, and the product technical description.
- B. Damaged or deteriorating materials shall not be used and shall be removed from the premises by the end of the day. Material that becomes contaminated with PCBs shall be decontaminated or disposed of as PCB Remediation Waste.
- C. Poly sheeting, in a roll size to minimize the frequency of joints, shall be delivered to the Site with factory label indicating four (4) or 6-mil thickness.
- D. Poly disposable bags shall be 6-mil thickness with pertinent pre-printed labels. Tie wraps for bags shall be plastic, five inches long (minimum), pointed and looped to secure filled poly bags.
- E. Tape or adhesive spray shall be capable of sealing joints in adjacent poly sheeting and for attachment of poly sheeting to finished or unfinished surfaces of dissimilar materials, and capable of adhering under both dry and wet conditions, including use of cleaning products.



- F. **Cleaning Products:** The Contractor shall utilize cleaning products such as Simple Green®, Natural Orange™, or other cleaners approved by the Consultant for use in decontaminating porous and non-porous surfaces to remain. All such products shall be utilized in accordance with manufacturer's specifications as intended. The Contractor shall ensure appropriate use and disposal associated with use in accordance with the SDS sheets for each product utilized.
- G. **Encapsulant:** The Contractor shall utilize specialty encapsulating products such as Sikagard® 62 or other epoxy coating approved by the Consultant for use in encapsulating porous surfaces to remain. Two applications of approved encapsulant (a base layer and a wear layer) shall be made and extend ½" from the caulk joint. Layers shall be different colors that are approved by the Owner or Consultant. All such products shall be utilized in accordance with manufacturer's specifications as intended. The Contractor shall ensure appropriate use and disposal in accordance with the SDS sheets for each product utilized.
- H. The Contractor shall have available spray equipment capable of mixing wetting agent with water and capable of generating sufficient pressure and volume and having sufficient hose length to reach all PCB Work Zones.
- I. The Contractor shall have available enough DOT-approved 17-C or 17-H drums for waste disposal.

## 2.02 TOOLS AND EQUIPMENT

- A. The Contractor shall provide all tools and equipment necessary for PCB removal and disposal.
- B. The Contractor's air monitoring professional shall have air-monitoring equipment of type and quantity to monitor operations and conduct personnel exposure surveillance per OSHA requirements.
- C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the Work including protective clothing, respirators, respirator filter cartridges, poly sheeting of proper size and thickness, tape, and air filters.
- D. The Contractor shall provide (as needed) temporary electrical power panels, electrical power cables, and electrical power sources (such as generators). Any electrical connection work affecting the building electrical power system shall be performed by a Commonwealth of Massachusetts-licensed electrician and permitted as required.
- E. The Contractor shall have available shower stalls and support plumbing including sufficient hose length and drain system, or an acceptable alternate.
- F. Vacuum units, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter or larger.

### PART 3 - EXECUTION

#### 3.01 PRE-CONSTRUCTION MEETING

- A. At least one week prior to the start of work a Pre-Construction Meeting shall be scheduled with the Owner and their Consultant, and must be attended by the Contractor, and any Subcontractors. The assigned Contractor Site Supervisor must also attend this meeting.
- B. The Contractor shall present a detailed project schedule and project submittal package at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.
- C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

#### 3.02 WORK ZONE PROTECTION

- A. Where necessary, deactivate electrical power. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with all applicable electrical codes. All installations are to be made by a Commonwealth of Massachusetts-licensed electrician, permitted as required, and located outside the Work Zone.
- B. Post warning signs in accordance with OSHA Title 29 CFR, Part 1910.1200 at all approaches to the Work Zone(s). Signs shall be conspicuously posted to permit a person to read signs and take precautionary measures to avoid exposure to PCBs or other Toxic or Hazardous Substances. These signs should include the large PCB ML markers at each entrance to the Work Zone.
- C. If applicable, refer to Section 028213 - Asbestos Abatement for additional requirements when materials contain asbestos.
- D. Separate waste containers for PCB Bulk Product Waste and PCB Remediation Waste shall be located on-site and shall be placed adjacent to work zone or in an area designated by the Owner. Waste containers shall be lined, covered, and secured. The PCB waste containers shall be properly marked as described in EPA Title 40 CFR, Part 761.40. Marking shall include a PCB M<sub>L</sub> marker formatted in accordance with EPA Title 40 CFR, Part 761.45.

### 3.03 DECONTAMINATION ENCLOSURE SYSTEM

- A. The Contractor shall establish, contiguous to the work area, a three-chamber decon consisting of equipment room, shower room, and clean room, in series. The only access between contaminated and uncontaminated areas shall be through this decon. If it is not feasible to erect a contiguous decon, the Contractor shall establish a remote decon in as close proximity to the work area as is feasible. For abatement not requiring a NPE, the Contractor shall establish a remote decon at the perimeter of the regulated work area.
- B. Access between rooms in the decon shall be through double-flap, curtained openings. The clean room, shower room, and equipment room within the decontamination enclosure, shall be completely sealed ensuring that the sole source of airflow through this area originates from uncontaminated areas outside the work area.
- C. If feasible, the Contractor shall establish, contiguous with the work area, an equipment decon consisting of 2 totally-enclosed chambers divided by a double-flapped, curtained opening. No personnel are permitted to enter or exit through this unit.
- D. Occupied areas and/or building space not within the work areas shall be separated from work areas by means of airtight barriers.
- E. Construct the decon with wood or metal framing, cover both sides with 2 layers of 6-mil poly sheeting, completely sealed with spray adhesive, and taped at the joints.
- F. If a Consultant is retained for pre-abatement services, the Contractor and the Consultant shall visually inspect barrier several times daily to assure effective seal and the Contractor shall repair defects immediately.

### 3.04 PCB BULK PRODUCT WASTE PROCEDURES

- A. The Contractor shall have a designated OSHA competent person on the Site at all times to ensure proper work practices are implemented throughout the project.
- B. The Contractor shall regulate the Work Zone as required for compliance with OSHA Title 29 CFR, Part 1910.1200 to prohibit non-trained workers from entering areas where PCBs are to be removed.
- C. PCB Bulk Products shall be removed in a manner that does not breakdown the materials into fine dust or powder to the extent feasible. Equipment and tools to be utilized shall include hand tools and mechanical equipment, such as demolition hammers, mechanical grinders, etc., to remove PCB Bulk Products from adjacent substrates. Mechanical removal equipment shall be fitted with HEPA-filtered vacuum attachments.

- D. Minimal quantities of water shall be utilized to adequately moisten the generated dust prior to collection for disposal. Under no circumstances shall the PCB Bulk Product Waste show evidence of free-liquid water, pooling, or ponding within the waste stream. Any liquid used to wet the dust and debris to control fugitive emissions shall be properly containerized and decontaminated in accordance with EPA Title 40 CFR, Part 761.79(b)(1) or disposed of in accordance with EPA Title 40 CFR, Part 761.60(a).
- E. Dry or brittle PCB Bulk Products shall be removed with additional engineering controls such as use of HEPA-filtered vacuums and/or wet-wiping methods to remove accumulated dust or debris during removal.
- F. Sequence of removal shall follow the following general requirements:
1. Site preparation and controls shall be completed. Work shall not proceed until authorized by the Consultant.
  2. PCB Bulk Product Waste shall be removed in entirety for disposal as PCB Bulk Product Waste. Note: Material is also presumed to contain asbestos. Refer to Section 028213 - Asbestos Abatement for additional disposal requirements.
  3. Following removal, cleaning of Work Zone shall be performed prior to a final visual inspection by the Consultant. Note that clearance criteria for asbestos may apply. Refer to Section 028213 - Asbestos Abatement for additional clearance requirements.
  4. Following an acceptable final visual inspection, the containment barriers, PPE, cleaning materials, products and supplies, and waste generated during removal of PCB Bulk Product Waste shall be containerized for disposal as PCB Remediation Waste (i.e., hazardous waste).
- G. Remove and containerize all visible accumulations of PCB Bulk Product Waste and PCB Remediation Waste. Wastes shall be containerized in labeled and signed 6-mil poly disposable bags. Tie wraps for bags shall be plastic, 5-inches long (minimum), pointed and looped to secure filled plastic bags. Disposal bags shall then be placed either in steel 55-gallon DOT-approved drums, or a fully-enclosed roll-off container (with a lock).
- H. At any time during PCB Bulk Product removal work should the Consultant suspect contamination of areas outside the Work Zone, the Consultant shall be authorized to issue a stop work order until the Contractor takes required steps to decontaminate these areas, and to eliminate the causes of such contamination. Unprotected individuals shall be prohibited from entering suspected contaminated areas until visual inspections indicate acceptable decontamination.
- I. The Consultant shall conduct a final visual inspection of the Work Zone. If residual suspect debris is identified during the final inspection, the Contractor shall comply with the Consultant's request to render the area clean of all suspect dust and debris.

### 3.05 CLEANING AND DECONTAMINATION

- A. The Contractor shall be responsible for complete cleaning and decontamination of the Work Zone upon completion of work. The Work Zone will be required to meet proposed final visual inspection requirements.
- B. The Contractor shall utilize HEPA-filtered vacuum equipment and wet-cleaning products to remove all visible dust and debris from all surfaces within the Work Zone. If specialty cleaning products are utilized, the Contractor shall utilize the product(s) in accordance with manufacturer's specifications, including any additional safety and disposal requirements for such use.
- C. Any liquid used to wet the dust and debris to control fugitive emissions shall be collected and decontaminated in accordance with EPA Title 40 CFR, Part 761.79(b)(1), or disposed of in accordance with EPA Title 40 CFR, Part 761.60(a). Wash water shall not be discharged on-site.
- D. All rags and other materials used to clean the Work Zone shall be properly disposed of as PCB Remediation Waste (i.e., hazardous waste). All PCB Remediation Waste shall be stored for disposal in accordance with EPA Title 40 CFR, Part 761.61(a)(5)(v)(A). All waste containers shall be appropriately marked and labeled in accordance with EPA Title 40 CFR, Parts 761.40 and 761.45.
- E. Equipment to be utilized in connection with the removal of PCB Bulk Product Waste including waste collection, or that will or may come in direct contact with the Site contaminants, shall be decontaminated prior to leaving the Site to prevent migration of the contaminated residues. Decontamination shall be in accordance with EPA Title 40 CFR, Part 761.79 and Subpart S procedures.
- F. All non-disposable equipment and tools employed in the Work will be decontaminated at the conclusion of each workday utilizing the following sequence:
  - 1. Gross debris removal
  - 2. Tap water and detergent or equivalent wash
  - 3. Tap water rinse
  - 4. Hexane or equivalent solvent
  - 5. Air dry
  - 6. Tap water rinse
- G. The wash water and decontamination liquids shall be captured and containerized in DOT-approved 55-gallon drums for off-site disposal in accordance with EPA Title 40 CFR, Part 761.60(a).

### 3.06 CONSULTANT'S RESPONSIBILITIES

- A. If required or requested, the Contractor shall monitor air quality (visually) within the Work Zone to ascertain the protection of employees and to comply with OSHA regulations. The Consultant may verify this monitoring.

- B. If required or requested, the Consultant's project monitor shall provide continual evaluation of the condition of the building during removal, using their best professional judgments, in respect to EPA and MassDEP regulations.

### 3.07 CONSULTANT'S INSPECTION RESPONSIBILITIES

- A. The Consultant may conduct inspections throughout the progress of the removal project. Inspections may be conducted to document the progress of the removal work, as well as the procedures and practices employed by the Contractor.
- B. The Consultant may perform the following inspections during presumed PCB removal and disposal activities:
  - 1. Pre-Commencement Inspection: Pre-commencement inspections shall be performed at the time requested by the Contractor. The Consultant shall be informed 24 hours prior to the time the inspection is needed. If deficiencies are identified during the pre-commencement inspection, the Contractor shall perform the necessary adjustments to obtain compliance.
  - 2. Work Zone Inspection: Work Zone inspections may be conducted on a daily basis at the discretion of the Consultant. During the work inspections, the Consultant shall observe the Contractor's removal procedures, verify isolation barrier integrity, assess project progress, and inform the Contractor of specific remedial activities if deficiencies are noted.
- C. The Consultant shall perform the following inspection following presumed PCB removal and disposal activities:
  - 1. Final Visual Inspection: Upon the request of the Contractor, the Consultant shall conduct a final visual inspection of the Work Zone. The final visual inspection shall be conducted after completion of the final cleaning procedures. The final visual inspection shall verify that all PCB Bulk Product Waste residual debris has been removed from the Work Zone. If during the inspection the Consultant identifies residual dust or debris, the Contractor shall comply with the request of the Consultant to render the area "free of suspect dust or debris".

### 3.08 MARKING OF WASTE CONTAINERS

- A. All waste containers must be marked with the name of the waste contained, the date when waste was first placed in the vessel, and the last date at which addition of waste occurred. All waste containers must be marked with a PCB M<sub>L</sub>.
- B. All waste containers containing PCB Bulk Product Waste and PCB Remediation Waste in the form of waste and contaminated debris, containment system components, used PPE, personal decontamination and equipment wash water, and any other decontamination fluids or other wastes generated during the Work shall be labeled as follows:

DOT Class 9 UN3432 (solid)  
Or UN2315 (liquid) PCB Waste

RQ

Waste for Disposal

Federal law prohibits improper disposal.

If found, contact the nearest police or public safety authority or

The U.S. Environmental Protection Agency.

Generator's Information: \_\_\_\_\_

Manifest Tracking No.: \_\_\_\_\_

Accumulation Start Date: \_\_\_\_\_

EPA ID No.: \_\_\_\_\_

EPA Waste No.: \_\_\_\_\_

Total Weight: \_\_\_\_\_

Container No.: \_\_\_\_\_

**HANDLE WITH CARE**

- C. In addition, these containers must be marked with a PCB M<sub>L</sub>.
- D. If applicable, the containers must also be marked in accordance with Section 028213 - Asbestos Abatement.
- E. Such marking must be durable, in English, and printed on, or affixed to, the surface of the package, and be displayed on a background of sharply contrasting color not unobscured by labels or attachments and located away from any other marking (such as advertising) that could substantially reduce its effectiveness.

**3.09 ON SITE WASTE MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTES**

- A. All solid waste material, containment system components, used PPE, and other solid wastes generated during the Work, shall be placed directly in appropriate waste receptacles immediately upon removal from its in-situ position. Suitable waste receptacles may consist of roll-off containers or DOT-approved 55-gallon drums.
- B. The Contractor shall be responsible for all packaging, labeling, transport, disposal, and recordkeeping associated with PCB Bulk Product Waste and PCB Remediation Waste in accordance with all federal, state, and local regulations.
- C. The Contractor shall ensure that the person transporting the waste holds a valid permit issued in accordance with appropriate federal, state, and local regulations.

- D. The Contractor shall provide appropriate shipping records or uniform waste manifests to the transporter at the time of transfer as required by the federal, state, and local regulations with a copy provided to the Owner and Consultant.
- E. The Owner should coordinate with the Contractor to sign-off waste materials as the “Generator”. The Consultant shall be given 48-hour notice prior to waste leaving the site (i.e., scheduled pick-up by waste hauler).
- F. The Contractor shall maintain proper follow-up procedures to assure that waste materials have been received by the designated waste facility in a timely manner, and in accordance with all federal, state, and local regulations.
- G. The Contractor shall assure that disposal of PCB Bulk Product Waste and PCB Remediation Waste is at a facility permitted to accept such waste(s) and shall provide a tracking/manifest form signed by the landfill’s authorized representative.
- H. If roll-off containers are to be utilized for containerization of the PCB Bulk Product waste the following shall apply:
  - 1. All roll-off containers, or other similar vessels utilized, shall be watertight and lined with 6-mil poly sheeting or equivalent impermeable lining, and equipped with a secured and impermeable cover.
  - 2. The impermeable cover shall remain securely in-place at all times when waste is not being actively placed in the vessels. The Contractor shall be responsible for ensuring that the cover remains securely intact until the container is removed from the Site. The container must be equipped with a lock.
- I. If 55-gallon drums are to be utilized for waste containerization, the drums shall consist of suitable DOT-approved 55-gallon drums that are watertight and free of corrosion, perforations, punctures, or other damage. All drums shall be securely covered and sealed at the conclusion of each workday.
- J. The waste containers shall remain staged at the Site with a secure, impermeable cover in-place until the materials are transported from the Site to be delivered to the designated waste disposal facility.
- K. Waste roll-off and barrel staging area shall be designated prior to initiation of the presumed PCB removal and disposal work and be approved by the Consultant. If this area is located outside of the building, it is recommended that the area (or areas) be surrounded by a chain-link fence with a minimum height of six feet. The fence shall be labeled with a large PCB M<sub>L</sub> marker.
- L. Properly containerized waste must be transported by a licensed hauler and be shipped as PCB Bulk Product Waste for disposal at a permitted soil waste facility in accordance with EPA Title 40 CFR, Part 761.62(b).



- M. PCB Remediation Waste must be transported by a licensed hauler and be shipped as PCB Remediation Waste for disposal in accordance with EPA Title 40 CFR, Part 761.61(b)(2) at one of the following facilities:
1. A hazardous waste landfill permitted by EPA under Section 3004 of EPA RCRA;
  2. A State-authorized landfill under Section 3006 of EPA RCRA; or
  3. A chemical waste landfill approved under EPA Title 40 CFR, Part 761.75.
- N. Any PCB liquid water waste shall be properly containerized and either decontaminated in accordance with EPA Title 40 CFR, Part 761.79, or disposed of in accordance with EPA Title 40 CFR, Part 761.60(a).
- O. Any chemicals, solvents, or other products used during decontamination shall be properly containerized as liquid PCB Remediation Waste. Waste must be properly decontaminated in accordance with 40 CFR Part, 761.79 or disposed of in accordance with 40 CFR Part, 761.60(a) or (e). Liquid PCB Remediation Waste shall be transported by a licensed hauler and shipped for treatment or disposal. Provide required copies of the uniform waste manifests for hazardous wastes to the Owner waste generation State and waste destination State as required.
- P. Provide required copies of the uniform waste manifests for PCB Remediation Waste to the Owner, waste generation State, and waste destination State, as required.
- Q. All contaminated waste shall be carefully loaded on trucks or other appropriate vehicles for transport. Before and during transport, care shall be exercised to ensure that no unauthorized persons have access to the waste materials.
- R. Waste transporters are prohibited from “back hauling” any freight after PCB waste disposal until decontamination of the vehicle and/or trailer is assured.

**END OF SECTION**



**SECTION 028733 BIRD DROPPINGS REMEDIATION AND DISPOSAL**

**PART 1 - GENERAL**

**1.01 RELATED SECTIONS**

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Fuss & O'Neill, Inc. Hazardous Building Materials Inspection Report (August 2020)
- C. Section 024100 – Selective Demolition
- D. Section 028213 – Asbestos Abatement
- E. Section 028319 – Lead-Based Paint Awareness
- F. Section 028433 – Presumed PCB Removal & Disposal.
- G. Demolition Drawings prepared by SOCOTEC AE Consulting, LLC.

**1.02 SUMMARY**

- A. This project includes the disturbance, removal, and cleaning of existing bird, bat, and/or rodent droppings and disposal of removed materials during renovation activities.
  - 1. The high nutrient content of accumulated bird, bat, and/or rodent excrement provides an excellent growth medium for organisms of potential human health concern.
  - 2. Humans may become infected by inhaling dusts containing dried feces, urine, or respiratory secretions of infected birds, bats, and rodents.
  - 3. Other sources of potential exposures include a bite from an infected bird, bat, or rodent, and handling the plumage, fur, and tissues of infected animals.
  - 4. The main disease organisms found in bird, bat, and rodent droppings are Cryptococcus, Histoplasmosis, and Psittacosis.

- B. This Section specifies the procedures for the disturbance, removal and cleaning of existing bird, bat, and rodent droppings and remains in a structure. The project scope includes the removal, cleaning and disposal of bird, bat, and rodent droppings from the following locations:

**BASE BID**

LOCATION	MATERIAL TYPE	ESTIMATED QUANTITY
Water Tower	Bird, Bat, and Rodent Droppings	150 SF

SF = Square Feet

Note: It is anticipated cleaning and remediation work associated with bird droppings will coincide with asbestos abatement at this location which will employ engineering controls specified in this section.

C. Type of Remediation Project:

1. Large Remediation Project: Greater than 100 square feet of surface contamination or greater than 10 square feet of air conveyance system contamination.

1.03 REFERENCES

- A. New York State Department of Environmental Conservation (DEC): 6NYCRR Part 364 (as guidance).
- B. New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology: Guidelines on Assessment and Remediation of Fungi in indoor environments (as guidance).
- C. Occupational Safety and Health Administration (OSHA):
  1. Respiratory Protection, Title 29, Part 1910, Section 134 of the Code of Federal Regulations.
  2. Construction Industry, Title 29, Part 1926, of the Code of Federal Regulations.
  3. Hazard Communication, Title 29, Part 1910, Section 1200 of the Code of Federal Regulations.
  4. Specifications for Accident Prevention Signs and Tags, Title 29, Part 1910, Section 145 of the Code of Federal Regulations.

- D. Center for Disease Control (CDC): Air Pollution and Respiratory Health - Prevention and remediation strategies for the Control and Prevention of Fungal Growth.
- E. Center for Disease Control (CDC): Histoplasmosis – Protecting Workers at Risk.
- F. National Institute for Occupational Safety and Health (NIOSH): publication 2005-109: Histoplasmosis-Protecting Workers at Risk.
- G. The Internet Center for Wildlife Damage Management: Bat Guano & Bat Feces cleanup.

#### 1.04 DEFINITIONS

- A. Abatement/Remediation/Removal: The process or procedure for removing and controlling the biological release and/or dispersion of microbial agents.
- B. Adequately Wetted: Sufficiently wet, mixed, or coated with a detergent solution to prevent biological and dust dispersion during the movement of contaminated items and debris.
- C. Air Filtration Unit (AFU): Local exhaust HEPA equipped air filtration unit capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area exhausting clean filtered air outside the work zone.
- D. Air Sampling: The process of measuring inside biological contamination and outside ambient conditions.
- E. Authorized Personnel: Facility or the Consultant, and all other personnel who are authorized officials of any regulating agency, be it State, Local, Federal, or Private entity who possess legal authority for enforcement or inspection of the remediation work.
- F. Isolation Barrier: Any surface which seals off the work area to inhibit the movement of biological agents and contamination.
- G. CIH: Certified Industrial Hygienist, certified by the American Board of Industrial Hygiene.
- H. Clearance Criteria: Shall be determined and established by an independent Industrial Hygienist hired by the Consultant, conforming to all standards set forth by all authorities having jurisdiction, mentioned in the references, and issue the certification of cleaning.

- I. Containment: The negative-pressurized enclosure within the building which establishes a contaminated area and surrounds the location where remediation is taking place.
- J. Critical Barrier: Two layers of 6 mil, fire retardant, polyethylene sheeting adhered in such a fashion that each layer is individually visible, and completely seals off the work area to prevent the distribution of infectious biological agents into the surrounding areas that are not part of the work area.
- K. Decontamination Unit: A serial arrangement of rooms or spaces for the purpose of separating the work area from the building environment. This unit provides for entering the work site, returning to the clean environment, cleaning of persons, equipment, and movement of properly contained waste material.
- L. Disposal Bag: A minimum 6 mil thick, polyethylene leak tight plastic bag used for packaging and transporting debris and biological waste from the work area to a disposal site.
- M. Fixed Object: Mechanical equipment, electrical equipment, fire detection systems, alarms, and all other fixed equipment, furniture, fixtures, or other items which cannot be removed from the work area.
- N. HEPA: High Efficiency Particulate Absolute filtration efficiency of 99.97% down to 0.3 microns. Filtration provided on specialized vacuums and air filtration devices to trap particles and infectious agents.
- O. Moveable Object: Equipment, furniture or other items in the work area which can be removed from the work area.
- P. Negative Pressure Ventilation System: A system established for the work zone utilizing Air filtration Unit(s) capable of maintaining a negative pressure inside the work area and which creates a constant air flow from adjacent areas into the work area and exhausts clean filtered air outside the work zone.
  - 1. Maintains minimum of one complete air change every 15 minutes and 0.02 inches of water column pressure differential from the surrounding area at a minimum.
- Q. PPE: Personal Protective Equipment.
- R. Remediation Contractor: Contractor or subcontractor who has demonstrated 3 years previous experience in the clean-up of regulated chemical or physical substances, proficient in environmental remediation and the clean-up of contaminated debris and/or infectious biological agents.

- S. Respirator: Device designed to protect the wearer from the inhalation of harmful respirable dust, fumes, mists, and infectious biological agents.
- T. Visible Emissions: Emissions containing particulate materials that are visually detectable without the aid of instruments.
- U. Wet Cleaning: The process of eliminating biological contamination from building surfaces and objects by using cloths, mops, or other cleaning devices which have been dampened with detergent solution.
- V. Work Area: The area where the related work or biological decontamination operations are performed which is defined and/or isolated to prevent the spread of biological agents.

#### 1.05 ABBREVIATIONS

- A. ASTM: American Society for Testing and Materials
- B. CFR: Code of Federal Regulations
- C. NIOSH: National Institute for Occupational Safety and Health
- D. OSHA: Occupational Safety and Health Administration
- E. USEPA: United States Environmental Protection Agency

#### 1.06 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions for each detergent, disinfectant and/or biocide, and chemicals specified.
- B. Quality Control Submittals:
  - 1. Worker' Qualifications: The persons removing contaminated material and their Supervisors shall be personally experienced in this type of work and shall have been employed by a company with a minimum of one year experience in this type of work.
  - 2. Work Plan: Submit one copy of the work plan required under Quality Assurance Article.
  - 3. Waste Transporter Permit.
  - 4. Safety Data Sheets (SDS) for detergents, disinfectants and/or biocides, and chemicals to be used during the project.

C. Remediation Company Qualification Data:

1. Name of Remediation Company, business address and telephone number.
2. Number of years in business.
3. Number of years performing bird, bat, and rodent dropping remediation.
4. Names, addresses, and contact phone numbers of five projects of similar size and complexity in which contractor has performed bird, bat, and/or rodent dropping remediation work in the last 3 years.

D. Remediation Worker's Qualifications Data:

1. Name of each person who will be performing the Work and their employer's name, business address and telephone number.
2. Copy of recent pulmonary function testing (PFT) and respiratory fit testing.
3. Employee training related to the hazards associated with the specific work/exposures.

E. Operation and Maintenance Data: Submit air filtration unit operation and maintenance data and manufacturer's catalog sheets for the HEPA filter. Provide an affidavit stating that the HEPA filters to be used for this project are new and unused.

F. Contract Closeout Submittals:

1. Disposal Site Receipts: Copy of each receipt showing that the waste containing materials have been properly disposed.
2. Copy of Daily Project Log.

1.07 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the referenced standards and all applicable Federal, State and Local regulatory requirements.

B. Pre-Construction Meeting:

1. Before the Work of this Section is scheduled to commence, a conference will be held by the Consultant at the Site for the purpose of reviewing the Contract Documents, discussing requirements for the Work, and reviewing the Work procedures.



2. The meeting shall be attended by the Contractor and any subcontractors.
  3. Other participants may be invited at the discretion of the Owner/Engineer.
- C. **Work Plan:** Prior to the pre-work conference and before the physical Work begins, prepare a detailed Work Plan. The Work Plan shall include, but not be limited to, work procedures, types of equipment, crew size, negative pressure containment and decontamination unit details, locations and emergency procedures for fire and medical emergencies and contingencies for the failure of containment. The work plan will be discussed at the pre-work conference.
- D. **Remediation Contractor Qualifications:** The firm performing the work of this section shall have been regularly engaged in bird, bat, and rodent dropping remediation work for a minimum of one year and shall have completed 5 similar projects of size and complexity.
- E. **Remediation Worker Qualifications:** The person performing the work of this section and their supervisor shall be personally experienced in this type of work for a minimum of one year and have received recent pulmonary function testing (PFT) and respiratory fit testing.

#### 1.08 PROJECT CONDITIONS

- A. Post the following documents at the entrance to the abatement area:
1. Copy of the printed Work Plan.
  2. Warning signs and/or tape.
- B. **Air Handling System Shut Down (where applicable):**
1. Complete the Work of this Section within the time limitation allowed for shut-down of the air handling system serving the work area.
  2. The air handling system will not be restarted until approval of the cleanup project.
- C. Electric services to those portions of the building and facility shall be maintained at all times.
- D. Remove or encase all equipment in the work area with two layers of six mil fire retardant polyethylene sheeting.
- E. No aisle or passageway shall be obstructed so as to reduce its required width as an exit.

#### 1.09 DELIVERY AND STORAGE

- A. Deliver cleaning and disinfection/biocidal materials in manufacturer's original sealed and labeled containers.
- B. Do not deliver products which have exceeded their shelf life, are in open or damaged containers or cartons, or are not properly labeled as specified.
- C. Store cleaning and disinfection/biocidal materials in compliance with the manufacturer's printed instructions.

#### 1.10 HEALTH AND SAFETY

- A. Where in the performance of the work, workers, supervisory personnel, or sub-contractors may encounter, disturb, or otherwise function in the immediate vicinity of contaminated items and materials, all personnel shall take appropriate continuous measures as necessary to protect all or any ancillary occupants from the potential biological hazard of exposure to potential infectious agents.
  - 1. Such measures shall include the procedures and methods described herein and shall be in compliance with all applicable regulations of Federal, State and Local agencies.

#### 1.11 FIRE PROTECTION AND EMERGENCY EGRESS

- A. Establish emergency and fire exits from the work area containment. Provide first aid kits and two full sets of protective clothing and respirators for use by qualified emergency personnel in the clean room of the decontamination facility.
- B. Maintain Daily Project Logbook throughout the entire term of the Project.
  - 1. All persons who enter the work area or containment shall sign the logbook.
  - 2. Document any intrusion or incident in the logbook.

#### 1.12 PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

- A. Workers must wear protective suits, protective gloves, eye protection and a minimum of half-face respirator with HEPA filter cartridge for all small projects and full-face respirator on all medium and larger projects.
- B. Respiratory Protection: As required by OSHA regulation 1910.134 and ANSI Z88.2.

- C. Workers must be trained, have medical clearance, and must have recently received a pulmonary function test (PFT) and been respirator fit tested by a trained professional.
- D. Personal Air Sampling Program: As required by OSHA. Follow a complete respiratory protection program as specified by OSHA.

## PART 2 - PRODUCTS

### 2.01 AIR FILTRATION UNIT

- A. Air Filtration Units: Comply with ANSI Z9.2, Local Exhaust Ventilation (If applicable)
  - 1. Final Filter: HEPA type.
  - 2. HEPA Filter Efficiency: Minimum efficiency of 99.97 percent when challenged with 0.3 micron particles.
  - 3. Filter Identification: Marked with the name of the manufacturer, model number, air flow rating, efficiency and resistance, and the direction of air flow.
  - 4. Dispose of used filters as contaminated waste.
- B. Equip the system with the following:
  - 1. Automatic Shutdown: Stops the fan in the event of a rupture in the HEPA filter or blocked air discharge.
  - 2. Warning Lights and/or Alarms: Indicate an excessive pressure drop across the filters or an insufficient pressure drop across the filters.
  - 3. Non-Resettable Elapsed Time Meter: Indicate the total accumulated hours of operation.
  - 4. Gage or Manometer: Measures the pressure drop across the filter.

### 2.02 DISPOSAL BAGS

- A. Type: Clear, minimum 6 mil thick polyethylene, preprinted with a caution label. Properly drum/containerize bags for disposal.

2.03 EQUIPMENT

- A. Temporary lighting, heating, hot water heating units, ground fault interrupters, and all other equipment on site shall be UL listed and shall be safe, proper, and sufficient for the purpose intended.
- B. All electrical equipment shall be in compliance with the National Electric Code, Article 305 - Temporary Wiring.

2.04 POLYETHYLENE SHEETING

- A. Type: Fire retardant polyethylene, minimum 6 mil thick.
- B. Initial Floor Protective Layer: Reinforced polyethylene sheets, minimum 10 mil thick.

2.05 PLYWOOD

- A. Type: Fire-rated CDX plywood, with minimum thickness of 1/2 inch.

2.06 SEALANTS

- A. Type: Combination fire stop foam and fire stop sealant to critically seal small openings; Dow Corning Fire Stop Foam and Dow Corning Fire Stop Sealant.

2.07 STUDS AND PARTITIONS

- A. Type: 2" x 4" or metal studs with fire-rated CDX plywood.

2.08 RESPIRATORS

- A. Type: Approved by the Mine Safety and Health Administration (MSHA), Department of Labor, or the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

2.09 VACUUM CLEANERS

- A. Type: Vacuums equipped with new HEPA filters.

2.10 CLEANING SOLUTIONS

- A. Only Cleaners, Disinfectants and Solutions approved for use of bird, bat and rodent remediation may be used.

### PART 3 - EXECUTION

#### 3.01 BIRD, BAT, AND/OR RODENT DROPPING MATERIAL HANDLING AND REMOVAL PROCEDURES

- A. Comply with the referenced standards in Part 1 of this Section, and all applicable Federal, State and Local regulatory requirements.
- B. Provide critical barrier on all openings (open doors, broken windows, etc.) in the work area. Use a minimum of 6 mil thick polyethylene sheeting on openings for the duration of the removal project.
- C. Provide a HEPA-filtered negative pressure enclosure for any contained area to be worked in. Provide a minimum of 4 air changes per hour. Refer to OSHA Asbestos Standard for further information.
- D. Perform the work using HEPA vacuums and/or wet methods. Dust and spores shall be kept to a minimum. No visible emissions are allowed during the performance of the work.
- E. Pressure washing inside building is not acceptable.
- F. Humanely remove all remaining birds, bats, and rodents from the building. Prevent bird, bat, and rodent reentry by providing critical barriers.

#### 3.02 PERSONAL PROTECTION

- A. Disease prevention is dependent on the protection of workers from contact with particulate matter/spores.
- B. Provide and require all workers to use respiratory protection.
  - 1. Type: Minimum of a NIOSH approved half face respirator with P-100 filters.
- C. Use of dust and/or particle masks is not allowed.
- D. Provide and require all workers to wear protective clothing.
  - 1. Protective Clothing: Includes disposable Tyvek™-type coveralls, safety glasses, and rubber gloves.
  - 2. Tape glove/sleeve interfaces.
  - 3. Rubber boots or Tyvek™-type booties shall be worn to prevent shoes from contamination.

4. Remove protective clothing and place in a plastic bag for disposal as required.
- E. Decontamination Area: Complies with decontamination/shower units as described in the OSHA Asbestos Standard.
1. Workers will be required to wash upon leaving work area.
  2. A soap/disinfection solution for workers, towels and a separate tool decontamination area are required.
- 3.03 CLEANING PROCEDURES
- A. Comply with the referenced standards in Part 1 of this Section and all applicable Federal, State and Local regulatory requirements.
- B. Work from top to bottom.
1. Remove gross residue first so as to prevent spreading material to non-contaminated areas.
  2. Gross removal of areas of accumulated waste can be performed with scrapers, etc. directly into bags. Keep material wet.
- C. Wet wipe/HEPA vacuum all surfaces where bird, bat, and rodent droppings are located. Cleaned surfaces must be free of all waste, dirt, and debris.

- 3.04 DISPOSAL OF BIRD, BAT, AND RODENT DROPPING MATERIAL AND RELATED DEBRIS
- A. Comply with the referenced standards in Part 1 of this Section.
- B. Double-bag droppings and contaminated waste in 6 mil polyethylene bags
1. Goose-neck each bag with duct tape.
  2. Clean/disinfect outer bag prior to leaving the work area.
  3. Place bags in dumpster.
- C. Transport the bird, bat, and rodent dropping waste, related debris, and wastewater to an approved disposal facility.

**END OF SECTION**

**DIVISION 02** **SUBSURFACE INVESTIGATION & DEMOLITION**

**SECTION 02 90 00** **LANDSCAPING REPAIR**

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01000 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

- A. Provide all the Landscaping Repair Work required to complete the work of the contract including all the Landscaping Repair Work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Landscaping Repair Work with all the other trades for the project. Provide all demolition and disposal work to complete the Landscaping Repair Work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each Subcontractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.
- B. Landscaping Repair Work includes, but is not limited to, replacing and planting of trees, shrubs and grass, including mulching, staking and related planting procedures of landscaping items only if damaged during construction.
  - 1. Preparation of final sub-grades in planted areas.
  - 2. Furnishing topsoil at areas to be planted.
  - 3. Planting mixes

4. Protection, maintenance and guarantee of plant materials.
5. Existing tree protection and care

#### 1.03 RELATED WORK UNDER OTHER SECTIONS

- A. The following items of related work are specified and included in other Sections of the Specifications:
1. Section 02 41 19 "Selective Demolition"
  2. Section 31 10 00 "Site Clearing"
  3. Section 31 23 00 "Excavation and Fill for Utilities and Pavement."

#### 1.04 QUALITY ASSURANCE

- A. Comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.
- B. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock". A plant shall be dimensioned as it stands in its natural position.
- C. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.

#### 1.05 SAMPLES

- A. Submit the following samples in accordance with the requirements of GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS.
1. Mulch
  2. Anchors
  3. Wire
  4. Hose
  5. Turnbuckles and cable clamps
  6. Wrapping
  7. Topsoil
- B. Provide samples for testing as required by Architect.



## PART 2 – PRODUCTS

### 2.01 TOPSOIL

- A. Topsoil shall be a fertile, friable natural topsoil not excessively acid or alkaline and free of toxic substances harmful to plant growth. Topsoil shall be without admixture of subsoil and free from clay lumps, stumps, roots, debris, stones, or other similar substances 2" or more in diameter.

It shall be obtained from a well-drained arable site with a history of good plant growth. Submit sample for approval by the Landscape Architect.

### 2.02 SLUDGE FERTILIZER

- A. Sludge fertilizer shall be an organic activated, granular, heat dried sludge and shall contain the following minimum percentages by weight: 6% Nitrogen, 4% Phosphoric Acid, and other nutritious basic elements. The sludge fertilizer shall be delivered as specified in standard size bags, showing weight analysis and name of processor and shall be stored in a weatherproof storage place.

### 2.03 COMPOSTED COW MANURE

- A. Manure shall be a derivative of cattle manure which has undergone a period of composting rendering it into a crumbly, odor free, weed free material containing beneficial natural soil bacteria. It shall be free of harmful chemicals and other injurious substances. Manure shall be free of refuse of any kind and shall not contain more than 25% of straw, shavings, leaves, or other material. Manure shall not be more than 2 years nor less than 9 months old.
- B. A composition of peat moss or peat humus to which has been added dehydrated manure such as bovung in the proportion of 100 pounds of dehydrated manure per cubic yard of peat, may be substituted for manure as specified above.

### 2.04 BONE MEAL

- A. Bone meal shall be commercial raw bone meal, finely ground, having a minimum analysis of 4% nitrogen and 20% phosphoric acid.

### 2.05 WATER

- A. Water will be furnished by Owner on the site. Hose and other watering equipment shall be furnished by Contractor.

## 2.06 PLANT MATERIALS

- A. Contractor shall replace in kind and plant all plants or lawn damaged or killed during construction. No substitutions will be permitted. All plants shall be nursery grown unless specifically authorized to be collected.
- B. Plant shall be in accordance with the USA Standard for Nursery Stock of the American Association of Nurserymen.
- C. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. All plants shall have been grown under climatic conditions similar to those in the locality of the site of the project under construction, or have been acclimated to such conditions for at least 2 years. Trees shall have straight trunks and all abrasions and cuts shall be completely culled over.
- D. The root system of each shall be well provided with fibrous roots. All parts shall be sound, healthy, and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae.
- E. All plants must be moved with the root systems as solid units with balls of earth firmly wrapped with burlap. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous root feeding system necessary for the healthy development of the plant. No plant shall be accepted when the ball of earth surrounding its roots has been badly cracked or broken preparatory to or during the process of planting or after the burlap, staves, ropes or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. All plants shall be freshly dug. No plants from cold storage or previously heeled-in will be accepted. All plants that cannot be planted at once must be heeled-in by setting in the ground and covering the balls with soil and then watering.
- F. The height of the trees (measure from the crown of the roots to the tip of the top branch) shall be not less than that of the tree being replaced. The branching height for shade trees next to walks shall be 7'. This may be obtained by pruning after delivery if this does not ruin the shape or form of the trees or cause unsightly scars. All cuts shall be shellacked. The trunk of each tree shall be a single trunk growing from a single unmutilated crown of roots. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sunscald, frost cracks, or wounds resulting from abrasions, fire or other causes. No pruning wounds shall be present having a diameter exceeding 2" and such wounds must show vigorous bark on all edges. No trees which have had their headers cut will be accepted.
- G. Shrubs shall meet the requirements for spread of height of the shrub being replaced. The measurements for height are to be taken from the ground level to

the average height of the shrub and not to the longest branch. The thickness of each shrub shall correspond to the trade classification No. 1.

Single stemmed or thin plants will not be accepted. The side branches must be generous, well-twigged, and the plant as a whole well branched to the ground. The plants must be in a moist vigorous condition, free from dead wood, bruises or other root or branch injuries.

## 2.07 MULCH

- A. Mulch material shall be softwood hemlock bark shredded into fibrous pliable slices generally not exceeding 1/2" in width.

Mulch shall be 98% organic matter with the pH range 3.5 to 4.5. Moisture content of packaged material shall not exceed 35%. Submit sample.

## 2.08 STAKING MATERIALS

- A. Stakes for supporting trees shall be of sound wood, uniform in size, free of knots and holes. They shall be nominal 2" x 4" and 10' long for support staking, 3' long for guy wire anchor stakes. Stakes shall be stained dark brown.
- B. Wire for tree bracing and guying shall be pliable No. 12 gauge galvanized steel.
- C. Hose for covering wire shall be new or used 2 ply reinforced rubber garden hose not less than 1/2" inside diameter.
- D. Wrapping material shall be first quality, heavy waterproof crepe paper manufactured for this purpose, or first quality burlap not less than 4" nor more than 6" wide of suitable strength and manufactured for this purpose.

## 2.09 SEED

- A. Seed mixture shall be fresh, clean, new crop seed. Grass shall be of the previous year's crop and in no case shall the weed seed content exceed 0.25% by weight. The seed shall be furnished and delivered in the proportion specified below in new, clean, sealed and properly labeled containers. All seed shall comply with State and Federal seed laws. Submit manufacturer's Certificates of Compliance. Seed that has become wet, moldy or otherwise damaged shall not be acceptable. Chewings fescue, hard fescue, tall fescue and rygrass shall contain *Acromonium* endophytes. Seed containing endophyte must be kept cool and dry at all times; do not stockpile in the sun.

1. Seed Mixture Composition (not to be used on terraces)

<u>Common Name</u>	<u>Proportion By Weight</u>	<u>Germination Minimum</u>	<u>Purity Minimum</u>
Creeping Red Fescue	50%	85%	95%

Kentucky Bluegrass	40%	85%	90%
Perennial Rye	10%	90%	90%

- a. Bluegrass and ryegrass varieties shall be within the top 50 percent and 25 percent respectively, of varieties tested in National Turfgrass Evaluation Program, or currently recommended as low maintenance varieties by University of Massachusetts or the University of Rhode Island.
- b. Seeding rate for the General Lawn Seed Mix shall be 6 pounds per 1,000 square feet.

### PART 3 - EXECUTION

#### 3.01 METHODS

- A. Personnel: The planting and lawn construction shall be performed by personnel familiar with the accepted procedure of planting and under the constant supervision of a qualified planting foreman.
- B. Planting Seasons:
  1. Deciduous plants shall be planted only when dormant, that is, before leaves appear in the spring and subsequent to their loss in the fall, unless otherwise directed by the Architect.
  2. Evergreen plants may be planted in the spring until new growth appears and any time between September 15 and November 30.
  3. If the building completion date prohibits in-season planting, the Contractor shall complete his work within the project date and prepare himself for out-of-season planting, including wiltproofing and extra watering.  
  
Plant guarantee periods remain as stated below. No frozen ground planting.
- C. Lawn Replacement
  1. Remove all areas of dead lawn including root system. The Architect shall be the sole authority as to the extent of lawn replacement areas.
  2. Contractor to provide a minimum of 6" of new loam in all areas of lawn replacement. Peat moss shall be mixed into existing hard and/or clay type soil. Architect shall determine the need for and amounts of peat moss required.
  3. New grass shall be sod of rye grass, blue grass or a combination of both.

4. Apply starter fertilizer to all areas of newly planted grass.
5. Maintain constant moist soil conditions, a minimum of thirty days.

D. Planting of Trees, Shrubs, and Vines:

1. Unless otherwise directed by the Architect, the indication of a plant to be replaced is to be interpreted as including the digging of a hole, furnishing a plant of the specified size, the work of planting and mulching, and guying, staking and wrapping where called for.
2. One or more stockpiles of approved backfill mixture shall be maintained at all times during the planting operations. The backfill mixture shall consist of 50% topsoil and 50% specified composted cow manure by volume, thoroughly mixed together. The following shall be added to each area of tree replacement:

5 lbs. of sludge fertilizer

5 lbs. of bone meal

5 lbs. of cottonseed meal

The following shall be added to each area of lawn replacement:

1 lb. sludge fertilizer

1 lb. bone meal

1 lb. cottonseed meal

3. Locations for all plants shall be staked on the ground and must be approved by the Architect before any excavation is made. Adjustments in locations and outlines shall be made as directed. In the event that areas for planting are prepared and backfilled with Backfill Mixture to grade prior to commencement of lawn operations, they shall be so marked that when the work of planting proceeds, they can be readily located.

In case underground obstructions such as ledge or utilities are encountered, locations shall be changed under the direction of the Architect without extra charge.

4. Holes for trees shall be at least 2' greater in diameter than the spread of the root systems and at least 6" deeper than root ball. Holes for shrubs and vines shall be at least 12" greater in diameter than the spread of the root system and at least 18" deep.

5. Specified backfill mixture shall be spread and incorporated with loam in all areas of tree or lawn replacement and as directed by the Architect.
6. Planting: All plant roots and earthballs must be kept damp and thoroughly protected from sun and/or drying winds at all times from the beginning until the final operation, during transportation, and on the ground until the final operation of planting. The plants shall be planted in the center of the holes and at the same depth as they previously grew. They shall be plumbed and turned as directed. Specified Mixture shall be backfilled in layers of not more than 9" and each layer watered sufficiently to settle before the next layer is put in place. Backfill Mixture shall be tamped under edges of balled plants. Enough Backfill Material shall be used to bring the surfaces to finish grade when settled.
  - a. A saucer shall be provided around each plant.
  - b. Plants must be flooded with water twice within the first 24 hours of time of planting.
  - c. Wrapping: The trunks of all shade trees shall be wrapped spirally from the ground to the height of the second branches or as directed. Wrap brown cord 3" on center spirally to hold paper neatly in place.
  - d. Provide a 3" layer (after settlement) of bark mulch over the surface of each saucer and over the entire area of shrub beds.
  - e. Stake all trees.

**E. PLANTING COORDINATION:**

1. Replacement plantings must match existing for type and caliber of trees and size of shrubs.
2. The Contractor shall be responsible for selection and tagging at nurseries stocking the specified materials.
3. Contractor shall inform Architect when planting will commence, anticipated delivery date of material and have made and provided for the staking of all plants and plant bed.
4. Failure to notify the Architect in advance, in order to arrange proper scheduling may result in loss of time or removal of any plant or plants not installed as specified or directed.

### 3.02 PRUNING

- A. Each tree and shrub shall be pruned in accordance with American Nurserymen Association Standards to preserve the natural character of the plant.
- B. All dead wood or suckers and all broken or badly bruised branches shall be removed. In addition, 1/3 of the wood may be removed by thinning out to balance root loss due to transplanting providing the natural character and form of the tree is preserved. Never cut a leader.
- C. Pruning shall be done with clean, sharp tools.
- D. Cuts over 1" in diameter shall be painted with an approved asphaltic tree paint. Paint shall cover all exposed living tissue.

### 3.03 MAINTENANCE

- A. Maintenance shall begin immediately after each plant is planted. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated and otherwise maintained and protected for a minimum of 30 days until provisional acceptance. Settled plants shall be reset to proper grade and position, planting saucer restored and dead material removed. Stakes and wire shall be tightened and repaired.  
  
Defective work shall be corrected as soon as possible after it becomes apparent and weather and season permit.
- B. Upon completion of planting and prior to provisional acceptance, remove from the site excess soil and debris, and repair all damage resulting from planting operations.
- C. Protection: Planting areas and plants shall be protected against trespassing and damage of any kind. This shall include the provision and installation of approved temporary fencing if necessary. If any plants become damaged or injured by vandalism or neglect of others prior to provisional acceptance, the Contractor shall treat or replace them at his own expense.

### 3.04 ACCEPTANCE AND GUARANTEE

- A. After the 30-day maintenance period, the Contractor shall request from the Architect an inspection to determine whether the plant material is acceptable. If the plant materials and workmanship are acceptable, written notice shall be given by the Architect to the Contractor stating that the guarantee period begins from the date of inspection.
- B. If a substantial number of plants are sickly or dead at the time of inspection, acceptance will not be granted, and the Contractor's responsibility for

maintenance of all plants shall be extended until replacements are made. Replacements shall conform in all respects to specifications for new plants and shall be planted in the same manner.

- C. **Materials and Operations:** All replacements shall be plants of the same kind and size specified on the plant list. They shall be furnished and planted as specified above. The cost shall be borne by the Contractor. Replacements resulting from the removal, loss or damage, due to occupancy of the project in any part, vandalism, or acts of neglect on the part of others, physical damage by animals, vehicles, etc., and losses due to curtailment of water by local authorities, will be approved and paid for by the Owner.
- D. Plants shall be guaranteed for a period of one year after inspection and shall be alive and in satisfactory growth at the end of the guarantee period.
- E. At the end of the guarantee period, inspection will be made again. Any plant required under this Contract that is dead or unsatisfactory shall be removed from the site. These shall be replaced during the normal planting season, until the plants live through one year.

END OF SECTION



**DIVISION 03**

**CONCRETE**

**SECTION 03 30 00**

**STRUCTURAL CONCRETE**

**PART 1 - GENERAL**

**1.01 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01000 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.02 WORK TO BE PERFORMED**

- A. Provide all the Structural Concrete work required to complete the work of the contract including all the Structural Concrete work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Structural Concrete work with all the other trades for the project. Provide all demolition and disposal work to complete the Structural Concrete work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each Subcontractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.
- B. Structural Concrete work includes, but is not limited to:
  - 1. New concrete sidewalks.
  - 2. New sonotube footings for fence posts.
  - 3. Drilling and doweling with non-shrink grout into existing, adjacent, concrete sidewalks, curbs, and walls.
  - 4. Installation of all steel reinforcing.

**1.03 RELATED WORK**

- A. The following items of related work are specified and included in other Sections of the Specifications:

**STRUCTURAL CONCRETE**

1. Section 02 41 19 "Selective Demolition"
2. Section 03 31 10 "Concrete Repair" for concrete repairs.

#### 1.04 REFERENCE STANDARDS

- A. The work shall conform to the codes and standards of the following agencies as further cited herein:
1. ASTM: American Society for Testing Materials, 1916 Race Street, Philadelphia, PA, 19103, USA as published in "Compilation of ASTM Standards in Building Codes".
  2. ACI: American Concrete Institute, P.O. Box 19150, Redford Station, Detroit, MI 48219.
  3. CRSI: Concrete Reinforcing Steel Institute, 180 North LaSalle Street, Chicago, IL 60601.

#### 1.05 SUBMITTALS

- A. Shop Drawings:
1. Submit complete shop drawings in accordance with the GENERAL CONDITIONS for Consultant's approval. Show plans, elevations, details or job conditions, of all the new concrete work (base contract and any accepted Alternates) and their relationship to other work.
  2. Drawings shall consist of sections, plans and details clearly showing location, sizes and spacing of reinforcing that is shown on the working drawings. Include schedules and diagrams to indicate bends, sizes and lengths of reinforcing members. Indicate location of construction and control joints and show additional reinforcing required at these locations. Schedule all accessories and chair bars required to hold slab or other reinforcing in place.
  3. Shop drawings will be checked for general location, size, spacing and design details and returned either approved or marked for correction. Make revisions where required and resubmit. No work shall be fabricated for which shop drawings have not been approved.
  4. Upon final approval of shop drawings, furnish all copies needed for erection and for use of other trades.

5. Contractor shall be responsible for furnishing and installing all materials called for in Contract Documents even though these materials may have been omitted from approved shop drawings.

B. Architectural Concrete Samples

1. Submit two samples approximately 12 inches by 2 inches thick to illustrate quality, color, and texture of surface finishes. Approved samples shall be retained at the site for use as a "Control Sample".

1.06 QUALITY ASSURANCE

- A. In addition to other standards listed below, concrete shall comply with ACI 301 "Specifications for Structural Concrete".
- B. All concrete work shall be performed to insure for the entire job homogeneous concrete having required strength, durability and weathering resistance, without planes of weakness, and other structural defects, and free of pronounced honeycombs, air pockets, voids, projections, offsets of plane, and other defacements on exposed surfaces.
- C. Manufacturer's statement attesting to compliance of each shipment of cement with standard specification shall be submitted to the Consultant upon request.

1.07 STORAGE AND HANDLING

- A. Handle and store cement to protect from air, ground or other moisture; to permit ready access for inspection; and to protect from contamination by foreign materials. Cement stored longest shall be used first. Caked or hardened cement shall not be used.
- B. Aggregate Protection: Protect aggregates from foreign materials, and store each separately until placed in mixer.

1.08 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work under the Contract.

1.09 GUARANTEE

- A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacturer's guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS

## 2.01 CONCRETE MATERIALS

- A. Cement: Portland Cement Type II conforming to ASTM C150. Use only one brand and type throughout the project.
- B. Fine Aggregate: Natural sand consisting of clean, hard, durable uncoated particles conforming to ASTM C33. Organic content shall be determined according to ASTM C40, and supernatant liquid above test sample shall show color no darker than reference standard color solution prepared at same time. Grading for fine aggregate shall be uniform, and fineness modulus shall never vary more than 0.15 from that of sample used in design mixes.
- C. Coarse Aggregate: Crushed stone or gravel conforming to ASTM C33. Maximum size: 3/4 inch.
- D. Water: From approved source, potable, clean, and free from oils, salt, alkali, organic matter, and other deleterious material.
- E. Water-Reducing Agent: "WRDA" by W.R. Grace and Co., or equal conforming to ASTM C494 as approved by the Consultant. Water reducing agent shall be by same manufacturer as air entraining agent.
- F. Air Entraining Agent: "Darex" by W.R. Grace Company, or equal conforming to C260 as approved by the Consultant. Total air entrained shall be 5% of volume concrete.

## 2.02 CONCRETE MIX

- A. Concrete Mix Requirements:

<u>Compressive Strength</u>	<u>Maximum Water to Cement Ratio</u>	<u>Minimum Cement Factor</u>
4000 psi	5.5 gallons per sack	6.0 bags per yard

Submit proposed mix to Consultant for approval before use in work. See General Notes for detail requirements.

- B. Maximum size aggregate shall be 3/4 inches.
- C. Maximum slump shall be 4 inches.
- D. Comply with requirements of ACI 613 "Recommended Practice for Selecting Proportions for Concrete", and ASTM C94 for Ready Mixed Concrete.
- E. Concrete slabs exposed to view and weather shall be air entrained, shall have a minimum compressive strength of 4000 PSI, and shall be uniform in color and finished appearance to the satisfaction of the Consultant.
- F. Admixtures causing accelerated setting of cement in concrete such as calcium chloride shall not be used.

## 2.03 FORMWORK

- A. Formwork shall be in accordance with ACI 347 "Recommended Practice for

Concrete Formwork".

- B. Formwork materials shall be exterior "Plyform" Class 1, B-B not less than 3/4 inches thick.
- C. Forms for Concealed Concrete Work: Forms for all work shall be of sound plywood or other material capable of providing finished surfaces conforming to the intent stated above. Joints shall be sufficiently tight to prevent leakage and shall be flush in the plane of the surface. Place ties in adequate quantity to prevent springing of forms, in locations which will be concealed from view in the finished work and will not interfere with other work under this Section or other Sections.
- D. Form Coatings: All forms shall be oiled before reinforcing is placed with a non-staining oil or liquid form coating as approved by the Consultant.

#### 2.04 REINFORCING STEEL

- A. Furnish, fabricate, and install in forms all concrete reinforcement and accessories required for the Work. Submit shop drawings for approval.
- B. All reinforcing steel shall conform to ASTM A615, Grade 60.
- C. Bar reinforcing shall be shop formed cold to dimensions indicated on drawings. Detailing, fabricating, and erecting reinforcing shall conform to ACI 315 "Manual of Standard Practice for Detailing Concrete Structures" and ACI 318 "Building Code Requirements for Reinforced Concrete".
- D. Reinforcement shall be free of paint, dirt, oil, and excessive rust and scale.
- E. Chairs, bolsters and the like shall be preformed and manufactured for the express use involved.

### PART 3 - EXECUTION

#### 3.01 PLACING REINFORCING STEEL

- A. Reinforcing shall be accurately placed as indicated on approved shop drawings and in accordance with CRSI 59 and ACI 318. Dowels shall be tied in place prior to placing concrete. Do not install reinforcing after concrete is placed by inserting into forms.
- B. All reinforcing shall be securely tied and supported to maintain proper spacing and cover during placing operations.
- C. All slab reinforcing shall be positioned in place and fully supported on slab bolsters.

#### 3.02 PLACING CONCRETE

- A. Contractor to provide dimensioned shop drawings indicated extents, locations and details of all construction, expansion and control joints as well as reinforcing. Placement shall not occur prior to Architect / Owner approval.
- B. Deposit concrete only after removal of all water, dirt, and foreign matter from forms, and after checking of forms, sleeves, inserts and reinforcing for proper location.

- C. Place concrete only by those methods and arrangements of equipment which comply with Parts V and VI of ACI 614 "Recommended Practice for Measuring, Mixing and Placing Concrete".
- D. Vibrate concrete during deposition with internal type, high frequency mechanical vibrator having a speed of not less than 7,000 rpm. Do not use vibrators to move concrete. Supplement all vibration by wooded spade muddling between reinforcing and forms and into corners.

### 3.03 FIELD QUALITY CONTROL

- A. The Consultant may select a qualified Testing Laboratory or Materials Engineer to make inspection tests during the course of work as specified herein and as otherwise considered necessary. Costs of all tests will be paid by the Owner and are not included in the Contract Sum.
- B. All measuring, mixing, placing and curing may be subject to inspection by the Laboratory and approval by the Consultant. However, such inspection and approval shall in no way relieve Contractor of his responsibility to fulfill the requirements of this Contract.
- C. Contractor shall cooperate in making tests and shall be responsible for notifying designated laboratory in sufficient time to allow taking of cylinders at time of pour.
- D. Where test show that concrete is below specified strength, Contractor shall remove all such concrete, as directed by the Consultant. Full cost of removal of low strength concrete and its replacement with concrete of proper specified strength shall be borne by the Contractor.

### 3.04 CURING AND PROTECTION

- A. Curing shall be started as soon as the concrete has hardened sufficiently to prevent surface damage.
- B. Surfaces shall be wet cured for at least five (5) days by use of blankets, or approved curing compound. Blankets shall be thoroughly soaked at all times during this period.
- C. In hot weather, all concreting shall be done in accordance with the recommendations of ACI 605 "Recommended Practice for Hot Weather Concreting".
- D. In cold weather, all concreting shall be done in accordance with the recommendations of ACI 306 "Recommended Practice for Cold Weather Concreting". Do not place concrete when outside air temperatures are below 40 degrees F without provisions for enclosing and heating as approved by the Consultant.

### 3.05 FINISHING OF CONCRETE SURFACES

- A. Intent of Architectural Concrete Finish
  - 1. For all concrete surfaces exposed to view and to the weather, it is the

**STRUCTURAL CONCRETE**

intent of this Specification to require forms, mixtures of concrete, and workmanship so that concrete surfaces, when exposed, will require no patching.

2. All concrete concealed from view, or which will in the opinion of the Consultant be concealed from view at any time when appearance will be a consideration, shall be free from defects affecting structural capacity but may have minor surface deficiencies which may be patched in accordance with the Specifications.
  3. All concrete not conforming to these requirements will be condemned by the Consultant and shall be properly and promptly removed and replaced with new work to the satisfaction of the Consultant, at no additional cost to the Owner.
- B. At other concrete that may be patched, for honeycomb concrete, stone pockets or voids, the loose concrete and loose cement shall be removed to sound hard concrete. The surface area shall be thoroughly wetted immediately prior to repair. New cement paste shall be used to fill in voids to a hard smooth surface even with adjacent concrete. For larger defects, repairs will be as directed by the Consultant.
- C. All sidewalks shall have tooled control joints in pattern indicated with broom finish. If not shown, provide joints 5'-0" o.c. each way, maximum. Broom direction shall alternate from section to section.

### 3.06 FORM REMOVAL

- A. Do not remove forms or shoring until concrete members have acquired sufficient strength to support their weight and subsequent construction loads without deflection or distress.
- B. Remove forms in manner to assure safety of structure.
- C. Retain forms in place for a minimum period as follows (assuming curing temperatures above 50 degrees F.)
  1. Sidewalks 2 days
  2. Sonotubes 2 days

END OF SECTION





**SECTION 03**

**CONCRETE**

**SECTION 03 31 10**

**CONCRETE REPAIR**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01000 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

- A. Provide all the Concrete Repair work required to complete the work of the contract including all the Concrete Repair work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Concrete Repair work with all the other trades for the project. Provide all demolition and disposal work to complete the Concrete Repair work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.
- B. Concrete Repair work includes, but is not limited to:
  - 1. Top surface partial depth concrete repair
  - 2. Underside partial depth concrete repair.
  - 3. Vertical wall/spandrel repairs.
  - 4. Concrete crack epoxy injection repair.
- C. All repair locations will be determined and marked in the field by the Engineer. Repairs will be located at small individual locations throughout the entire scope area. Unit Price work performed without the approval of the Engineer will not be

paid for.

- D. The Owner reserves that right to increase or decrease the unit cost quantities without any adjustment in the unit costs.

#### 1.03 REFERENCE STANDARDS

- A. The work shall conform to the codes and standards of the following agencies: ASTM, ACI, and CRSI.

#### 1.04 SUBMITTALS

- A. Shop Drawings:
  1. Submit complete shop drawings for concrete repair work and reinforcing steel in accordance with the GENERAL CONDITIONS.
  2. Concrete mix design.
  3. Manufacturers' literature of all products with supporting technical performance criteria.
  4. Written letter describing proposed techniques and methods for repairs in each scope area.
  5. Prepare sample patch at each unit price scope area, including all installation techniques and products with Engineer, Owner, and Manufacturer on site to witness and approve - minimum 2' x 2' at locations directed by the Engineer.

#### 1.05 RELATED WORK

- a. Section 02 41 19 "Selective Demolition"
- b. Section 03 31 10 "Concrete Repair" for concrete repairs.
- c. Section 04 21 00 "Brick Masonry"
- d. Section 07 92 00 "Joint Sealants"
- e. Section 26 00 00 "Electrical"

### PART 2 - PRODUCTS - GENERAL

#### 2.01 FORMWORK

- A. Formwork shall be in accordance with ACI 347 "Recommended Practice for Concrete Formwork."
- B. Form Coatings: All forms shall be oiled before reinforcing is placed with a non-staining oil or liquid form coating as approved by the Architect.

#### 2.02 REINFORCING STEEL

- A. All reinforcing steel shall conform to ASTM A615, Grade 60.
- B. Bar reinforcing shall be shop formed cold to required dimensions indicated on drawings.

#### 2.03 REPAIR CONCRETE MIX

- A. Concrete mix requirements and techniques for concrete repair shall satisfy the limiting qualities as described in the particular specification section for “cast-in-place” - see Section 2.04, “dry-pack” - see Section 2.05, or “concrete repair mortar materials” - see Section 2.06.
- B. Submit all proposed mixes (including color) and techniques to be used to Consultant for approval before use in work.
- C. Comply with requirements of ACI 613 “Recommended Practice for Selecting Proportions for Concrete”, ASTM C94 for Ready Mixed Concrete, and ACI-318-88 Building Code Requirements for Reinforced Concrete.
- D. Admixtures causing accelerated setting of cement in concrete such as calcium chloride shall not be used.
- E. Prepare test panel for approval before work begins at each scope area. Test panel shall establish approved methods as well as the proper color of the patching material which shall match the existing, adjacent material to the satisfaction of the Consultant and the owner. Test panel location shall be selected by the Consultant.

#### 2.04 CAST IN PLACE - REPAIR CONCRETE

- A. Cement: Portland Cement Type I or II conforming to ASTM C150.
- B. Water-Reducing Agent: "WRDA" by W.R. Grace and Co., or equal conforming to ASTM 494 as approved by the Consultant. Water reducing agent shall be by same manufacturer as air entraining agent.
- C. Air Entraining Agent: "Daravair" by W.R. Grace Company, or equal conforming to C260 as approved by the Consultant. Total air entrained shall be 5% ( $\pm 1\%$ ) of volume concrete.

#### 2.05 DRY-PACK - REPAIR CONCRETE

- A. Areas shall be repaired with dry-pack concrete as described herein. Dry-pack concrete shall satisfy the following limiting qualities:

<b><i>Class Concrete</i></b>	<b><i>5000 psi at 28 days</i></b>
Cement-to-Sand Ratio	1:1.5
Water	Potable in sufficient quantities to mix as noted in 2.05.B, below.
Min. Cement Factor	7.5 sacks/cu. yd.
Consistency, Maximum	Dry/crumbly
Entrained Air Content	5.0 to 6.0%
Color	To match exist.

- B. The consistency of the dry-pack concrete shall be zero slump, but moist enough so that when it is rodded and tamped until dense, an excess of paste will appear on the surface in the shape of a spider web. The concrete shall be of the driest possible consistency and mix composition so that it can be worked into the

corners and angles of forms and around the reinforcement without permitting the materials to segregate or free water to collect on the surface - due consideration being given to the methods of placing and compacting.

- C. Dry-pack concrete for larger voids can contain a 1-1-1.5 mixture of cement, concrete sand, and pea gravel.
- D. Prepare test panel for approval before work begins. Test panel shall establish approved methods to the satisfaction of the owner and the Consultant. Location of test panel shall be selected by the Consultant.

## 2.06 CONCRETE REPAIR MORTAR MATERIALS - CONCRETE REPAIR

- A. Repair material to be a silica fume repair mortar, EMACO S88-CA as manufactured by Master Builders, Inc., 23700 Chagrin Boulevard, Cleveland, Ohio 44122-5554, Phone: (216) 831-5500, FAX: (216) 831-6910 or as manufactured by THORO, FOSROC, or approved equal. The follow specification is based on the EMACO, but may be by an "or approved equal" manufacturer.
- B. Mix EMACO S88-CA mortar with approximately 0.7 to 1.0 gallon (2.7 to 3.8 liters) of water (10.5 to 15% by weight of EMACO) per 55 pound (25 kg.). All of the mixing water should be added to an approved mixing device first, then mixer should be started and EMACO S88-CA mortar added in a continuous manner.
- C. Prepare test panel for approval before work begins. Test panel shall establish approved methods to the satisfaction of the owner, manufacturer, and the Consultant. Location of test panel shall be selected by the Consultant.

## PART 3 - EXECUTION GENERAL

### 3.01 DEFINITION OF WORK TO BE PERFORMED

- A. It is required to repair or replace all the disintegrated, cracked, delaminated, and defective concrete on the exposed areas of the concrete structure, as indicated in drawings for corrective work, or as determined during the course of the work. By exposed it is meant all concrete which is exposed to the eye.
- B. Concrete shall be considered "unsatisfactory" when it exhibits weakness due to crazing, cracking, spalling, volume change, disintegration, segregation, erosion, scaling, popping, delamination, unbonding, etc.
- C. Concrete shall be considered satisfactorily "sound" when it "rings" under the hammer blow and resist chipping in a manner equal to virgin original concrete in the structure that has not exhibited deterioration. Removal equipment shall consist of small chipping hammers (maximum twelve (12) pounds ). Hand held hammers and cold chisels shall be used where directed by the Engineer. Note: Excessive removal due to the use of larger equipment shall be completely repaired to the satisfaction and at not cost to the Owner.
- D. Any reinforcing bars which have broken bond more than 50% around the perimeter with the concrete shall have the concrete cut away all around and behind them so that the fingers of the hand can be inserted in the peripheral space between the rod and sound concrete. This will permit placement of repair

concrete around the reinforcing bar and bonding of bar and parent concrete. Temperature bars and chairs are considered to be secondary bars. When condition of existing steel is unclear or in question the Consultant shall be contacted immediately for a decision.

- E. Install any additional reinforcing as to develop the original design strength required. Repair or replace any damaged accessories or inserts in the damaged portion of the concrete.

### 3.02 REINFORCEMENT REPLACEMENT

- A. All existing reinforcement which is damaged, eroded, or oxidized to reduce the effective working area by more than 15% shall be replaced with new, rolled, deformed reinforcing bars of the same dimensions as the original steel or augmented with additional smaller bars to provide the same total working area.
- B. The replacement bars shall be anchored by welding or splicing as directed by the Consultant.
- C. Care shall be taken at the interface between exposed rebar and sound concrete. Smaller chisels shall be used to prevent unnecessary bond breakage.
- D. Reinforcement shall be cleaned by wire brushing, chisel, sandblasting or grinding as deemed appropriate by the Consultant.
- E. The steel shall be clean and free of contaminants and properly lapped or welded to provide equivalent strength with the existing continuous bars. Where reinforcement is exposed too near the surface, the Contractor shall cut out concrete behind the rods so that the reinforcing bars can be more thoroughly embedded with a minimum 1" cover. Existing reinforcement, where exposed, shall be cleaned by chisel, grinding, sandblasting or wire brushing to remove rust, scale, and loose concrete before covering. Mounding of concrete may be permitted in certain locations in order to provide proper cover. The Consultant shall review and approve the locations and extent of mounding.
- F. After the exposed reinforcing steel has been properly prepared, coat with an epoxy coating. Protect concrete from coatings. Remove any epoxy from concrete before placing new material at no additional cost to the owner.

### 3.03 SURFACE PREPARATION OF CONCRETE

- A. Perimeter of each repair location shall be saw-cut 3/4" deep minimum and the cut sloped backwards 3 to 5 degrees to key in the new concrete behind the existing concrete.
- B. The areas to be repaired shall be prepared by chipping, or by use of power and hand tools to expose a totally, sound, clean, virgin surface over every square inch. Particular attention shall be given to all extremities, such as construction joints, openings, walls, columns, etc. Weight of power tools shall not exceed twelve (12) pounds.
- C. The repair area shall be left thoroughly wet overnight (to prevent ultimate flash hardening of repair concrete and to provide a source of curing). All water collected in depressions shall be blown out with an air blast.

- D. Just prior to placing fresh concrete all detritus, loose and foreign material shall be removed from the slab by brushing with clean brooms and air jet, and flushing with a high pressure air and water blast. Special care shall be taken to clean the substrate thoroughly, including all depressions.

## PART 3A - EXECUTION CAST IN PLACE

### 3.04 PLACING CONCRETE

- A. Deposit concrete only after removal of all water, dirt, and foreign matter from forms, and after checking of forms, sleeves, inserts and reinforcing for proper location.
- B. Submit procedures for placing and consolidating concrete for approval.
- C. Cast-in-place, pneumatically applied, and dry-pack procedures will be permitted for repair if approved before work commences. Submit sequence of construction and methods for approval.

### 3.05 FIELD QUALITY CONTROL

- A. Costs of all tests will be paid by the Owner and are not included in the Contract Sum.
- B. Where test show that concrete is below specified strength, Contractor shall remove all such concrete, as directed by the Consultant. Full cost of removal of low strength concrete and its replacement with concrete of proper specified strength shall be borne by the Contractor. Evaluation of concrete strength and acceptance shall be in accordance with ACI-318-88 Section 4.7.

### 3.06 CURING AND PROTECTION

- A. Curing shall be started as soon as the concrete has hardened sufficiently to prevent surface damage.
- B. Surfaces shall be wet cured for at least seven (7) days by use of blankets and a waterproofing membrane or with the use of a product such as "Burlene". Blankets shall be maintained thoroughly soaked at all times during this period.  
Newly placed concrete found to be dry within the seven (7) day moist curing process shall be rejected and shall be completely removed and replaced by the contractor at no additional cost to the owner.

## PART 3B - EXECUTION DRY-PACK

### 3.07 SURFACE PREPARATION OF CONCRETE

- A. Just prior to placing fresh concrete all detritus, and loose and foreign material shall be removed from the concrete by brushing with clean brooms and air jet, and flushing with a high pressure air and water blast. Special care shall be taken to clean the concrete thoroughly, including all depressions.
- B. The repair area shall be left thoroughly wet overnight (to prevent ultimate flash hardening of repair concrete and to provide a source of curing). All standing water collected in depressions shall be blown out with an air blast.

- C. Just prior to new concrete placement, existing surfaces shall be brushed thoroughly with a uniform coat of neat cement paste. Consistency of the paste shall be that of heavy paint. Care should be taken to cover all surfaces, especially around reinforcing bar and sawcut edges. Particular attention shall be given to all extremities of placement. Application of slurry shall be started at such locations and worked toward the center (rather than working "dead" slurry to stops). Excess and/or diluted slurry shall be removed by shovel and broom. Application of slurry shall not get ahead of concrete placement. Slurry shall not be allowed to dry or change color.

### 3.08 INSTALLATION OF DRY-PACK

- A. Ram repair concrete (dry-pack) into the voids. Rod and tamp vigorously by hand for small voids and with power tampers for large areas. Trowel smooth with heavy pressure.
- B. Transport dry-pack concrete from mixer to place of final deposit as rapidly as practical by methods which prevent separation of ingredients and displacement of reinforcement. Do not deposit any partially hardened concrete.
- C. Deposit dry-pack concrete before the bonding slurry has dried or changed color.
- D. Dry-pack concrete shall be deposited in layers of such thickness as to prevent sagging.
- E. All dry-pack concrete shall be thoroughly consolidated by hand tamping or other suitable mechanical means and trowelled dense, smooth, and level to match existing surface. Avoid premature and excessive trowelling.
- F. Protect all concrete and dry-pack work against injury from the elements and defacement of any nature during construction operations.
- G. No dry-pack concrete shall be placed against existing surfaces when the temperature of the parent surface is below 50 degrees F.
- H. All concrete and dry-pack placed at ambient temperature below 40 degrees F shall have a minimum temperature of 50 degrees F. All repairs shall be so protected that the temperature at the surface will not fall below 50 degrees F for not less than seven (7) days after placing.
- I. All concrete and dry-pack shall be treated immediately after placement or cement finishing is completed to provide continuous moist curing without change in color for at least seven (7) days, regardless of the ambient temperature. Surfaces shall be covered with damp flannel blanket or burlap and sealed with taped polyethylene or a combination product such as Burlene used. Membrane curing compounds shall not be used.
- Newly placed dry-pack concrete found to be dry within the seven (7) day moist cure process shall be rejected and shall be completely removed and replaced by the Contractor at no additional cost to the Owner.
- J. In installing repairs in cold weather, care shall be exercised to have the base slab concrete above 50 degrees F, and preferably between 60-70 degrees F. Repairs

made in cold weather shall not contain frozen aggregates and shall be placed at a mix temperature between 60-80 degrees F.

- K. In no case shall warm and moist curing of the repairs be discontinued until test cylinders stored with the work exhibit a minimum compressive strength of 4000 psi.

### PART 3C - EXECUTION REPAIR MORTARS

#### 3.09 SURFACE PREPARATION OF CONCRETE

- A. Just prior to placing fresh concrete all detritus, and loose and foreign material shall be removed from the concrete by brushing with clean brooms and air jet, and flushing with a high pressure air and water blast. Special care shall be taken to clean the concrete thoroughly, including all depressions.
- B. The repair area shall be left thoroughly wet for a minimum of two hours (to prevent flash hardening of repair concrete and to provide a source of curing). All standing water collected in depressions shall be blown out with an air blast.

#### 3.10 INSTALLATION OF REPAIR MORTAR

- A. Applicator of EMACO S88-CA must have prior successful experience in the application of this product.
- B. Apply a scrub coat of the mortar mix just prior to applying the repair mortar.
- C. Apply EMACO S88-CA mortar by low pressure spraying or hand troweling on vertical or overhead surfaces in depths ranging from 3/8" to 2" (9.5 to 51 mm). When applying EMACO S88-CA mortar at depths over 1" (25 mm) 2 x 2" (50 x 50 mm) mesh must be firmly tied into the properly prepared substrate and properly spaced. For depths over 2" (51 mm) consult your Master Builders representative. When applying by low pressure spraying use a "Moyno" or rotor/stator-type machine as would commonly be used for plastering.
- D. Transport EMACO from mixer to place of final deposit as rapidly as practical by methods which prevent separation of ingredients and displacement of reinforcement. Do not deposit any partially hardened mortar.
- E. EMACO S88-CA can be spray applied for vertical applications in thicknesses up to 2" (50 mm) in one lift.
- F. Unless forming is used the thickness for overhead applications should be no more than 1 to 1.5" (25 to 38 mm) per pass. For depths greater than 1.5" (38 mm) succeeding lifts of no more than 1" (25 mm) should be used.
- G. Timing between lifts is critical and will vary with several factors including mix consistency, ambient and mix temperature, humidity, and application technique. Typical timing is to allow twenty (24) hours between lifts. Moist curing is preferred in order to not interfere with adhesion between lifts.
- H. If necessary a wooden float may be used to make the surface level. The final surface may be made smooth using a wooden, plastic, or synthetic sponge trowel.
- I. Protect all repair work against injury from the elements and defacement of any



nature during construction operations.

- J. No repair mortar shall be placed against existing surfaces when the temperature of the parent surface is below 50 degrees F.
- K. All repair mortar placed at ambient temperature below 40 degrees F shall have a minimum temperature of 50 degrees F. All repairs shall be so protected that the temperature at the surface will not fall below 50 degrees F for not less than seven (7) days after placing.
- L. All concrete and dry-pack shall be treated immediately after placement or cement finishing is completed to provide continuous moist curing without change in color for at least seven (7) days, regardless of the ambient temperature. Surfaces shall be covered with damp flannel blanket or burlap and sealed with taped polyethylene or a combination product such as Burlene used. Membrane curing compounds such as two (2) coats of Masterkure MB-429 or Masterkure 100W or 200W may be used for repair mortars only.  
Newly placed repair mortar found to be dry within the seven (7) day moist cure process shall be rejected and shall be completely removed and replaced by the Contractor at no additional cost to the Owner.
- M. In installing repairs in cold weather, care shall be exercised to have the base slab concrete above 50 degrees F, and preferably between 60-70 degrees F. Repairs made in cold weather shall not contain frozen aggregates and shall be placed at a mix temperature between 60-80 degrees F.
- N. In no case shall warm and moist curing of the repairs be discontinued until test cylinders stored with the work exhibit a minimum compressive strength of 4000 psi.

END OF SECTION



**DIVISION 03**

**CONCRETE**

**SECTION 03 91 00**

**RESIN CRACK REPAIR**

**PART 1 - GENERAL**

**1.01 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01000 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.02 WORK TO BE PERFORMED**

- A. Provide all the Resin Crack Repair work required to complete the work of the contract including all the Resin Crack Repair work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Resin Crack Repair work with all the other trades for the project. Provide all demolition and disposal work to complete the Resin Crack Repair work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each Subcontractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.
- B. Resin Crack Repair work includes, but is not limited to:
  - 1. Repair locations will be determined and marked in the field by the Engineer. Repairs will be located at small individual locations throughout the entire scope area. Unit Price work performed without the approval of the Engineer will not be paid for.

**1.03 QUALITY ASSURANCE**

- A. Epoxy injection shall be performed by a qualified waterproofing Subcontractor.
- B. Provide sufficient workmen and supervisors to be present at all times during the execution of this work, who will be thoroughly familiar with the type of injection techniques involved and the materials specified.

1.04 SUBMITTALS

- A. Product Literature: Submit four (4) copies of product data sheets and the manufacturer's installation instructions.
- B. Submit Subcontractor qualifications.

1.05 PRODUCT HANDLING

- A. Delivery shall be in manufacturers original unopened container, clearly identifying each product specified, relating it to the product literature submitted.

1.06 JOB CONDITIONS

- A. Workmen using chemicals are required to wear protective clothing, goggles, face shields, gloves as recommended by manufacturer. Provide every safeguard to protect workmen of every trade and the general public and their property against injury of any character and magnitude by erecting barriers well outside the limits of the resin injection process. Safety is the sole responsibility of the Contractor on the job site.
- B. Protect adjacent work, foundation plantings, lawn areas, parking areas and sidewalks from permanent damage as the result of the resin injection process.

1.07 RELATED SECTIONS

- A. Section 02 41 19 "Selective Demolition"
- B. Section 03 31 10 "Concrete Repair" for concrete repairs.
- C. Section 07 92 00 "Joint Sealants"

**PART 2 - PRODUCTS**

2.01 EPOXY RESIN– "I Panol Deck Seal" low-mod/low viscosity epoxy healer sealer by IPA Systems or approved equal

- A. Injection System shall be a two (2) component, epoxy material whose components conform to the following requirements:
  - 1. Component A shall be a modified epoxy resin of the Bisphenol-A-Epichlorhydrin type with an epoxide equivalent of 180-190 (ASTM D-1652).
  - 2. Component B shall be the curing agent containing modified polyamines.
  - 3. No unreactive dilutents, solvents or other fillers may be used in the formulation.
  - 4. Physical Characteristics:
    - a. Viscosity: Approximately 85 cps
    - b. Compressive Properties: ASTM D-695
    - c. Modulus of Elasticity: @ 28 days
    - d. Tensile Properties: ASTM D-638 @14 days  
Tensile Strength: 1500 psi  
Elongation of Break:

Modulus of Elasticity:

- e. Flexural Properties: ASTM D-790  
Flexural Strength:  
Tangent Modulus of  
Elasticity in Bending:
- f. Shear Strength: ASTM D-732 @ 14 days
- g. Bond Strength: ASTM C-882  
Hardened Concrete to Hardened Concrete  
(dry cure): Bond Strength @ 2 days  
(moist cure): Bond Strength @ 14 days
- h. Deflection Temperature: ASTM D-648 @ 14 days 122° F
- i. Water: ASTM D-570 @ 7 days .27%

**PART 3 - EXECUTION**

**3.01 EQUIPMENT FOR METERING, MIXING, AND INJECTION**

- A. Type: The equipment used to meter and mix the two (2) adhesive components and inject the mixed adhesive into the crack shall be portable, positive displacement type pumps with interlock to provide positive ration control of exact proportions of the two (2) components at the nozzle. The pumps shall be electric or air powered and shall provide in-line mixing and metering system, and shall contain drain back plugs.
- B. Ratio Tolerance: The equipment shall have the capability of maintaining the mix ratio for the injection adhesive prescribed by the manufacturer of the adhesive within a tolerance of plus or minus 5 percent by volume.

**3.02 INSPECTION**

- A. Resin Injection Contractor must examine the areas and conditions which crack repair will effect. Notify the Project Engineer in writing of conditions detrimental to the proper and timely completion of the Work.

**3.03 PREPARATION**

- A. Clean surfaces adjacent to cracks or other areas of application of dirt, dust, grease, oil, efflorescence or other foreign matter detrimental to application of epoxy injection surface seal system.
- B. Clean such surfaces with surface cleaner in accordance with manufacturer's recommendations and instructions.

**3.04 METHODS**

- A. Application of Surface Seal
  - 1. Seal cracks to be injected with surface sealer material in such manner that no defacing or discoloration of concrete surfaces shall result.

B. Epoxy Grout

1. Install epoxy in accordance with procedures as recommended by manufacturer or as required to obtain 100 percent penetration of cracks without inclusion of air pockets or voids in epoxy and as required to achieve structural bonding.
2. Perform epoxy repair continuously until cracks are completely filled.
3. Finishing Requirements:
  - a. When cracks are completely filled, cure epoxy for sufficient time to allow removal of surface seal without any draining or runback of epoxy material from cracks. Apply sand on the top surface of repair, prior to curing.

END OF SECTION

**DIVISION 04**

**SECTION 04 00 01**

**MASONRY**  
**(FILED SUB-BID REQUIRED)**

PART 1 - GENERAL

1.1 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 04 00 01  
MASONRY FILED SUB BID

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

1.2 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.3 REQUIREMENTS FOR FILING SUB-BIDS

- A. Time, Manner and Requirements for Submitting Sub-Bids:
1. Sub-bids for work under this Section shall be for the complete work and shall be filed in a sealed envelope with the Public Agency at a time and place as stipulated in the "Invitation to Bid."
  2. Sub-bidders must be DCAMM Certified in the listed trade and shall include a current DCAMM sub-bidder Certificate of Eligibility and Update Statement with the bid.
  3. Each sub-bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended.
  4. Sub-bids filed with the Awarding Authority shall be accompanied by Bid Bond, Cash, Certified Check, Treasurer's Check, or Cashier's Check issued by a responsible bank or trust company payable to the City of Lawrence in the amount of 5 percent of the sub-bid. A sub-bid accompanied by any other form of bid

**MASONRY - FILED SUB BID**

**04 00 01 - 1**

deposit than those specified will be rejected.

- B. All File Sub-Bidders shall provide all of their own:
1. Vertical access and hoisting to perform the work of their section. Vertical access shall also be provided for the Architect to review the work at any time requested by the Architect.
  2. Provide all coring, demolition, and patching to perform the work of their section.
  3. Design and install all Firestopping associated with and required for this Trade. Submit Firestopping design for review.
  4. Coordination with the General Bidder and all the other File Sub-Bidders.
  5. Disposal of all demolition debris and trash to perform the work of their section.
  6. Provide As-Built drawings in CAD using the latest version of AutoCAD.
- C. Sub Sub-Bid requirements: Sub-bids shall include performance of the complete work of this section, including any sub-trade classes of work, with employees on the sub-bidder's own payroll unless the sub-bidder identifies in Paragraph E of the bid form, the name of a sub-trade subcontractor that will perform each class of sub-trade work and the corresponding sub-trade subcontract sum.

#### 1.4 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including the following Specification Sections, which are combined for this Filed Sub-Bid category:
1. Section 04 00 01 "Masonry Filed Sub-Bid"
  2. Section 04 21 00 "Brick Masonry"

- B. The Work of this Section is shown on the following Drawings:

D2-01-D2-02, S1-01, S1-02, S2-01, S2-02, S2-03, S3-01, S3-02

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION



**DIVISION 04**

**MASONRY**

**SECTION 04 21 00**

**BRICK MASONRY RESTORATION**  
***(FILED SUB-BID REQUIRED)***

PART 1 – GENERAL

1.1 FILED SUB-BID

- A. Brick Masonry Restoration is stipulated as a Filed Sub-Bid under Part D, Item 2 of the Form for General Bid.
- B. All sub-bids shall be submitted on the Form for Sub-Bid furnished by the Awarding Authority, as required by section 44F of Chapter 149 of the Massachusetts General Laws, as amended.
- C. Sub-Bids must be filed with the Awarding Authority in a sealed envelope, before twelve o'clock (noon), Boston time, on the date stipulated in the Advertisement.
- D. Specific information relating to the sub-bidders is set forth in the Contract Documents, under the heading "Notice to All Bidders, Including Sub-Bidders" and the attention of sub-bidders is directed thereto.

The work to be done under this Section 04 21 00 Brick Masonry Restoration is shown on the drawings.

1.02 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01000 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

### 1.03 WORK TO BE PERFORMED

- A. Provide all the Masonry Restoration Work required to complete the work of the contract including all the Masonry Restoration Work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Masonry Restoration Work with all the other trades for the project. Provide all demolition and disposal work to complete the Masonry Restoration Work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.
- B. All Brick Masonry Restoration Work, which includes but is not limited to:
1. Cut and point existing brick masonry façade as indicated on the drawings, including joints between the brick and the cast in place concrete. Clean brick masonry after the repairs have been completed.
  2. Replace crack or spalled masonry bricks.

### 1.04 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including the following Specification Sections, which are combined for this Filed Sub-Bid category:
1. Section 04 00 01 "Masonry Filed Sub-Bid"
  2. Section 04 21 00 "Brick Masonry"
- B. The Work of this Section is shown on the following Drawings:

D2-01-D2-02, S1-01, S1-02, S2-01, S2-02, S2-03, S3-01, S3-02

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

1.05 RELATED WORK UNDER OTHER SECTIONS

- A. The following items of related Work are specified and included in other Sections of the Specifications:
1. Section 021120 – Selective Demolition and Cleaning
  2. Section 079200 – Joint Sealants

1.06 REFERENCED STANDARDS

- A. ANSI A41.1 - "Building Code Requirements for Masonry".
- B. Municipal or State regulations governing sandblasting, cleaning, scaffolding, protection of adjacent properties, etc.
- C. NCMA
- D. ASTM

1.07 SUBMITTALS

- A. Submit complete shop drawings in accordance with the provisions of SECTION 01300 - SUBMITTALS in GENERAL REQUIREMENTS.
1. Product Data: Submit manufacturer's product data for each type of masonry unit, accessory, clear sealer, waterproofing, and other manufactured products, including certifications that each type complies with specified requirements.
  2. Copies of sample warranties.
- B. Samples:
1. Mortar:
    - a. Mortar shall be custom to match existing in quality, texture, color, joint size and finish.
    - b. At a minimum of (4) locations on the building and as selected by the Architect, cut a minimum of four (4) square feet of area of the existing brick mortar joints to a minimum depth of ¾-inch for review.
    - c. Apply new mortar samples for selection by the Architect. Color to be selected by owner.

- d. This shall be in addition to the contract quantities. The locations are to be selected by the Architect and there shall be no limit to the number of samples provided until Approved.
  2. Provide fully washed, cured, and dry mortar samples in a variety of colors for decision by the Architect. Provide samples in advance of the Work so as not to adversely affect the schedule.
  3. Sample Cleaning of Existing Masonry:
    - a. Provide minimum of eight (8) square feet, in four (4) different locations on the building as selected by the Architect, of cleaning samples for each cleaning product specified to determine effectiveness and appearance, and approval by Architect.
    - b. There shall be no limit of the sample areas of each required to determine effectiveness and appearance, and until Approved by the Architect.
  4. Cleaning, caulking, repointing compounds or coatings in color and texture specified. Repointing mortar shall be set, dry, and at least 7 days old.
- C. Product Data: For each type of product indicated.
- D. Clear Sealer Sample: Provide minimum of eight (8) square feet, in four (4) different locations on the building as selected by the Architect to determine effectiveness and appearance, and approval by the Architect.

#### 1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry materials in undamaged condition.
- B. Storage and Handling:
  1. Store and handle brick masonry units and materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes.
  2. Limit moisture absorption of brick masonry units and cement lime, etc., during delivery and until time of installation to the maximum percentage specified for brick for the average annual relative humidity as reported by the U.S. Weather Bureau Station nearest project site.
  3. Store cementitious materials off the ground, under weathertight covers or indoors, and kept clean and dry.
  4. Store aggregates where grading and other required characteristics can be maintained.

5. Store masonry accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.

#### 1.09 PROTECTION

- A. Protect windows, doorways, trim, and all other surfaces from damage, and immediately remove stains, efflorescence, or other unsightly excess resulting from the work of this Section.
- B. Protect roof membranes, flashings, and fascia edge metals from damage.
- C. Protection of Work:
  1. During erection, cover top of masonry element with waterproof sheeting at end of each day's Work.
  2. Cover partially completed structures when Work is not in progress.
  3. Extend cover min. 24 in. down both sides and hold cover securely in place.
  4. Do not apply loads for min. 3 days after building masonry walls.
- D. Staining:
  1. Prevent grout, mortar, or soil from staining the face of masonry to be left exposed.
  2. Remove immediately grout or mortar in contact with such masonry.
  3. Protect base of walls from rain-splashed mud and mortar splatter by means of covering spread on ground and over wall surface.
  4. Protect sills, ledges, and projections from droppings of mortar.
- E. Cold Weather:
  1. Do not lay masonry or stonework, re-point, caulk, wash down, or wet surfaces when temperature may drop below 40 degrees F within 24 hours. Follow cold weather procedures as set out on ANSI A41.1 when temperatures may drop below 40 degrees F.
  2. Mortar admixtures are not allowed on this project.

### PART 2 – PRODUCTS

#### 2.01 POINTING MORTAR

- A. Mortar: Shall conform to ASTM C270, Type N, consisting of one (1) part Portland Cement (ASTM C150, Type 1, and meeting efflorescence requirements below), one (1) part hydrated lime (ASTM C207, Type S), and five (5) to six (6) parts sand (ASTM C144).
- B. Mortar shall be custom match the original mortar in color, texture, aggregate and finish.
- C. Tooled joint shall match original including depth of joint, shape of joint as well as amount of aggregate exposed.
- D. Water: Clean and free of deleterious amounts of oil, acid, alkalis and organic matter.
- E. No admixtures of any type will be permitted.
- F. Mixing:
  - 1. Measure materials by volume or equivalent weight.
  - 2. Do not measure by shovel. Use known measure.
  - 3. Mix ingredients in clean mechanical batcher for 3-5 minutes.
  - 4. Let mortar sit for 20 minutes prior to use to allow for initial shrinkage. Use mortar within 1 hours of initial mixing. Do not re-temper.

## 2.02 CLEANING AGENTS

- A. Restoration Cleaner: Environmentally safe masonry cleaner as manufactured by Prosoco, EK Restoration Cleaner, with PH 5.5 Concentrate prior to dilution or Approved equal.

## 2.03 STAINLESS-STEEL CONNECTION MATERIALS

- A. Stainless-Steel Plate: ASTM A 666, Type 304, of grade suitable for application.
- B. Stainless-Steel Bolts and Studs: ASTM F 593, Alloy 304 or 316, hex-head bolts and studs; stainless-steel nuts; and flat, stainless-steel washers.
  - 1. Lubricate threaded parts of stainless-steel bolts with an antiseize thread lubricant during assembly.
- C. Stainless-Steel-Headed Studs: ASTM A 276, with minimum mechanical properties of PCI MNL 117, Table 3.2.3.

### PART 3 – EXECUTION

#### 3.01 PREPARATION

- A. Carefully remove and store in a protected place all fixtures, fittings, finishing hardware, accessories.
- B. Close off, seal, mask, and board-up all areas, materials, and surfaces not receiving work of this Section to protect from damage.

#### 3.02 BRICK MASONRY REMOVAL AND REPLACEMENT

- A. At locations indicated and/or selected by Architect, remove bricks that are damaged, spalled, or deteriorated. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.
  - 1. When removing single brick unit, remove material from center of brick and work toward outside edges.
- B. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.
- C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose masonry units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.
- D. Remove in an undamaged condition as many whole brick units as possible.
  - 1. Remove mortar, loose particles, and soil from brick units by cleaning with hand chisels, brushes, and water.
  - 2. Store brick units for reuse, as indicated.
  - 3. Deliver cleaned units not required for reuse to Owner, unless otherwise directed.
- E. Clean brick units surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.
- F. Install replacement brick units into bonding and coursing pattern of existing brick units, match existing mortar joints for size. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.
- G. Lay replacement brick units with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding brick units that have ASTM C 67 initial rates of

absorption (suction) of more than 30 g/30 sq. in. per min.. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid. Maintain joint width for replacement units to match existing joints.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
2. Rake out mortar used for laying brick units before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry, and at same time as repointing of surrounding area.

### 3.03 POINTING

- A. Cut all joints to be pointed to a depth of 2 & ½ times the joint width and a minimum depth of ¾". Horizontal joints maybe sawcut and vertical joints shall be prepared with hand tools.
- B. New mortar shall match the existing masonry mortar. No Work shall commence without approval of sample by the Owner and SOCOTEC. SOCOTEC shall be on site to observe the pointing procedures. Said procedures shall be representative of the procedures used throughout the project provided they are performed per this specification section and BIA standards.
- C. Pointing:
  1. During the tooling of joints, enlarge any voids or holes and completely fill with mortar prior to pointing.
  2. Mortar shall be applied in ⅜" lifts maximum. Additional lifts shall be applied only when the previous lift is "thumbprint" hard.
  3. The use of mortar bags and/or mortar guns is prohibited. Use of such equipment will result in rejection of the work.
  2. Point up all joints including corners, openings, and adjacent Work to provide a neat, uniform appearance, prepared for application of sealants.
  3. The following BIA Technical Standards shall be included as part of this specification section: Technical Notes 8B; Technical Notes 46. Should there be a discrepancy between this specification and the BIA Technical Notes, the more stringent of the two shall apply.

### 3.04 ADJUSTING AND CLEANING

- A. Damaged or Defective Masonry:



1. Remove and replace masonry units which are loose, chipped, broken, stained, sawcut or otherwise damaged or, if units do not match adjoining units as intended.
  2. Provide new units to match adjoining units and install in fresh mortar pointed to eliminate evidence of replacement.
- B. Final Cleaning
1. General:
    - a. After mortar is thoroughly set and cured, clean masonry.
    - b. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
    - c. Test cleaning methods on sample wall lintel; leave 1/2 lintel unclean for comparison purposes.
    - d. Obtain approval of SOCOTEC for sample cleaning before proceeding with cleaning of masonry.
    - e. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking.

### 3.05 CLEAN-UP

- A. Clean adjacent and adjoining surface of all marks arising out of the execution of work of this Section.
- B. Sweep up and remove daily all sand, cleaning compounds and mixtures, dirt, debris, and rubbish.

END OF SECTION



**DIVISION 05**

**METALS**

**SECTION 05 00 01**

**MISCELLANEOUS AND ORNAMENTAL IRON**

*(FILED SUB-BID REQUIRED)*

PART 1 - GENERAL

1.01 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 05 00 01  
MISCELLANEOUS AND ORNAMENTAL IRON FILED SUB BID

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

1.02 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.03 REQUIREMENTS FOR FILING SUB-BIDS

- A. Time, Manner and Requirements for Submitting Sub-Bids:
1. Sub-bids for work under this Section shall be for the complete work and shall be filed in a sealed envelope with the Public Agency at a time and place as stipulated in the “Invitation to Bid.”
  2. Sub-bidders must be DCAMM Certified in the listed trade and shall include a current DCAMM sub-bidder Certificate of Eligibility and Update Statement with the bid.
  3. Each sub-bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended.
  4. Sub-bids filed with the Awarding Authority shall be accompanied by Bid Bond,

**MISCELLANEOUS AND ORNAMENTAL IRON - FILED SUB BID**

**SECTION 05 12 23 - 1**

Cash, Certified Check, Treasurer's Check, or Cashier's Check issued by a responsible bank or trust company payable to the City of Lawrence in the amount of 5 percent of the sub-bid. A sub-bid accompanied by any other form of bid deposit than those specified will be rejected.

- B. All File Sub-Bidders shall provide all of their own:
1. Vertical access and hoisting to perform the work of their section. Vertical access shall also be provided for the Architect to review the work at any time requested by the Architect.
  2. Provide all coring, demolition, and patching to perform the work of their section.
  3. Design and install all fire stopping associated with and required for this trade. Submit firestopping design for review.
  4. Coordination with the General Bidder and all the other File Sub-Bidders.
  5. Disposal of all demolition debris and trash to perform the work of their section.
  6. Provide As-Built drawings in CAD using the latest version of AutoCAD.
- C. Sub Sub-Bid requirements: Sub-bids shall include performance of the complete work of this section, including any sub-trade classes of work, with employees on the sub-bidder's own payroll unless the sub-bidder identifies in Paragraph E of the bid form, the name of a sub-trade subcontractor that will perform each class of sub-trade work and the corresponding sub-trade subcontract sum.

#### 1.04 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including the following Specification Sections; which are combined for this Filed Sub-Bid category:
1. Section 05 00 01 "Miscellaneous and Ornamental Iron Filed Sub-Bid"
  2. Section 05 50 00 "Metal Fabrications."
  3. Section 05 51 00 "Metal Stairs."
  4. Section 05 52 13 "Pipe and Tube Railings."

- B. The Work of this Section is shown on the following Drawings:

D1-01, S1-01 to S4-04

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

PART 2 - PRODUCTS (Not Used)  
PART 3 - EXECUTION (Not Used)

END OF SECTION

**DIVISION 05**

**METALS**

**SECTION 05 12 23**

**STRUCTURAL STEEL**

**PART 1 – GENERAL**

**1.01 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.02 WORK TO BE PERFORMED**

- A. Provide all the Structural Steel work required to complete the work of the contract including all the Structural Steel work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Structural Steel work with all the other trades for the project. Provide all demolition and disposal work to complete the Structural Steel work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.
- B. Structural Steel work includes, but is not limited to:
  - 1. New steel beams at upper landing.
  - 2. Welded steel plate brackets and bolts, expansion bolts and epoxy anchors. All bolts shall be stainless steel.

### 1.03 RELATED WORK UNDER OTHER SECTIONS

- A. The following items of related work are specified and included in other sections of the Specifications:
1. Section 03 31 00, Structural Concrete.

### 1.04 SUBMITTALS

- A. Fabricator certification/quality control procedures: Fabricator shall submit description of fabrication and quality control procedures which provide a basis for inspection control of the workmanship and the fabricator's ability to conform to construction drawings, project specifications, and applicable standards.

If fabricator maintains an agreement with an approved independent testing or quality control agency to conduct periodic in-plant inspections of the fabricator's plant, details of such an agreement, including qualifications of the inspectors, frequency of inspections, and scope of inspections, shall be submitted to the Structural Engineer of Record.

- B. Shop drawings: Submit complete shop drawings of work of this Section to Architect for approval, showing all dimensions, details of construction, details of installation, relation to adjoining work, reinforcement, welds, fastenings, anchorage and specification of shop finishes.
- C. Bolts, nuts, washers and post tensioning strands: Manufacturer's certificate of compliance with specifications.
- D. Structural Steel: Furnish certified mill reports, chemical and physical tests for each steel melt from which structural steel is obtained to the Architect and to the Structural Engineer of Record for determination of steel's conformity to specifications. Failure to furnish reports and suitable strength marking will authorize the Architect to direct the testing laboratory to test the structural steel at the Contractor's expense.
- E. Weld filler material: Product specifications and manufacturer's certificate of compliance with project specifications.
- F. Do not order materials or begin fabrication or installation until Architect's approval of submittals has been obtained.

### 1.05 REFERENCE STANDARDS

- A. The work shall conform to the codes and standards of the following agencies as

further cited herein:

1. ASTM: American Society for Testing and Materials, 196 Race Street, Philadelphia, PA 19103, USA as published in "Compilation of ASTM Standards in Building Codes."
2. AWS: American Welding Society Inc., 2501 NW 7th Street, Miami, FL 33125 USA as published in "Standard D1.1-72, Structural Welding Code."
3. AISC: American Institute for Steel Construction, 101 Park Avenue, New York, NY, USA as published in "Code for Standard Practice for Steel Buildings and Bridges;" "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings."
4. ANSI: American National Standard Institute, 1430 Broadway, New York, NY 10018, USA.
5. SSPC: Steel Structures Painting Council, 4400 Fifth Avenue, Pittsburgh, PA 15213, USA as published in Volumes 1 and 2 of "SSPC Manual."

#### 1.06 DELIVERY AND STORAGE

- A. Steel shall be carefully unloaded on delivery and suitably stored at the site in approved locations. No steel shall be dumped or dropped.
- B. Steel shall be neatly stacked on skids off the ground so that it will not be in contact with water or soil; shall be piled and blocked so that it will not be damaged or bent.
- C. Protect all materials from weather damage at all times.
- D. Deliver work under this Section to site in ample time to avoid delay in job progress and at such times as to permit proper coordination of the various parts.

#### 1.07 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work under the Contract.

#### 1.08 GUARANTEE

- A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacturer's

### **STRUCTURAL STEEL**

guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contract may have by law or other provisions of the Contract Documents.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Structural Steel: As noted on contract drawings.
- B. Bolts, Nuts, and Washers: Shall comply with ASTM A-325. Bolt dimensions shall comply with requirements of ANSI Standards B18.2 for structural bolts, except that the radius of the filler under the bolt head shall not be less than 1/32 inch for bolts up to 1 inch in diameter. Nut dimensions shall comply with requirements of ANSI B18.2 for heavy semi-finished hexagonal nuts. Circular washers shall be flat and smooth and bevel washers square or rectangular. All washers shall comply with requirements of ANSI B27.2 for Type A washers. Where clipping of washers is necessary, clip one side only and not closer than 7/8 of the bolt diameter from the center of the washer.

### 2.02 WELDING

- A. Welding connections shall be either manual or submerged electric and welded with a full 1/4 inch minimum fillet weld unless noted otherwise. The details of all structural joints, the techniques of welding employed, the appearance and quality of welds made, and the methods used to correct defective work shall conform to requirements of the AISC and AWS Codes.
- B. Welding electrodes for manual shielded metal arc welding shall conform to ASTM A-233, E70 Series. Bare electrodes and granular flux used in the submerged arc process shall conform to AISC Specifications.
- C. Welding shall be done only by experienced welders who have within one (1) year previously been qualified by tests as prescribed in AWS “Standard Qualification Procedure” for the type of work required.
- D. Inspection and Testing of Welding: Welding inspection shall be done in accordance with AWS Code by qualified Inspectors engaged by the Owner. Continuous inspection shall be provided for all shop and field welds except as follows.

Periodic inspection may be provided during welding of the following items provided the materials and qualifications of welding procedures and welders are verified prior to start of work; periodic inspections are made of work in progress;

#### **STRUCTURAL STEEL**



and a visual inspection of all welds is made prior to completion or prior to shipment of shop welding:

1. Single-pass welds not exceeding 5/16" in size.

## 2.03 FABRICATION

- A. Furnish and fabricate all structural steel indicated on the Drawings and as specified herein.
- B. Do all required drilling and fitting, cutting, welding, bolting and riveting.
- C. Fabrication of steel shall conform to the AISC and AWS Standards and Codes listed above.
- D. Connections shall be designed to safely carry the full capacity of the member.
- E. The design of members and connections for any portions of the structure not indicated on Drawings shall be completed by the fabricator, shall conform to AISC Specifications, and shall be capable of supporting the maximum uniform load of the member of the span shown and the materials specified unless otherwise noted on drawings.
- F. Fitted surfaces of connected parts when assembled shall be clean and bare, carrying only normal mill scale, free of paint, lacquer, dirt, oil, loose scale, burrs, pits, and other defects that would prevent solid seating of the parts to be connected.
- G. All shop connections shall be welded as previously specified.
- H. Provide holes and connections as required to accommodate the work of other trades and for site assembly of steel work. Holes shall be drilled or punched and reamed in the shop. Show sizes and locations of all such holes on the shop drawings.
- I. Diameter of holes in bolted parts shall be 1/16 inch greater than the nominal diameter of the bolt. No unfair holes will be accepted, and enlargement of holes shall not be accomplished by burning. Burrs resulting from drilling or punching shall be ground to the surface of the metal. Shearing and punching shall be done cleanly so as not to deform or mar adjacent surfaces.

## 2.04 GALVANIZING

- A. All structural steel shall be hot dip galvanized after fabrication in accordance with ASTM A-123.

- B. Reference Standards: Comply with ASTM A 123, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
- C. Certificate of Compliance from Galvanizer: Submit notarized Certificate of Compliance, signed by galvanizer, indicating compliance with requirements of specifications.
- D. Provide coating for steel fabrications applied by the hot-dip process. Comply with ASTM A123 with the addition of 0.05 to 0.09 percent nickel. Use dry kettle process.
- E. Touch-Up and Repair: For damaged and field-welded galvanized surfaces, bolted connections, and abraded areas apply organic zinc repair paint complying with requirements of ASTM A780. Galvanizing repair paint shall have 65 percent zinc by weight. Thickness of applied galvanizing repair paint shall be not less than coating thickness required by ASTM A123. Touch-up of galvanized surfaces with aerosol spray, silver paint, brite paint, or aluminum paints is not acceptable.

## PART 3 – EXECUTION

### 3.01 ERECTION OF STEEL

- A. Provide all erection equipment, bracing, planking, field bolts, nuts, washers, drift pins, and similar materials which do not form a part of the completed construction but are necessary for its proper erection.
- B. Erect and anchor all structural steel in accordance with AISC Code. All work shall be accurately set to established lines and elevations and rigidly fastened in place with suitable attachments to the construction of the building.
- C. Temporary bracing, guying and support shall be provided to keep the structure safe and aligned at all times during construction, and to prevent danger to persons and property. Check all temporary loads and stay within safe capacity of all building components.
- E. Except as otherwise indicated all field connections shall be bolted in accordance with the AISC “Specifications for Structural Joints using ASTM A325 or A490 Bolts.” Bolts in shear/bearing connections shall be tightened to the snug tight condition, defined as the tightness that exists when all plies in a joint are in firm contact. Bolts in connections requiring full pre-tensioning, such as slip-critical connections, connections subject to direct tension, and fully pre-tensioned bearing connections, shall be tightened using the turn-of-the-nut method or direct tension indicators. Use not less than one (1) washer placed under the turning part of the assembly.

## STRUCTURAL STEEL

- F. Where bolts contact structural steel, the steel surfaces shall be parallel (by use of bevel washers, if required), clean, even and smooth, and the holes shall be aligned and free of burrs and imperfections, so that when assembled, the bolted parts shall fit together solidly without the interposition of gaskets or any flexible material.
- G. All bolted connections shall be visually inspected for soundness. All slip-critical bolts shall be inspected for proper tension.
- H. The use of a gas cutting torch in the field for correcting fabrication errors will not be permitted on structural framing members without the prior written approval of the Architect for each specific condition.
- I. Do not cut or alter any members in the field without Architect's approval. Do not enlarge unfair holes by burning and forcing, but correct by reaming.

### 3.02 FIELD QUALITY CONTROL

- A. All materials and workmanship under this Section may be subject to inspection in the mill, shop or field by the Architect, or by qualified inspectors retained by the Owner.
- B. However, such inspection, wherever conducted, shall not relieve Contractor of his responsibility to furnish materials and workmanship in accordance with Contract requirements, nor shall inspector's acceptance of materials or workmanship prevent later rejection of same by the Owner or Architect if defects are discovered.

END OF SECTION



**DIVISION 05**

**METALS**

**SECTION 05 31 23**

**STEEL DECK**

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect the work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that the equipment to be furnished complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

- A. Provide all the Steel Deck Work required to complete the work of the contract including all the Steel Deck Work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all hardware, finishes, and accessories. Coordinate the Steel Deck Work with all the other trades for the project. Provide all demolition and disposal work to complete the Steel Deck Work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-contractor, and each file Sub-Bidder for the entire project so that all the work can be properly and completely performed.
- B. Steel Deck Work includes, but is not limited to: Provide all labor, materials, equipment, services, and transportation required to complete all steel floor and roof deck work as shown on Drawings and/or specified herein. Refer to Drawings for locations and details.

### 1.03 RELATED WORK UNDER OTHER SECTIONS

- A. The following items of related work are specified and included in other Sections of the Specifications:
1. Section 05 12 23, Structural Steel
  2. Section 05 50 00, Miscellaneous Metals

### 1.04 SUBMITTALS

- A. Shop Drawings: Submit complete shop drawings of work of this Section to Architect for approval.
1. Shop drawings shall indicate the size and location of framing supports and the location, lengths, and markings of deck units to correspond with the sequence of installation. Deck type, gauge, profile, and geometric properties (section modulus and moment of inertia) shall be clearly shown. Drawings shall indicate fastening methods for deck units, accessories, closure pieces, fittings, the type and sequence of welded connections, and the manufacturer and type of self-drilling screws. Indicate welds by standard welding symbols adopted by the American Welding Society.
  2. Approval of shop drawings will be for size and arrangement of units and strength of connections. Errors in dimensions shown on the shop drawings shall be the responsibility of this erector.
  3. Verify dimensions with the approved structural and steel fabricator's shop drawings and be responsible for fitting steel deck.
- B. Samples: Submit samples, if requested by the Architect, of any materials specified under this section to the Architect for selection and approval.
- C. Manufacturer cut sheets on all types of deck used. Provide deck design properties, including section modulus and moment of inertia.
- D. Do not order materials or begin fabrication or installation until Architect's approval of submittals has been obtained.

### 1.05 REFERENCE STANDARDS

- A. The work shall conform to the codes and standards of the following agencies as further cited herein:

1. ASTM: American Society for Testing and Materials, 196 Race Street, Philadelphia, PA 19103, USA as published in "Compilation of ASTM Standards in Building Codes."
2. AWS: American Welding Society, Inc., 2501 NW 7th Street, Miami, FL 33125, USA.
3. SDI: Steel Deck Institute, Box 3812, St. Louis, MO 63122.
4. AISI: American Iron and Steel Institute, 1000 16th Street N.W., Washington, DC 20036 as published in "Specifications for the Design of Light Gauge Cold Formed Structural Members."
5. Federal Specifications: As published by the United States Government, are available from the General Services Administration, Specification and Consumer Information Distribution Service, Washington Navy Yard Building 197, Washington, DC, USA.
6. ANSI: American National Standards Institute, 1430 Broadway, New York, NY 10018, USA.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Steel deck shall be stored on platforms, skids, or other supports above the ground away from damp surfaces and shall be protected from damage. Loading, transportation and unloading of material shall be conducted so as to avoid injury and deformation of the steel.
- B. Deliver work under this Section to site in ample time to avoid delay in job progress and at such times as to permit proper coordination of the various parts.

#### 1.07 QUALITY ASSURANCE

- A. Materials and operations specified by reference to the published specifications of a manufacturer, the American Society for Testing and Materials (ASTM), the American Welding Society (AWS), the American Iron and Steel Institute (AISI), the Steel Deck Institute (SDI), or other published standard, shall comply with requirements of the current specification of standard listed. In case of a conflict between the referenced specification and the project specification, the project specification shall govern.
- B. This erector, if requested, shall furnish an affidavit from the manufacturer, certifying that the materials or products delivered to the job meet the requirements

specified. However, such certification shall not relieve this erector from the responsibility of complying with any added requirements specified herein.

- C. All steel deck welding and fasteners shall be visually inspected by the inspection agency responsible for structural steel welding inspection.

#### 1.08 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work under the Contract.

#### 1.09 GUARANTEE

- A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

### PART 2 – PRODUCTS

#### 2.01 STEEL DECK

- A. Steel deck shall be roll formed from steel sheets. See General Notes for additional information.
- B. Deck units shall be designed and manufactured in accordance with the current Steel Deck Institute's "Design Manual for Floor Decks and Roof Decks" and with modifications as indicated on Drawings and specified herein.
- C. The section design properties shall be computed in accordance with the applicable requirements of the AISI "Specifications for the Design of Cold-Formed Steel Structural Members." The deck units shall conform to the manufacturer's published load tables.
- D. Steel deck shall be equal in shape and depth to the steel deck shown on the Drawings, and shall have at least the section moduli and moment of inertia of the steel deck shown on the Drawings.



- E. Fabricate deck units to sizes and details indicated or specified. Deck units shall be cut to required lengths such that end joints will occur on supporting members and be lapped a minimum of 2 inches. Typical lengths shall extend over three (3) or more spans unless otherwise indicated on drawings.
- F. All steel deck units shall be galvanized in accordance with ASTM A924-94, coating class G60.
- G. All steel deck units shall be vented with vent tabs or manually drilled holes by the contractor. Manually drilled holes shall be installed in the lower flutes, with a staggered spacing of 6 inches on center. Use PLB™-36/B-36 Formlok® Composite Deck or approved equal.

## 2.02 ACCESSORIES

- A. Accessories required to make a complete installation such as closure plates, valley plates, ridge plates, and other fittings around openings and edges shall be furnished and installed under this section. Accessories shall not be lighter than 20-gauge and of the same material and finish as the deck units.
- B. Provide pour stops at perimeter and around all openings and at columns, etc.

## PART 3 – EXECUTION

### 3.01 ERECTION

- A. Deck shall be erected and fastened in accordance with manufacturer's specifications, approved shop drawings, and as hereinafter specified.
- B. Place steel deck units on supporting frame work and adjust to final position with proper bearings, end and side laps before permanently securing work.
- C. Refer to structural drawings for deck fastening requirements.
- D. Welding washers shall be used in connection of all deck material to supporting steel for deck gauge of less than 22 gauge.
- E. Fasten accessories to deck by welding unless otherwise noted.

FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

- F. Holes and openings which are located and dimensioned on the Structural Drawings shall be cut by the deck erector. Holes not so indicated, but which are required for work by other trades shall be located and cut by respective trades.
- G. After erection, all scarred areas on deck, including cuts, drill holes, rust spots, welds, and weld scars, shall be touched up with one (1) coat of an approved rust inhibitive primer.

END OF SECTION

**DIVISION 05**

**METALS**

**SECTION 05 50 00**

**METAL FABRICATIONS**

***(FILED SUB-BID REQUIRED)***

**PART 1 - GENERAL**

**1.01 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 05 00 01  
MISCELLANEOUS AND ORNAMENTAL IRON FILED SUB BID**

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

**1.02 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.03 WORK TO BE PERFORMED**

- A. Provide all the Metal Fabrications work required to complete the work of the contract including all the Metal Fabrications work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Metal Fabrications work with all the other trades for the project. Provide all demolition and disposal work to complete the Metal Fabrications work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-Contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed

- B. Metal Fabrications includes, but is not limited to the following:
1. Modifications and repairs to existing ornamental iron fencing.
  2. New decorative fencing fabrication and installation.

- C. The Work of this Section is shown on the following Drawings:

D1-01, S1-01 to S4-04

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

- D. Related Sections include the following:
1. Section 02 41 19 "Selective Demolition"
  2. Section 09 90 00 "Painting"

- E. The following Sections also include work to be incorporated in the Miscellaneous and Ornamental Iron Filed Sub Bid:

1. Section 05 00 01 "Miscellaneous and Ornamental Iron Filed Sub Bid"
2. Section 05 50 00 "Metal Fabrications."
3. Section 05 51 00 "Metal Stairs"
4. Section 05 52 13 "Pipe and Tube Railings."

#### 1.05 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

#### 1.06 ACTION SUBMITTALS

- A. Product Data: For the following:
1. Paint products.
  2. Grout.
- B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
2. Provide templates for anchors and bolts specified for installation under other Sections.
3. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer licensed in the Commonwealth of Massachusetts responsible for their preparation.
4. Provide Shop Drawings for the following:
  - Modifications to existing ornamental iron fencing.

#### 1.07 INFORMATIONAL SUBMITTALS

- A. Mill Certificates: Signed by manufacturers of stainless-steel sheet certifying that products furnished comply with requirements.
- B. Welding certificates.
- C. Qualification Data: For professional engineer.
- D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- E. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

#### 1.08 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to the following:
  1. AWS D1.1, "Structural Welding Code--Steel."
  2. AWS D1.3, "Structural Welding Code--Sheet Steel."
  3. AWS D1.6, "Structural Welding Code--Stainless Steel."

#### 1.09 PROJECT CONDITIONS

- A. Temporary Support Facilities: Furnish and install all temporary lifts, hoists, staging, scaffolding, rigging, labor and materials, and temporary support to perform all operations in connection with the installation of this Work. Remove all temporary support facilities when no longer required.
- B. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
  1. Provide allowance for trimming and fitting at site.

## PART 2 - PRODUCTS

### 2.01 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

### 2.02 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

### 2.03 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.
- C. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304.
- D. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.

### 2.04 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, nuts and, where indicated, flat washers; ASTM F 593 for bolts and ASTM F 594 for nuts, Alloy Group 1.
- D. Anchor Bolts: ASTM F 1554, Grade 36.
  - 1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

- E. Eyebolts: ASTM A 489.
- F. Machine Screws: ASME B18.6.3.
- G. Lag Bolts: ASME B18.2.1.
- H. Wood Screws: Flat head, ASME B18.6.1.
- I. Plain Washers: Round, ASME B18.22.1.
- J. Lock Washers: Helical, spring type, ASME B18.21.1.
- K. Cast-in-Place Anchors in Concrete: Anchors capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  - 1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.
- L. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  - 1. Material for Anchors in Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.
  - 2. Material for Anchors in Exterior Locations: Alloy Group 1 stainless-steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594.

## 2.05 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.
- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically

recommended by manufacturer for interior and exterior applications.

## 2.06 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
  - 1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units



and 24 inches o.c., unless otherwise indicated.

## 2.07 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
  - 1. Furnish inserts if units are installed after concrete is placed.
- C. Hot dip galvanize miscellaneous framing and supports where indicated.

## 2.08 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.

## 2.09 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
  - 1. ASTM A 123/A 123M, for galvanizing steel and iron products.
  - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.
- B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
  - 1. Exteriors (SSPC Zone 1B): SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."
- C. Shop Painting: Apply shop primer and finish paint to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
  - 1. Primer: B58T00101 – Macropoxy #920 Pre-Prime Rust Penetrating Epoxy Pre-Primer – One Coat.

2. Finish: B54W00151 – Pro Industrial Urethane Alkyd Enamel in Black by Sherwin Williams or approved equal.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
  1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  2. Obtain fusion without undercut or overlap.
  3. Remove welding flux immediately.
  4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

#### 3.02 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

#### 3.03 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

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1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION



**DIVISION 05**

**METALS**

**SECTION 05 51 00**

**METAL STAIRS**

***(FILED SUB-BID REQUIRED)***

PART 1 - GENERAL

1.01 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 05 00 01  
MISCELLANEOUS AND ORNAMENTAL IRON FILED SUB BID

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

1.02 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.03 WORK TO BE PERFORMED

- A. Provide all the Metal Stairs work required to complete the work of the contract including all the Metal Stairs work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Metal Stairs work with all the other trades for the project. Provide all demolition and disposal work to complete the Metal Stairs work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-Contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.

- B. Metal Stairs Section includes, but is not limited to the following:
1. Site assembled steel stairs with metal diamond plate treads, risers, and landings installed on steel stringers.
  2. Steel pipe handrails attached to walls adjacent to metal stairs and ramps.
  3. Steel guardrails at landings, between stair runs, and window openings.
  4. All hoisting and scaffolding necessary for the completion of the Work.
  5. All stair components shall be hot dip galvanized separately and then assembled.
- C. The Work of this Section is shown on the following Drawings:
- D1-01, S1-01 to S4-04
- The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.
- D. Related Sections include the following:
1. Section 02 41 19 "Selective Demolition"
  2. Section 26 00 00 "Electrical"
- E. The following Sections also include work to be incorporated in the Miscellaneous and Ornamental Iron Filed Sub Bid:
1. Section 05 00 01 "Miscellaneous and Ornamental Iron Filed Sub Bid"
  2. Section 05 50 00 "Metal Fabrications."
  3. Section 05 51 00 "Metal Stairs"
  4. Section 05 52 13 "Pipe and Tube Railings."

#### 1.10 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design metal stairs, including comprehensive engineering analysis by a qualified professional engineer registered in Massachusetts, using performance requirements and design criteria indicated. Include all attachments, fasteners, welds, clips, angles, and accessories for a complete assembly in every way.
- B. Structural Performance of Stairs: Provide metal stairs capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Uniform Load: 100 lbf/sq. ft.
  2. Concentrated Load: 300 lbf applied on an area of 4 sq. in.
  3. Uniform and concentrated loads need not be assumed to act concurrently.
  4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
  5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch,

whichever is less.

- C. Structural Performance of Railings: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Handrails and Top Rails of Guards:
    - Uniform load of 50 lbf/ ft. applied in any direction.
    - Concentrated load of 200 lbf applied in any direction.
    - Uniform and concentrated loads need not be assumed to act concurrently.
  2. Infill of Guards:
    - Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
    - Infill load and other loads need not be assumed to act concurrently.
- D. Seismic Performance: Provide metal stairs capable of withstanding the effects of earthquake motions determined according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads" and the Massachusetts State Building Code.

#### 1.11 ACTION SUBMITTALS

- A. Product Data: For metal stairs and the following:
1. Metal floor plate diamond treads.
  2. Paint products.
  3. Grout.
  4. Fasteners.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
1. Provide templates for anchors and bolts specified for installation under other Sections.
  2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer registered in Massachusetts responsible for their preparation.

#### 1.12 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.
- C. Qualification Data: For professional engineer, licensed in the Commonwealth of Massachusetts.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for railings.
  - 1. Test railings according ASTM E 894 and ASTM E 935.

#### 1.13 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.
- B. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM AMP 510, "Metal Stairs Manual," for class of stair designated, unless more stringent requirements are indicated.
  - 1. Stairs: Commercial class.
- C. Welding: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1, "Structural Welding Code--Steel."
  - 2. AWS D1.3, "Structural Welding Code--Sheet Steel."
- D. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
  - 1. Build mockups for each form and finish of railing consisting of two posts, top rail, infill area, and anchorage system components that are full height and are not less than 24 inches in length.
  - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.14 COORDINATION

- A. Coordinate preparation of entire assembly for hot dip galvanizing with appropriate vent holes. Comply with galvanizer's written recommendations to ensure that each piece will not be deformed in the process and will receive full coverage.
- B. Coordinate installation of anchorages for metal stairs. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts,



anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

#### 1.15 PROJECT CONDITIONS

- A. Temporary Support Facilities: Furnish and install all temporary lifts, hoists, staging, scaffolding, rigging, labor and materials, and temporary support to perform all operations in connection with the installation of this Work. Remove all temporary support facilities when no longer required.

### PART 2 - PRODUCTS

#### 2.01 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

#### 2.02 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
- C. Iron Castings: Either gray or malleable iron, unless otherwise indicated.
  - 1. Gray Iron: ASTM A 48/A 48M, Class 30, unless another class is indicated or required by structural loads.
  - 2. Malleable Iron: ASTM A 47/A 47M.
- D. Uncoated, Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, either commercial steel, Type B, or structural steel, Grade 25, unless another grade is required by design loads; exposed.

#### 2.03 FASTENERS

- A. General: Provide zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 25 for exterior use, and Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Anchor Bolts: ASTM F 1554, Grade 36.

- D. Machine Screws: ASME B18.6.3.
- E. Lag Bolts: ASME B18.2.1.
- F. Plain Washers: Round, ASME B18.22.1.
- G. Lock Washers: Helical, spring type, ASME B18.21.1.
- H. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  - 1. Material for Anchors in Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.

#### 2.04 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
  - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

#### 2.05 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
  - 1. Join components by welding, unless otherwise indicated.
  - 2. Use connections that maintain structural value of joined pieces.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

- D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
- E. Weld connections to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. Weld exposed corners and seams continuously, unless otherwise indicated.
  - 5. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated. Locate joints where least conspicuous.

#### 2.06 STEEL-FRAMED STAIRS

- A. Metal Floor Diamond Plate Stairs: Form treads to configurations shown from cast aluminum, abrasive finish floor plate of thickness needed to comply with performance requirements, but not less than 1/4 inch.
  - 1. Form treads with integral nosing and back edge stiffener, with holes in front nosing and rear toe plate for fastening to risers.

#### 2.07 STEEL TUBE RAILINGS

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.
  - 1. Configuration: As indicated.
- B. Welded Connections: Fabricate railings with welded connections. Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
- C. Form changes in direction of railings as follows:
  - 1. By bending.
- D. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming

exposed surfaces of components.

- E. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- F. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.
  - 1. Connect posts to stair framing by direct welding unless otherwise indicated.
  - 2. For galvanized railings, provide galvanized ferrous-metal fittings, brackets, fasteners, and sleeves, including galvanized anchors embedded in exterior masonry and concrete construction.
  - 3. Wall Brackets: Provide minimum clearance of 1-1/2- inches from bottom of handrail to top of horizontal projection of the bracket, and minimum 1-1/2- inches clear from wall to edge of handrail.
    - a. Subject to compliance with requirements, provide the following wall brackets in malleable iron, or approved equal:
      - 1) The Wagner Companies; Style D Handrail Bracket, No. 4591.

## 2.08 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. All components of metal stairs and railings shall be hot dipped galvanized, excepting the cast aluminum treads.
  - 1. ASTM A 123/A 123M, for galvanizing steel and iron products.
  - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

## PART 3 - EXECUTION

### 3.01 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured

from established lines and levels and free of rack.

- C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete, unless otherwise indicated.
- D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- F. Field Welding: Comply with the following requirements:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

### 3.02 INSTALLING METAL STAIRS WITH GROUTED BASEPLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of baseplates.
- B. Set steel stair baseplates on wedges, shims, or leveling nuts. After stairs have been positioned and aligned, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.
  - 1. Use nonmetallic, nonshrink grout, unless otherwise indicated.
  - 2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

### 3.03 INSTALLING STEEL TUBE RAILINGS

- A. Attach handrails to wall with wall brackets. Locate brackets at spacing required to support structural loads, not more than 48" o.c. Secure wall brackets to building construction as follows:
  - 1. Use type of bracket with predrilled hole for exposed bolt anchorage.
  - 2. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
  - 3. For hollow masonry anchorage, use toggle bolts.

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- B. Weld guardrails to steel prior to hot dip galvanizing.

#### 3.04 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION

**DIVISION 05**

**METALS**

**SECTION 05 52 13**

**PIPE AND TUBE RAILINGS**  
***(FILED SUB-BID REQUIRED)***

**PART 1 - GENERAL**

**1.01 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 05 00 01  
MISCELLANEOUS AND ORNAMENTAL IRON FILED SUB BID**

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

**1.02 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.03 WORK TO BE PERFORMED**

- A. Provide all the Pipe and Tube Railings work required to complete the work of the contract including all the Pipe and Tube Railings work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Pipe and Tube Railings work with all the other trades for the project. Provide all demolition and disposal work to complete the Pipe and Tube Railings work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-

Contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed

B. Pipe and Tube Railings includes, but is not limited to:

1. Steel pipe railings at all stairs.
2. Where noted on the plans.

C. The Work of this Section is shown on the following Drawings:

D1-01, S1-01 to S4-04

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

D. The following Sections also include work to be incorporated in the Miscellaneous and Ornamental Iron Filed Sub Bid:

1. Section 05 00 01 "Miscellaneous and Ornamental Iron Filed Sub Bid"
2. Section 05 50 00 "Metal Fabrications."
3. Section 05 51 00 "Metal Stairs"
4. Section 05 52 13 "Pipe and Tube Railings."

#### 1.04 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

- a. Uniform load of 50 lbf/ ft. applied in any direction.
- b. Concentrated load of 200 lbf applied in any direction.
- c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

- a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
- b. Infill load and other loads need not be assumed to act concurrently.

C. Thermal Movements: Allow for thermal movements from ambient and surface



temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

- D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

#### 1.05 ACTION SUBMITTALS

- A. Product Data: For the following:

1. Grout
2. Anchoring cement.
3. Paint products.

- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Provide templates for anchors and bolts specified for installation under other Sections.
2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

- C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer registered in Massachusetts responsible for their preparation.

#### 1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified professional engineer, licensed in the Commonwealth of Massachusetts.
- B. Welding certificates.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

#### 1.07 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- B. Welding Qualifications: Qualify procedures and personnel according to

AWS D1.1/D1.1M, "Structural Welding Code - Steel."

#### 1.08 PROJECT CONDITIONS

- A. Temporary Support Facilities: Furnish and install all temporary lifts, hoists, staging, scaffolding, rigging, labor and materials, and temporary support to perform all operations in connection with the installation of this Work. Remove all temporary support facilities when no longer required.
- B. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

#### 1.09 COORDINATION AND SCHEDULING

- A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

### PART 2 - PRODUCTS

#### 2.01 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

#### 2.02 STEEL AND IRON

- A. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
  - 1. Provide hot dip galvanized finish.
- B. Plates, Shapes, and Bars: ASTM A 36/A 36M.

#### 2.03 FASTENERS

- A. General: Provide the following:
  - 1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.

- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  - 1. Material for Exterior Locations: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

#### 2.04 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

#### 2.05 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar

items.

- G. Connections: Fabricate railings with welded connections unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove flux immediately.
  - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Form changes in direction as follows:
  - 1. By bending.
- J. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- M. For railing posts set in concrete, provide steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

## 2.06 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

- D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

## 2.07 STEEL AND IRON FINISHES

### A. Galvanized Railings:

1. Hot-dip galvanize exterior steel and iron railings, including hardware, after fabrication.
2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
4. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

- B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

- C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

## PART 3 - EXECUTION

### 3.01 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
  1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
  2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
  3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

### 3.02 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.
- B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

### 3.03 ANCHORING POSTS

- A. Use metal sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- C. Leave anchorage joint exposed with 1/8-inch buildup, sloped away from post.

### 3.04 ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

### 3.05 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION

**DIVISION 07**

**THERMAL AND MOISTURE PROTECTION**

**SECTION 07 00 01**

**WATERPROOFING, DAMPPROOFING AND CAULKING**

***(FILED SUB BID REQUIRED)***

**PART 1 - GENERAL**

**1.01 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 07 00 01  
WATERPROOFING, DAMPPROOFING AND CAULKING FILED SUB BID**

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

**1.02 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.03 REQUIREMENTS FOR FILING SUB-BIDS**

- A. Time, Manner and Requirements for Submitting Sub-Bids:
  - 1. Sub-bids for work under this Section shall be for the complete work and shall be filed in a sealed envelope with the Public Agency at a time and place as stipulated in the “Invitation to Bid.”
  - 2. Sub-bidders must be DCAMM Certified in the listed trade and shall include a current DCAMM sub-bidder Certificate of Eligibility and Update Statement with the bid.
  - 3. Each sub-bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended.

4. Sub-bids filed with the Awarding Authority shall be accompanied by Bid Bond, Cash, Certified Check, Treasurer's Check, or Cashier's Check issued by a responsible bank or trust company payable to the City of Worcester in the amount of 5 percent of the sub-bid. A sub-bid accompanied by any other form of bid deposit than those specified will be rejected.
- B. All File Sub-Bidders shall provide all of their own:
1. Vertical access and hoisting to perform the work of their section. Vertical access shall also be provided for the Architect to review the work at any time requested by the Architect.
  2. Provide all coring, demolition, and patching to perform the work of their section.
  3. Design and install all Firestopping associated with and required for this Trade. Submit Firestopping design for review.
  4. Coordination with the General Bidder and all the other File Sub-Bidders.
  5. Disposal of all demolition debris and trash to perform the work of their section.
  6. Provide As-Built drawings in CAD using the latest version of AutoCAD.
- C. Sub Sub-Bid requirements: Sub-bids shall include performance of the complete work of this section, including any sub-trade classes of work, with employees on the sub-bidder's own payroll unless the sub-bidder identifies in Paragraph E of the bid form, the name of a sub-trade subcontractor that will perform each class of sub-trade work and the corresponding sub-trade subcontract sum.

#### 1.04 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including the following Specification Sections; which are combined for this Filed Sub-Bid category:
1. Section 07 00 01 "Waterproofing, Damp-proofing and Caulking Filed Sub Bid"
  2. Section 07 18 00 "Elastomeric Coatings."
  3. Section 07 92 00 "Joint Sealants."
- B. The Work of this Section is shown on the following Drawings:
- D2-01, D2-02, S1-01 to S4-04.
- The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

#### PART 2 - PRODUCTS (Not Used)



FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

PART 3 - EXECUTION (Not Used)

END OF SECTION



**DIVISION 07**

**THERMAL AND MOISTURE PROTECTION**

**SECTION 07 00 02**

**ROOFING**

***(FILED SUB BID REQUIRED)***

**PART 1 - GENERAL**

**1.01 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 07 00 02  
ROOFING FILED SUB BID.**

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

**1.02 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.03 REQUIREMENTS FOR FILING SUB-BIDS**

- A. Time, Manner and Requirements for Submitting Sub-Bids:
  - 1. Sub-bids for work under this Section shall be for the complete work and shall be filed in a sealed envelope with the Public Agency at a time and place as stipulated in the “Invitation to Bid.”
  - 2. Sub-bidders must be DCAMM Certified in the listed trade and shall include a current DCAMM sub-bidder Certificate of Eligibility and Update Statement with the bid.
  - 3. Each sub-bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended.
  - 4. Sub-bids filed with the Awarding Authority shall be accompanied by Bid Bond,

Cash, Certified Check, Treasurer's Check, or Cashier's Check issued by a responsible bank or trust company payable to the City of Lawrence in the amount of 5 percent of the sub-bid. A sub-bid accompanied by any other form of bid deposit than those specified will be rejected.

- B. All File Sub-Bidders shall provide:
1. Provide all coring, demolition, and patching to perform the work of their section.
  2. Design and install all Firestopping associated with and required for this Trade. Submit Firestopping design for review.
  3. Coordination with the General Bidder and all the other File Sub-Bidders.
  4. Disposal of all demolition debris and trash to perform the work of their section.
  5. Provide As-Built drawings in CAD using the latest version AutoCAD.
  6. Vertical access and hoisting to be provided by the General Contractor.
- C. Sub Sub-Bid requirements: Sub-bids shall include performance of the complete work of this section, including any sub-trade classes of work, with employees on the sub-bidder's own payroll unless the sub-bidder identifies in Paragraph E of the bid form, the name of a sub-trade subcontractor that will perform each class of sub-trade work and the corresponding sub-trade subcontract sum.

#### 1.04 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including the following Specification Sections, which are combined for this Filed Sub-Bid category:
1. Section 07 00 02 "Roofing Filed Sub-Bid"
  2. Section 07 31 26 "Slate Shingles"
  3. Section 07 62 00 "Sheet Metal Flashing and Trim"
- B. The Work of this Section is shown on the following Drawings:

D1-01 to S3-03

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

**DIVISION 07**

**THERMAL AND MOISTURE PROTECTION**

**SECTION 07 18 00**

**TRAFFIC COATINGS**

***(FILED SUB-BID REQUIRED)***

**PART 1 - GENERAL**

**1.01 GENERAL PROVISIONS – TRADE SUB-BID REQUIRED AS PART OF 07 00  
01 WATERPROOFING, DAMPPROOFING AND CAULKING FILED SUB  
BID**

- A. Work of this Section requires Trade Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

**1.02 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that the equipment to be furnished complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.02 WORK TO BE PERFORMED**

- A. Provide all the Traffic Coatings Work required to complete the work of the contract including all the Traffic Coatings Work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all hardware, finishes, and accessories. Coordinate the Traffic Coatings Work with all the other trades for the project. Provide all demolition and disposal work to complete the Traffic Coatings Work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each Subcontractor, and each file sub-bidder for the entire project so that all the work can be properly and completely

performed.

B. Elastomeric Coatings includes, but is not limited to Heavy-Duty vehicular traffic coating (polyurethane based waterproofing with epoxy topcoat) at Entrance over Structural Concrete.

C. The Work of this Section is shown on the following Drawings:

D2-01, D2-02, S1-01 to S4-04.

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

D. Related Sections:

1. Section 03 30 00 "Structural Concrete"
2. Section 03 31 10 "Concrete Repairs."
3. Section 07 19 00 "Joint Sealants."

E. The following Sections also include work to be incorporated in the Waterproofing, Damp-proofing, and Caulking Filed Sub Bid:

1.03 Section 07 00 01 "Waterproofing, Damp-proofing and Caulking Filed Sub Bid."

1.04 Section 07 18 00 "Traffic Coatings"

1.05 Section 07 92 00 "Joint Sealants."

#### 1.06 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

#### 1.07 SUBMITTALS

A. Product Literature: Submit 4 copies of product data sheets and the manufacturer's installation instructions.

B. Submit list of five projects similar in nature which have been installed by applicator during the last five years, identified with project name, location, and date.

C. Submit copy of "Certificate of License" issued to applicator by membrane product manufacturer.

D. Sample colors.

E. 12" x 12" sample board of material in final form in the color selected.

G. Sealants to be used with this product.

#### 1.08 QUALITY ASSURANCE

A. Applicator shall be licensed by the manufacturer with at least five years experience in application of the product system.

#### 1.09 PRODUCT HANDLING

A. Delivery shall be in manufacturers original unopened container, clearly identifying each product specified, relating it to the product literature submitted.

#### 1.10 PROJECT CONDITIONS

A. Install materials in accordance with all safety and weather conditions required by manufacturer.

B. Environmental Conditions:

1. Do not apply coating if rain is anticipated within eight hours of application.
2. Do not apply if temperatures are lower than 40 degrees F or higher than 110 degrees F.
3. Provide positive ventilation until eight hours after application period.

C. Post signs indicating use of products containing isocyanates until at least eight hours following application period.

#### 1.11 GUARANTEES

A. Opaque membrane shall be guaranteed against defects of materials and workmanship for a period of five years, beginning with date of substantial completion.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS – VEHICULAR TRAFFIC COATING

A. Traffic Coating: Manufacturer's standard, fluid applied epoxy / polyurethane waterproofing system consisting of a flexible polyurethane basecoat and epoxy topcoat.

1. Basis-of-Design Product: Subject to compliance with requirements, provide **BASE Corporation; Construction Systems; MasterSeal Traffic 2530**, equal product by one of the following, or approved equal:

- a. Euclid Chemical Company (The); an RPM company.
  - b. Sika Corporation.
- B. Deck Coating System: High-solids, fluid-applied, polyurethane, waterproofing, traffic-bearing, membrane deck coating system.
1. Primer: MasterSeal P 255, two-component, polyurethane-based adhesive primer.
  2. Base coat: MasterSeal M 265, two-component, fast-curing, polyurethane base coat.
  3. Intermediate Coat: MasterSeal TC 275: 100% solids, two-component, fast-curing, aromatic polyurethane top coat.
  4. Topcoat: MasterSeal 350: 100% solids, two-component, fast curing epoxy topcoat.
  5. Second Topcoat: MasterSeal 350: 100% solids, two-component, fast curing epoxy topcoat.
- C. Accessories:
1. Aggregate: MasterSeal 940.
  2. Sealant Primer: MasterSeal P 173.
  3. Sealant: MasterSeal SL 2 or MasterSeal CR 195.
  4. Perimeter Joint Sealant: MasterSeal SL 2 or MasterSeal NP 2.
  5. Reinforcing Fabric: MasterSeal 995.
- D. Performance Requirements: Provide material complying with the following requirements:
1. Crack Bridging, Base Coat, ASTM C957: Passes.
  2. Adhesion Peel, Primer and Base Coat, ASTM C957.
    - a. Concrete: 14 pli.
  3. Tensile Strength, ASTM D412:
    - a. Base Coat: 2,500 psi (17.2 MPa).
  4. Elongation, ASTM D412:
    - a. Base Coat: 900 percent.
    - b. Intermediate Coat: 30 percent.



5. Hardness, ASTM D2240, Shore D:
  - a. Intermediate Coat: 70.
6. Solids Content:
  - a. Primer: 99 percent.
  - b. Base Coat: 99 percent.
  - c. Intermediate Coat: 99 percent.
  - d. Epoxy Top Coat: 99 percent.
- E. Primer: Liquid primer as recommended in writing for substrate and conditions by traffic-coating manufacturer.
  1. Material: Polyurethane.
- F. Base Coat: Two component, polyurethane.
  1. Thicknesses: Minimum wet-film thickness as recommended in writing by manufacturer for substrate and service conditions indicated.
- G. Intermediate Coat: Two component, polyurethane.
  1. Thicknesses: Minimum wet-film thickness as recommended in writing by manufacturer for substrate and service conditions indicated.
- H. Topcoats: Two-component epoxy.
  1. Thicknesses: Minimum wet-film thickness as recommended in writing by manufacturer for substrate and service conditions indicated, measured excluding aggregate.
  2. Aggregate Content: As recommended in writing by traffic-coating manufacturer for substrate and service conditions indicated,
  3. Color: As selected by Architect from manufacturer's full range.
- I. Aggregate: Uniformly graded, washed silica sand of particle sizes, shape, and minimum hardness recommended in writing by traffic-coating manufacturer.

## 2.02 ACCESSORIES

- A. Sealant at Masonry and Concrete: Low modulus, multi-component, non-sag, polyurethane sealant - ASTM C-920-79/Type S/Class 25/Grade NS. Color to be selected from standard range by Consultant, compatible with the coating.

- B. Backer Rod: Shall be closed cell polyethylene or polyurethane as approved by the Consultant.
- C. Bond Breaker Tape: Any acceptable polyethylene or similar type bond breaker tape shall be used to prevent three (3) sided adhesion in locations where backer rod cannot be used.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Before coating is applied inspect the concrete surface and treat as necessary to remove laitance, loose material on the surface, grease, oil, and other contaminants which will affect the bond of the coating.
- B. Concrete surfaces shall be visibly dry and pass a four hour rubber mat test (no condensation) prior to application of the coating system. The membrane is being applied to a sandwich system. The presence of moisture will require the use of an epoxy base coat in lieu of the prime coat. Manufacturer's recommendations are to be followed.

#### 3.02 PREPARATION

- A. Thoroughly clean all surfaces to receive coating materials in accordance with manufacturer's instructions and recommendations. Remove oil and grease with a commercial grade alkaline cleaner; thoroughly rinse and dry. Prepare all concrete surfaces by sandblasting, shotblast, acid etching with a 10-15% solution of muriatic acid, or high pressure wash. Flush all acid with clean water and allow to dry thoroughly.
- B. Treat all expansion, control, and construction joints to be overcoated by deck coating with sealant. Joints wider than one inch shall not be coated. Clean joint surfaces immediately before installation of sealant and caulking compounds.

Remove all failed sealants if required. Remove dirt, insecure coatings, moisture, and other substances which would interfere with the bond of sealant or caulking compounds.

- C. Rout or saw-cut cracks exceeding 1/16" in width and fill with sealant.
- D. Where backer rod requires replacement it shall be installed using only blunt instruments or rounded tools which will insure a uniform depth (+ or - 1/8") depth without puncturing the material. Backer rod shall be a minimum of 33% oversized for closed cell. Bond breaker tape shall be the exact width of the joint.
- E. Sealant shall be prepared and installed in accordance with manufacturer's

recommendations and instructions in order to insure proper width to depth ratio. Take all steps to prevent three (3) sided adhesion. Sealant depth shall be one half of joint width with a minimum depth of 1/4" and a maximum of 1/2" unless otherwise required by the manufacturer.

- F. Protect adjacent areas with drop cloths or masking as required.
- G. Prime all concrete or apply epoxy barrier coat as required by manufacturer.
- H. Apply 20 mil dry film thickness of non-flow type base coat for a distance of 2" on either side of all expansion joints, control joints, and construction joints to be coated.

### 3.03 APPLICATION

- A. Apply deck coating system in accordance with manufacturer's instructions, and as follows:
  - 1. Primer (M255): Apply 4 wet mils (0.1 mm or 250-400 sq. ft. /gallon).
  - 2. Base Coat (M265): Apply 25 wet mils (0.64 mm or 55- 60 sq. ft. /gallon). Backroll to evenly distribute material and maintain consistent thickness. Allow base coat to cure 4 to 6 hours.
  - 3. Intermediate Coat (TC275): Apply 15-20 wet mils (0.38 – 0.51 mm or 80 - 100 sq. ft. /gallon). Backroll to evenly distribute material and maintain consistent thickness. Allow intermediate coat to cure 4 -6 hours.
  - 4. Aggregate (MasterSeal 941): Immediately broadcast aggregate at the rate of 20 – 30 lbs., per 100 sq. ft. Allow intermediate coat to cure for 4-6 hours
  - 5. Top Coat (MasterSeal 350): Apply 40 wet mils (0.9 - 1.0 mm or 35 - 40 sq. /gallon). Evenly distribute the material.
  - 6. Aggregate (Masterseal 940 – Dynagrip #9): Immediately broadcast aggregate at rate of 1.1 lb. /sq. ft. or until refusal into wet top coat. Allow to cure for 6-8 hours.
  - 7. Second Top Coat (MasterSeal 350): Apply 40 wet mils (0.9 – 1.0 mm or 35 - 40 sq. ft. /gallon). Evenly distribute the material.
  - 8. Aggregate (MasterSeal 940 – Dynagrip #9): Immediately broadcast aggregate (Dynagrip #9) at the rate of 1.1 lb. /sq. ft. or until refusal into the wet topcoat. Allow to cure for 12 - 24 hours.

### 3.04 PAVEMENT MARKINGS

- A. Do not apply pavement-marking paint for striping and other markings until layout, colors, and placement have been verified with Architect and traffic coating has cured.
- B. Sweep and clean surface to eliminate loose material and dust.
- C. Apply pavement-marking paint with mechanical equipment to produce markings of dimensions indicated with uniform straight edges. Apply at manufacturer's recommended rates for a minimum wet-film thickness of 15-mils.
  - 1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to surface. Mask an extended area beyond edges of each stencil to prevent paint application beyond stencil. Apply paint so that it cannot run beneath stencil.

### 3.05 CLEANING

- A. Clean stains from adjacent surfaces with appropriate cleaning agents.
- B. Remove all masking protection, equipment, material, and debris from site and storage area.

END OF SECTION

**DIVISION 07**  
**SECTION 07 18 13**

**THERMAL AND MOISTURE PROTECTION**  
**ELASTOMERIC COATINGS**  
***(FILED SUB-BID REQUIRED)***

PART 1 - GENERAL

1.03 GENERAL PROVISIONS – TRADE SUB-BID REQUIRED AS PART OF 07 00 01  
WATERPROOFING, DAMPPROOFING AND CAULKING FILED SUB BID

- A. Work of this Section requires Trade Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

1.04 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that the equipment to be furnished complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.12 WORK TO BE PERFORMED

- A. Provide all the Elastomeric Coatings Work required to complete the work of the contract including all the Elastomeric Coatings Work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all hardware, finishes, and accessories. Coordinate the Elastomeric Coatings Work with all the other trades for the project. Provide all demolition and disposal work to complete the Elastomeric Coatings Work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each Subcontractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed. Refer to Drawings for locations and details.

- B. The Work of this Section is shown on the following Drawings:

D2-01, D2-02, S1-01 to S4-04.

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

- C. Related Sections:

1. Section 03 30 00 "Structural Concrete"
2. Section 03 31 10 "Concrete Repairs."

- D. The following Sections also include work to be incorporated in the Waterproofing, Damp-proofing, and Caulking Filed Sub Bid:

1. Section 07 00 01 "Waterproofing, Damp-proofing and Caulking Filed Sub Bid."
2. Section 07 18 00 "Traffic Coatings"
3. Section 07 92 00 "Joint Sealants."

### 1.13 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

### 1.14 SUBMITTALS

- A. Product Literature: Submit 2 copies of product data sheets, the manufacturer's installation instructions, and the appropriate Material Safety Data Sheets (MSDS).
- B. Submit list of five projects similar in nature which have been installed by applicator during the last five years, identified with project name, location, and date.
- C. Submit copy of "Certificate of License" issued to applicator by membrane product manufacturer.
- D. Sample colors.
- E. 12" x 12" sample board of material in final form in the color selected.
- G. Sealants to be used with this product.

#### 1.15 QUALITY ASSURANCE

- A. Manufacturer qualifications: The manufacturer of the specified product shall be ISO 9001:2008 certified and have in existence a recognized on-going quality assurance independently audited on a regular basis.
- B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer representative.
- C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state, and federal authorities having jurisdiction. Consult material safety data sheets for complete handling recommendations.

#### 1.16 PRODUCT HANDLING

- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.
- B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
- C. Condition the specified product as recommended by the manufacturer.

#### 1.17 PROJECT CONDITIONS

- A. Install materials in accordance with all safety and weather conditions required by manufacturer.
- B. Environmental Conditions:
  - 1. Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature is 45 degrees F.
  - 2. Do not apply if temperatures are lower than 40 degrees F or higher than 110 degrees F.
  - 3. Provide positive ventilation until eight hours after application period.
- C. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

#### 1.18 GUARANTEES

- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

## PART 2 - PRODUCTS

### 2.03 MATERIALS – ELASTOMERIC COATING

- A. Elastomeric Coating: Manufacturer's standard, fluid applied acrylic / silicone waterproofing system consisting of an acrylic basecoat.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide BASF Corporation; Construction Systems; Sika Corporation, equal product by one of the following, or approved equal:
    - a. MasterSeal Traffic 1500.
    - b. Tremco: TREMproof®
- B. Elastomeric Acrylic Coating Sikagard 550W:
  - 1. Product shall be 100% acrylic Emulsion with the following properties:
    - a. Water vapor permeable.
    - b. Can bridge dynamically moving cracks.
    - c. Crack bridging properties maintained at low temperatures.
    - d. The material shall be resistant to dirt pick-up and mildew.
    - e. Custom color to be selected by owner.
- C. Elastomeric Acrylic Smooth & Textured Base Coating Sikagard Elastic Base Coat (Smooth and Textured):
  - 1. Product shall be 100% Acrylic emulsion with the following properties:
    - a. Water vapor permeable.
    - b. Can bridge dynamically moving cracks.
    - c. Crack bridging properties maintained at low temperatures.
- D. Adhesion Promoter / Surface Conditioner Sikagard 552W:
  - 1. Product shall be a water based, acrylic primer with the following properties:
    - a. Solids content 12.5% - 20% by volume.
    - b. Recoat time 4 – 24 hours.
- E. Performance Criteria:
  - 1. Properties of the elastomeric acrylic coating:
    - a. Pot life: indefinite.
    - b. Tack Free Time 6 Hours @ 73°F, 50% Relative Humidity. Final Cure < 24 Hours.
    - c. Carbon Dioxide Diffusion:  $\mu\text{CO}_2$  214,000 Carbon Dioxide Diffusion Resistance at 16 mils (400 microns)  $\text{SdCO}_2 = 299$  ft. (Equivalent air thickness) i.e. Approx. 9-in. of standard concrete cover.
    - d. Water Vapor Diffusion:  $\mu\text{H}_2\text{O}$  2,146 Water Vapor Diffusion Resistance at 16 mils  $\text{SdH}_2\text{O} = 2.6$  ft. (0.8m) (equivalent air thickness).
    - e. Moisture Vapor permeability (ASTM E96) 14.5 perms.



- f. Tensile Properties (ASTM D-412 Modified) 7 day-Tensile strength 190 psi (1.3 MPa) - Elongation at break 820% - 340% @ 0oF (-18oC).
- g. Crack Bridging(at 16 mils = 400 microns DFT
  - Static (at -4°F/-20°C) 30 mils (0.75mm)
  - Dynamic>1000 cycles(at -4°F/-20°C) 12 mils (0.30mm)
- h. Resistance to wind driven rain (TT-C-555B): No passage of water through coating.
- i. Weathering (ASTM G-23) 10,000 hours excellent, no chalking or cracking.
- j. Solids Content: by weight – 62% by volume – 55%.
- k. Flame Spread and Smoke Development (ASTM E-84-94). Flame Spread 5 Smoke Development 5 Class Rating A.

#### 2.04 ACCESSORIES

- A. Sealant at Masonry and Concrete: Low modulus, multi-component, non-sag, polyurethane sealant - ASTM C-920/Type M/Class 50/Grade NS. Color to be selected from standard range by Consultant, compatible with the coating.
- B. Backer Rod: Shall be closed cell polyethylene or polyurethane as approved by the Consultant.
- C. Bond Breaker Tape: Any acceptable polyethylene or similar type bond breaker tape shall be used to prevent three (3) sided adhesion in locations where backer rod cannot be used.

### PART 3 - EXECUTION

#### 3.06 EXAMINATION

- A. Before coating is applied inspect the concrete surface and treat as necessary to remove laitance, loose material on the surface, grease, oil, and other contaminants which will affect the bond of the coating.
- B. Concrete surfaces shall be visibly dry and pass a four hour rubber mat test (no condensation) prior to application of the coating system. The membrane is being applied to a sandwich system. The presence of moisture will require the use of an epoxy base coat in lieu of the prime coat. Manufacturer's recommendations are to be followed.

#### 3.07 PREPARATION

- A. Thoroughly clean all surfaces to receive coating materials in accordance with manufacturer's instructions and recommendations. Remove oil and grease with a commercial grade alkaline cleaner; thoroughly rinse and dry. Prepare all concrete surfaces by sandblasting, shotblast, acid etching with a 10-15% solution of muriatic acid, or high pressure wash. Flush all acid with clean water and allow to dry thoroughly.
- B. Crack detail: Recommended application temperatures 40° - 100°F (4°-38°C).
- C. Rout or saw-cut cracks exceeding 1/16" in width and fill with sealant.
- D. Where backer rod requires replacement it shall be installed using only blunt instruments or rounded tools which will insure a uniform depth (+ or - 1/8") depth without puncturing the material. Backer rod shall be a minimum of 33% oversized for closed cell. Bond breaker tape shall be the exact width of the joint.
- E. Sealant shall be prepared and installed in accordance with manufacturer's recommendations and instructions in order to insure proper width to depth ratio. Take all steps to prevent three (3) sided adhesion. Sealant depth shall be one half of joint width with a minimum depth of 1/4" and a maximum of 1/2" unless otherwise required by the manufacturer.
- F. Protect adjacent areas with drop cloths or masking as required.
- G. Prime all concrete and masonry or apply epoxy barrier coat as required by manufacturer.

### 3.08 APPLICATION

- A. Apply coating materials in accordance with manufacturer instructions.
  - 1. Apply 1 coat of Sikagaurd 552W (or approved equal), primer/surface conditioner by brush, roller, or spray at a rate not to exceed 300 sq. ft per gallon.
  - 2. Coating Application: Apply by brush, roller, or spray over entire area moving in one direction. A minimum of two coats are required. Each coat shall be applied at a rate not to exceed 100 sq. ft per gallon. Total dry film thickness shall be a minimum of 8 – 10 dry mils. per coat. Allow a minimum of 2 hours prior to recoating.
  - 3. When applying the recoating, never stop the application unless the entire surface has been recoated. Always stop application at an edge, corner, or

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joint. Never let a previously coated film dry; always coat into a wet film.  
Always apply the coating at a 45° angle to an edge, corner, or joint.

4. Adhere to all limitations and cautions for the elastomeric acrylic coating in the manufacturers printed literature.
5. Install 2'-0" x 2'-0" sample of concrete and masonry surfaces for owner approval.

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3.09 CLEANING

- A. Clean stains from adjacent surfaces with appropriate cleaning agents.
- B. Remove all masking protection, equipment, material, and debris from site and storage area.

END OF SECTION

**DIVISION 07 00 00**

**THERMAL & MOISTURE PROTECTION**

**SECTION 07 31 26**

**SLATE SHINGLES**  
***(FILED SUB-BID REQUIRED)***

**PART 1 - GENERAL**

**1.01 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect Work of this Section whether or not such Work is specifically mentioned in this Section.
- C. Coordinate Work with that of all other trades affecting or affected by Work of this Section. Cooperate with such trades to assure the steady progress of all Work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that the equipment to be furnished complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the Work shall be new and of the best grade of their respective kinds.

**1.02 DESCRIPTION OF WORK:** The work of this Section consists of the following:

- A. Careful removal of all existing slate shingles and felt underlayment from the roofs of the building.
- B. Removal and disposal of all copper ridge cover and copper hips on the roof.
- C. Coordination of slate shingling work with roof sheathing repair/replacement, replacement of eave trim, and repointing of brick masonry above the roof.
- D. Installation of roofing underlayment materials specified herein.
- E. Installation of new slate shingles.
- F. Installation of new copper ridge cover and copper hips.

**1.03 RELATED WORK SPECIFIED ELSEWHERE**

- A. Carefully examine all of the Contract Documents for requirements which effect the work of this section.
- B. Other specifications sections which directly relate to the work of this section include, but are not limited to, the following:
  - 1. Section 02 41 19 - Selective Demolition.
  - 2. Section 02 82 00 - Asbestos Abatement and Related Work.
  - 3. Section 02 83 00 – Lead Based Paint Abatement and Related Work
  - 4. Section 07 62 00 – Sheet Metal & Flashing
  - 5. Section 07 92 13 - Joint Sealers and Fillers
  - 6. Section 09 90 00 – Painting and Coating
- C. The Work of this Section is shown on the following Drawings:

D1-01 to S3-03

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

#### 1.04 QUALITY ASSURANCE

- A. Standards: American Society for Testing and Materials (ASTM); National Roofing Contractors Association (NRCA); National Slate Association, National Slate Association Insulation Manuel; Sheet Metal and Air Conditioning Contractors National Association (SMACNA); "Architectural Sheet Metal", latest edition; Revere Copper Products, Inc., "Copper and Common Sense", latest edition; product manufacturers' printed recommendations.
- B. Workmanship: Mechanics shall have skill and experience of sufficient level to qualify them as expert roofers; and particular skill and experience in laying slate roofs. Mechanics shall be carefully supervised, and shall perform all work in such a manner as to insure weather-tight roofing installations.

#### 1.05 COORDINATION

- A. The Contractor shall coordinate the work of all other trades related to the successful completion of the work of this Section. The Contractor shall not proceed with aspects of this work that require prior completion of work by other trades until all such work of other trades is completed.

- B. In accordance with other Sections of the Specifications, the Construction Manager shall provide sufficient staging to give complete access to the work of this section prior to commencement of the work.

#### 1.06 SUBMITTALS:

- A. In accordance with Division 1, the Contractor shall submit the following items for approval, prior to procurement and/or installation of the respective materials.
- B. Shop Drawings: Following the removal of existing slate shingles, copper ridge and copper hip, the Contractor shall indicate by notation and other simple graphic methods on a copy of the Architect's roof plan, which will receive new reproduction ridge cover and hips. In addition, surface area calculations for each roof plane, and linear dimensions of all ridges shall be indicated.
- C. Product Literature, Labels and Certifications:
  - 1. Slate shingles
  - 2. Bituminous rubberized roof underlayment
  - 3. Fasteners (nails for securing slate shingles)
  - 4. Mastics, adhesives and calking materials
- D. Material Samples
  - 1. Submit 1 sample, 1-ft square, of self-adhesive bituminous rubberized roofing underlayment if not product name and manufacturer specified but submitted as an equal.
  - 2. Submit 2 of each type of specified fastener.
  - 3. Submit a minimum of 3 slate shingles for color match and size.

#### 1.07 PRODUCT HANDLING

- A. The Contractor shall supply all new materials required to complete the work. The Contractor shall deliver packaged materials in unbroken packages with the manufacturer's name, brand, and material standard indicated plainly thereon. The Contractor shall protect work during delivery, storage, and installation from soiling, mechanical damage, contact with ground, and exposure to water or high humidity conditions.
- B. The Contractor shall exercise reasonable care in the removal, handling and disposal of slate shingles and copper.

#### 1.07 PROTECTION

- A. The Contractor shall be responsible for the protection and safety of persons entering and exiting the building and walking on surrounding public walkways.

- B. The Contractor shall ensure protection of all adjacent site and elements from potential damage resulting from the work of this Section.
- C. The Contractor shall be fully responsible for maintaining the weather-tightness of all portions of the roof during re-roofing operations. The Contractor or his authorized representative shall be available on two hour's notice, twenty-four hours a day for the duration of this contract, to repair and prevent any and all leaks related to the work. The Contractor shall furnish the Owner's authorized representative with personal telephone number(s) and name of person(s) that will respond in the event of an emergency.

#### 1.08 WEATHER

- A. Work shall be performed only during favorable weather conditions and shall be performed only on dry surfaces with dry materials. Close up exposed roof areas if weather becomes bad and have a contingency/action plan for implementation.

#### 1.09 JOB CONDITIONS

- A. Before commencing work, the Contractor shall become aware of the nature of the project and take all precautions to see that the work is carried out in compliance with OSHA standards.
- B. The Contractor shall not commence any phase of the work until all related preparation work is completed and approved by the Owner's authorized representative.

#### 1.10 WARRANTY

- A. Contractor shall warranty the work, covering both material and labor for defects that may occur, for a minimum period of five years. Repairs or replacement of defective slates or flashing during the warranty period shall be at no cost to the Owner.
- B. Near the end of the warranty period and before the expiration of the warranty, Contractor will inspect the Work and replace all broken, cracked, displaced, or otherwise deteriorated roofing slates in all areas of the new slate roofing.

### **PART 2 - MATERIALS**

2.01 FLASHING: Specified in Section 07 62 00

2.02 UNDERLAYMENT MATERIALS



- A. Continuous breathable air and water barrier SlopeShield PLUS Self-Adhered Water-Resistive Roof Underlayment by VaproShield,
1. SlopeShield PLUS consists of multiple layers of UV stabilized spun- bonded polyethylene having the following properties:
    - a. Color: Black with allowable UV exposure for 180 days (6 Months).
    - b. Adhesive: 100% coverage on back side of membrane (not spot applied), vapor permeable, with zero VOC's.
    - c. High temperature resistance up to 250 °F (121 °C)
    - d. Air Leakage: 0.00086 cfm/ft<sup>2</sup> @ 1.57 psf when tested in accordance with ASTM E2178.
    - e. Water Vapor Permeance tested to ASTM E398 and ASTM E96 water method @23°C 50%RH: minimum of 30 perms
    - f. Water Resistance tested (Ponding): no leakage
    - g. Tensile Strength tested to ASTM D5034: Pass, 135 lbf/in. (23.6 N/mm), machine direction; 113 lbf/in. (19.8 N/mm), cross-machine direction
    - h. Physical Dimensions: 0.02 in. (0.51 mm) thick
    - i. Fastener Pull-through Resistance: ASTM D3462 – Pass
    - j. Nail Seal ability: ASTM D1970 / D7349 - Pass
    - k. Surface Burning Characteristics: ASTM E84 Flame Spread Index 5, Smoke Developed Index 45
  2. Substitutes may be submitted for approval providing they meet these standards.
  3. Self-adhered underlayment flashing membrane compatible with SlopeShield PLUS shall be SlopeFlashing™ by VaproShield, a fully self-adhered vapor permeable water-resistive sheet membrane having properties equal to the primary self-adhered water resistive air barrier roofing underlayment membrane.
  4. Liquid applied vapor permeable flashing material – VaproLiqui-Flash by Vaproshield, compatible with SlopeShield membrane.
- B. Rolled, self-adhering bituminous rubberized membrane detail sheet: Membrane underlayment shall be formulated for high temperature applications and be a minimum 30 mil thick self adhering membrane of butyl rubber based adhesive backed by a layer of high density cross laminated polyethylene sheeting; Vycor Ultra as manufactured by Grace Construction
- C. Products or approved substitute from Polyken Technologies or Carlisle Coatings and Waterproofing.

## 2.03 SLATE SHINGLES

- A. New slate shingles of color, dimensions, shape, texture with demonstratable durability characteristics that best match the existing slate shingles to the extent practical, from the available stock of single source commercial suppliers such as Vermont Slate Company, LLC - [www.VermontSlateCo.com](http://www.VermontSlateCo.com) - (866) 895-9940 or Approved Equal.
- B. Slates shall conform to ASTM C 406 and shall be Grade S1 (minimum 575 lbf breaking load 1 , maximum 0.25% absorption<sup>2</sup> , and maximum 0.002 inches depth of softening<sup>3</sup> ) [ 1ASTM C120, Test Methods of Flexure Testing of Slate (Breaking Load, Modulus of Rupture, Modulus of Elasticity); 2ASTM C 121, Test Method for Water Absorption of Slate; 3ASTM C 217, Test Method for Weather Resistance of Slate]
- C. Slates shall be all new 10" x 18" x 1/4" minimum thickness #1 material, with exposure to match original.
- D. Slate have two (2) drilled holes, with holes located 1 1/2" from edge and 1/3 down from top edge, counter sunk to receive nail. Corners of exposed edges shall be squared up, full and unbroken. Covered edges may be shouldered at 45 degrees each side.
- E. Slates also include rounded fish scale slates and narrowing width slates at rounded corners to match existing.
- F. The slates shall be machine punched, hand punched for nail holes when of standard thickness (3/16" to 1/4" or 4.8mm to 6.4mm) or optionally drilled and counter-sunk when 3/8" or thicker for a minimum of two nail holes each. The holes punched in the slates shall be the correct diameter to provide a snug fit for the shank of the roofing nails. Slates shall be punched or drilled back to front (except starter slates, which are punched front to back). Slates are to be punched on the thinner end if there is a variation in the thickness along the length of the slate.
- G. All slate shall be hard, dense, sound rock of natural cleft with chamfered (beveled) edges. No broken or cracked slate shall be used, although broken slates may be cut into smaller, unbroken pieces.
- H. Broken corners on the exposed ends of new slates are not permitted. Broken corners on the unexposed ends may be considered cause for rejection when either the base or leg of the right triangular piece broken off is greater than 1-1/2 inch.
- I. Curvature of slates shall not exceed 1/8 inch over a distance of 12 inches. Curved slates shall be trimmed and punched to permit them to be laid with the convex side facing up.
- J. Defects in slates such as "knuckles," "knots," "knurls" and "cramps" which protrude above the surface of the slates shall be positioned such that they remain on the exposed top surface of the slate after installation. Knots, knurls and cramps are not permitted on the back or covered portions of the slates unless removed by grinding beforehand. A slate shall be rejected if a surface defect adversely affects the proper laying of the slate.

- K. Slates are to be free of pyrite inclusions that can visibly leach rust stains onto the roof.
- L. Slates shall not have carbon-bearing bands known as “ribbons” as these are considered defects that undermine the longevity of the slate.
- M. Nail holes are to be positioned no more than 1.5” in from the side edges of any slates that are 10” wide or narrower. Nail holes must be positioned far enough from the bottom of the slates that the top of the underlying slates will not be penetrated by the slating nails.
- N. Face dimensions shall not differ from those specified by more than 1/8 inch.
- O. Slates shall not have quartz veins.
- P. Large iron pyrite within the slate shall be cause for rejection.
- Q. Slates that are wedge shaped (tapering to less than 3/16" in thickness) are unacceptable.
- R. Cross-grained slates are unacceptable.
- S. Slates should ring like China when tapped with knuckles.

#### 2.04 ROOFING CEMENT

- A. Elastic slater's cement or caulking materials shall be waterproof, have a high melting point and low freezing point, and shall be of a non-fading color that best matches the color of the slate shingles.

#### 2.05 FASTENERS

- A. For securing underlayment: Hot-dip galvanized wire nails, 3/4 inch long, 5/8-inch diameter, 12 gauge steel.
- B. Slate roofing nails: Copper or stainless-steel wire nails manufactured specifically for slate roofing applications, 4 d (1 1/2 inch) minimum length and 5 d (1 3/4 inch) maximum length, with head diameter appropriate for the size of countersunk machine-punched holes of the slate shingles.

### **PART 3 - EXECUTION**

#### 3.01 REMOVAL OF EXISTING SLATE SHINGLES

- A. Existing slate shingles on the roof shall be removed with care, using appropriate tools and staging methods designed to avoid damage to the building and materials and pedestrians below. Stacking of removed slate on the roofs, or on staging supported by the roofs, shall be minimized to avoid concentrated loads on the structure.

- B. Dispose of all slate shingles off site.

### 3.02 INSPECTION AND PREPARATION OF ROOF SHEATHING

- A. Contractor shall coordinate and schedule the slate shingle removal operation with the work of other trades so that any damaged or deteriorated roof sheathing boards and rafters can be inspected, replaced and/or repaired as soon as practical.
- B. Following any required carpentry repairs for each segment of the roof work, the Owner's Authorized Representative shall inspect and approve the work prior to installation of underlayment materials over the sheathing.

### 3.03 INSTALLATION OF UNDERLAYMENT MATERIALS

- A. Install breathable AWB underlayment in strict accordance with the manufacturer's printed instructions after the deck has been repaired and approved by the Architect.
  - 1. All surfaces must be dry, sound, clean and free of oil, grease, dirt, or other contaminants detrimental to the adhesion of the fully self-adhered roof underlayment membrane.
  - 2. Fill voids and gaps greater than ½ inch (12.7 mm) in width, in substrate to provide an even surface.
  - 3. Provide transitions flashing membrane around areas required for continuity.
  - 4. Provide minimal nails to support the underlayment as needed until the slates are installed
  - 5. Cover membrane as soon as practical.
  - 6. Repair damaged water-resistive roof underlayment membrane. Measure and pre-cut roof underlayment membrane to cover damaged area with minimum 12 in. (30.5 cm) overlap to the sides and bottom. Roll membrane to ensure positive contact. Provide VaproBond over exposed leading edge of membrane terminations.
- B. Bituminous Rubberized Membrane: Install directly on deck prior to the installation of the AWB membrane, along valleys, ridges, hips and copper drip edges along eaves, in accordance with manufacturer's instructions. Hold back lower edge of membrane at eaves a minimum of 2-inches from outer edge of metal drip edging.
- C. Cover roof surfaces during roofing to ensure water tightness of roof for duration of roof slate installation.

### 3.04 INSTALLATION OF SLATES SHINGLES

- A. General: Apply slate shingles in the same pattern, the same slate shapes, narrow slates at the top of rounded sections, and with the same exposure of the original application. Before commencing installation, ensure that all requisite hip trim and drip edges have been properly installed.
- B. Coursing: Slates shall be laid in horizontal courses to match original installation in jointing, lap and exposure. A double thickness starter course at the eaves shall be canted ¼-inch by a continuous cedar wood cant strip, and project a minimum of 2 ½ - inches beyond the outer edge of the copper drip edge. The shingles are uniform in size, so vertical joints between adjacent slates of each course shall be centered over the width of the under slates of the preceding course.
- C. Exposure: The average exposure shall be 8 inches, with a tolerance of 1/8 inch either way permitted between horizontal courses (but not permitted between adjacent slates within a course).
- D. Cutting Slates: Neatly cut slates where necessary, to provide neat, straight terminations at hips.
- E. Nailing: Nail each slate with two nails. Nails shall **not be driven "home"** or draw the slate but left with the heads just clearing the slate so that the slate hangs on the nail. Slates overlapping sheet metal flashing shall be nailed to avoid puncturing the sheet metal. New holes necessary for nailing cut slates or for under slates at the eaves, shall be made with a power drill and not with a punch. Glue slate at eaves and rakes per slate manufacturers installation manual. Where exposed nail heads are unavoidable, they shall be covered with elastic cement.

### 3.05 INSTALLATION OF ROOF FLASHING MATERIALS & RIDGE COVERS

- A. General: Incorporate flashings into the slate work as it progresses. Refer to Section 07 62 00 for types and locations.
- B. Prior to installation of reproduction decorative ridge cover, install a simple sheet copper cap flashing adhered to the slates on either side of the ridge with a flexible and compatible adhesive caulking, and as few nails as possible to properly position and hold the metal in place until the caulking sets. Make certain all "under" flashing is dimensioned and positioned to be completely concealed by the decorative caps.
- C. Install the ridge cover as directed by the Architect. Concealed clips may be used at the Contractor's discretion to ensure proper anchoring of the main ridge cover. Any fasteners shall be copper.

### 3.06 ADDITIONAL STOCK FOR FUTURE REPAIR

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- A. Furnish the Owner with 20 full-dimension new slate shingles of each color from the same order used for the installation and stockpile in a location designated by the Owner's Authorized Representative.

### 3.07 CLEAN-UP

- A. Clean work area daily of all debris generated by the work of this Section with particular attention paid to sweeping pedestrian ways and adjacent parking lot to ensure that there are no nails left on these surfaces. At job conclusion, conduct a final and thorough clean-up of all remaining job-related debris.

END OF SECTION

**DIVISION 07 00 00** **THERMAL & MOISTURE PROTECTION**

**SECTION 07 62 00** **SHEET METAL FLASHING & TRIM**  
***(FILED SUB-BID REQUIRED)***

PART 1 - GENERAL

1.01 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 07 00 02  
ROOFING FILED SUB BID

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

1.02 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.03 WORK TO BE PERFORMED

- A. Provide all the Sheet Metal Flashing and Trim work required to complete the work of the contract including all the Sheet Metal Flashing and Trim work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Sheet Metal Flashing and Trim work with all the other trades for the project. Provide all demolition and disposal work to complete the Sheet Metal Flashing and Trim work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-Contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.

- B. Sheet Metal Flashing and Trim work includes, but is not limited to:
1. Formed Products:
    - a. Roof edge flashings.
  2. All hoisting and scaffolding necessary for the completion of the work.
  3. Waste disposal.

- C. The Work of this Section is shown on the following Drawings:

D1-01 to S3-03

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

- D. Related Sections:

1. Section 06 10 53 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
- E. The following sections 1.06 The following Sections also include work to be incorporated in the Roofing Filed Sub Bid:
1. Section 07 00 02 "Roofing Filed Sub Bid"
  2. Section 07 56 00 "Fluid Applied Roofing"
  3. Section 07 62 00 "Sheet Metal Flashing and Trim"

#### 1.04 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

#### 1.05 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.



- B. Shop Drawings: Show fabrication and installation layouts of sheet metal flashing and trim, including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work. Include the following:
1. Identification of material, thickness, weight, and finish for each item and location in Project.
  2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
  3. Details for joining, supporting, and securing sheet metal flashing and trim, including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.
  4. Details of termination points and assemblies, including fixed points.
  5. Details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction.
  6. Details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
  7. Details of special conditions.
  8. Details of connections to adjoining work.
  9. Detail formed flashing and trim at a scale of not less than 1-1/2 inches per 12 inches.
- C. Fabrication Samples: For copings and roof edge flashings made from 12-inch lengths of full-size components including fasteners, cover joints, accessories, and attachments.
- D. Samples for Initial Selection: For each type of sheet metal flashing, trim, and accessory indicated with factory-applied color finishes involving color selection.
- E. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
  2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
  3. Accessories and Miscellaneous Materials: Full-size Sample.
- F. Qualification Data: For qualified fabricator.
- G. Maintenance Data: For sheet metal flashing, trim, and accessories to include in maintenance manuals.
- H. Warranty: Sample of special warranty.

## 1.06 QUALITY ASSURANCE

- A. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
  - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- B. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
- C. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.
- D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
  - 1. Build mockup of typical roof eave approximately 10 feet long, including supporting construction cleats, seams, attachments, underlayment, and accessories.
  - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

## 1.08 COORDINATION

- A. Coordinate installation of manufactured roof specialties with interfacing and adjoining

construction to provide a leakproof, secure, and noncorrosive installation.

#### 1.09 WARRANTY

- A. Provide a 20 year materials warranty from the manufacturer.
- B. Provide a 2 year labor warranty by the roofing Filed Sub-bidder.
- C. See Section 01 70 00 - Project Closeout, for additional warranty requirements.
- D. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.01 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.
  - 1. Surface: Smooth, flat.
  - 2. Exposed Coil-Coated Finish:
    - a. 2-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.
  - 4. Color: Custom to match existing.

## 2.02 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
  - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
  - 2. Fasteners for Aluminum Sheet: Series 300 stainless steel.
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; low modulus; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- G. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

## 2.03 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.
  - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
  - 2. Obtain field measurements for accurate fit before shop fabrication.
  - 3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back

- to form hems.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.
  - B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
  - C. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant.
  - D. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
  - E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
  - F. Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual" for application, but not less than thickness of metal being secured.
  - G. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer.
  - H. Do not use graphite pencils to mark metal surfaces.

#### 2.04 ROOF EDGE FLASHINGS

- A. Roof Edge Flashing and Fascia Cap: Fabricate in minimum 96-inch- long, but not exceeding 12-foot- long sections. Furnish with 6-inch- wide, joint cover plates. Shop fabricate interior and exterior corners.
  1. Fascia Material: aluminum sheet metal with fluoropolymer finish.
  2. Fascia Cover Color: As selected by Architect from manufacturer's full range.
  3. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.
  4. Joint Style: Manufacturer's standard self-adhered seam.
  5. Fascia Accessories: Fascia extenders with continuous hold-down cleats.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.
  1. Verify compliance with requirements for installation tolerances of substrates.

2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  3. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
  4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
  5. Install sealant tape where indicated.
  6. Torch cutting of sheet metal flashing and trim is not permitted.
  7. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.
  1. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
- D. Fastener Sizes: Use fasteners of sizes that will penetrate wood sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- E. Seal joints as shown and as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
  2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."
- F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches, except reduce pre-tinning where pre-tinned surface would show in completed Work.
1. Do not solder aluminum sheet.
- 3.03 FLASHING INSTALLATION
- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
- 3.04 ERECTION TOLERANCES
- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- 3.05 CLEANING AND PROTECTION
- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
  - B. Clean off excess sealants.
  - C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.
  - D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.
- 3.06 WASTE DISPOSAL
- A. Unless otherwise indicated, excess materials are Contractor's property. At completion of roofing work, remove from Project site. Separate, salvage, recycle, and legally dispose of materials in accordance with the Commonwealth of Massachusetts Waste

FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

Ban, 310 CMR 19.017.

END OF SECTION



**DIVISION 07**

**THERMAL AND MOISTURE PROTECTION**

**SECTION 07 72 33**

**ROOF HATCHES**

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

- A. Provide all the Roof Hatch Work required to complete the Work of the contract including all the Roof Hatch Work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all accessories. Coordinate the Roof Hatch Work with all the other trades for the project. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section and each Subcontractor for the entire project so that all the work can be properly and completely performed.
- B. Roof Hatch Work includes, but is not limited to:
  - 1. Provide and install new thermally broken and insulated 36" x 36" opening aluminum access hatch and all associated accessories, as indicated in the drawings.

1.03 RELATED WORK

- A. The following related work is to be performed under the designated Sections:

1. Section 03 30 00 – Structural Concrete
2. Section 07 18 00 – Traffic Coatings

#### 1.04 QUALITY ASSURANCE

- A. The roof hatch shall be supplied by a manufacturer supplying similar products successfully for a minimum of 5 years.
- B. Installer to be experienced in the installation of specified roofing material and roof hatch for no less than 2 years in the area of the project.

#### 1.05 SHOP DRAWINGS

- A. Submit complete shop drawings in accordance with the provisions of the GENERAL CONDITIONS.
- B. Submit manufacturer's specifications, standard detail drawings, and recommended layout and installation instructions.

#### 1.06 GUARANTEE

- A. Manufacturer shall provide their standard guarantees for work under this Section. However, such guarantees shall be in addition to and not in lieu of all other liabilities which the manufacturer and Contractor may have by law or by other provisions of the Contract Documents.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original packaging. Store materials in a dry, protected, well vented area. Inspect product upon receipt and report damaged material immediately to the manufacturer.

### PART 2 – PRODUCTS

#### 2.01. GENERAL

- A. The Roof Hatch shall be manufactured by The Bilco Company, P.O. Box 1203, New Haven, CT 06505, 1-800-366-6530, Fax: 1-203-933-8478, Web: [www.bilco.com](http://www.bilco.com), or approved equal.
- B. Products listed below are by The Bilco Company. Products from other manufacturers may be used, provided their characteristics meet or exceed the listed requirements. All materials are to be provided from one manufacturer.

#### 2.02 ROOF HATCH

- A. Provide and install, as indicated on the plans, Bilco metal roof hatch Type E, size 36" x

36". The roof hatch shall be single leaf and the roof hatch shall be pre-assembled from the manufacturer.

1. Bilco Model #S-50TB or approved equal

B. Performance Characteristics:

1. Cover shall be reinforced to support a minimum live load of 40 psf with a maximum deflection of 1/150<sup>th</sup> of the span or 20 psf wind uplift.
2. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
3. Operation of the cover shall not be affected by temperature.
4. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.

C. Roof hatch cover shall be 11 guage aluminum with a 5" beaded flange with formed reinforcing members. Cover shall have a heavy extruded EPDM rubber gasket that is bonded to the cover interior to assure a continuous seal when compressed to the top surface of the concrete slab.

D. Lifting mechanisms: Manufacturer shall provide compression spring operators enclosed in telescopic tubes to provide, smooth, easy and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe welded to the curb assembly.

E. Hardware

1. Heavy stainless steel pintle hinges shall be provided.
2. Cover shall be equipped with a spring latch with interior and exterior turn handles.
3. Roof hatch shall be equipped with interior and exterior padlock hasps.
4. The latch strike shall be a stamped component bolted to the curb assembly.
5. Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 1" (25mm) diameter red vinyl grip handle to permit easy release for closing.
6. Compression spring tubes shall be an anti-corrosive composite material and all other hardware shall be zinc plated and chromate sealed. [For installation in highly corrosive environments or when prolonged exposure to hot water or steam is anticipated, specify Type 316 stainless steel hardware].
7. Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.

- F. Factory finish shall be mill finished aluminum.

## 2.03 ACCESSORIES

- A. Safety Rail: Bilco Bil-Guard 2.0 Hatch Railing System RL2-E or Approved equal.

## PART 3 – EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 INSTALLATION

- A. Comply with architectural drawings and manufacturer's recommendations for locations and with manufacturer's instructions for installation.
- B. Install product in strict accordance with manufacturer's instructions and approved submittals. Locate units' level, plumb and in proper alignment with adjacent work.
  - 1. Test units for proper function and adjust until proper operation is achieved.
  - 2. Repair finishes damaged during installation.
  - 3. Restore finished so no evidence remains of corrective work

### 3.03 ADJUSTING AND CLEANING

- A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage the finish.

END OF SECTION

**DIVISION 07**

**THERMAL AND MOISTURE PROTECTION**

**SECTION 07 92 00**

**JOINT SEALANTS**

*(FILED SUB-BID REQUIRED)*

**PART – 1 GENERAL**

**1.01 GENERAL PROVISIONS – TRADE SUB-BID REQUIRED AS PART OF 07 00 01 WATERPROOFING, DAMPPROOFING AND CAULKING FILED SUB BID**

- A. Work of this Section requires Trade Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

**1.02 GENERAL REQUIREMENTS**

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

**1.03 WORK TO BE PERFORMED**

- A. Provide all the Joint Sealants work required to complete the work of the contract including all the Joint Sealants work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Joint Sealants work with all the other trades for the project. Provide all demolition and disposal work to complete the Joint Sealants work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-Contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed
- B. Joint Sealants work includes, but is not limited to the following:

1. Silicone joint sealants to replace all exterior perimeter sealants at windows and doors.
2. Urethane joint sealants to replace all joints between brick and concrete.
3. Urethane sealants for rout and sealing of slab cracks.

C. The Work of this Section is shown on the following Drawings:

D2-01, D2-02, S1-01 to S4-04.

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

E. Related Sections include the following:

1. Section 02 41 19 "Selective Demolition"
2. Section 03 41 00 "Structural Concrete"
3. Section 03 31 10 "Concrete Repair" for concrete repairs.
4. Section 04 21 00 "Brick Masonry"

F. The following Section also includes work to be incorporated in the Waterproofing, Dampproofing, and Caulking Filed Sub Bid:

1. Section 07 00 01 "Waterproofing, Dampproofing and Caulking Filed Sub Bid."
2. Section 07 18 00 "Elastomeric Coatings"
3. Section 07 92 00 "Joint Sealants."

#### 1.10 PRECONSTRUCTION TESTING

A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

1.11 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.12 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
  - 1. Joint-sealant application, joint location, and designation.
  - 2. Joint-sealant manufacturer and product name.
  - 3. Joint-sealant formulation.
  - 4. Joint-sealant color.

1.13 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- B. Qualification Data: For Installer.
- C. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
  - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
  - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- D. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.
- E. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer,

indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

F. Warranties: Special warranties specified in this Section.

#### 1.14 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

D. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:

1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.
2. Each type of sealant and joint substrate indicated.

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section 01 20 00 "Project Meetings."

#### 1.15 PROJECT CONDITIONS

A. Temporary Support Facilities: Furnish and install all temporary lifts, hoists, staging, scaffolding, rigging, labor and materials, and temporary support to perform all operations in connection with the installation of this Work. Remove all temporary support facilities when no longer required.

B. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted



- by joint-sealant manufacturer or are below 40 deg F.
- 2. When joint substrates are wet.
- 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
- 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

#### 1.10 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period for Urethane: Five years from date of Substantial Completion.
  - 2. Warranty Period for Silicone: 20 years from date of Substantial Completion.
- C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
  - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
  - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
  - 3. Mechanical damage caused by individuals, tools, or other outside agents.
  - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when

calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
  2. Sealant Primers for Nonporous Substrates: 250 g/L.
  3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- E. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

## 2.02 SILICONE JOINT SEALANTS

- A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.
1. Products: Subject to compliance with requirements, provide one of the following, or approved equal:
    - a. Dow Corning Corporation; 790.
    - b. Pecora Corporation; 890 NST.
    - c. Tremco Incorporated; Spectrem 1.

## 2.03 URETHANE JOINT SEALANTS

- A. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 50, for Use NT.
1. Products: Subject to compliance with requirements, provide one of the following, or approved equal:
    - a. BASF Corporation-Construction Systems; MasterSeal NP 2.
    - b. Pecora Corporation; Dynatrol II.
    - c. Sherwin Williams; Loxon 2K NS.
    - d. Tremco; Dymeric 240 FC.
- B. Multicomponent, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade P, Class 25, for Use T and I.
1. Products: Subject to compliance with requirements, provide one of the following,

or approved equal:

- a. BASF Corporation-Construction Systems; MasterSeal SL 2.
  - b. Pecora Corporation; Dynatrol II-SG.
  - c. Sherwin Williams; Loxon 2K SL.
  - d. Tremco; THC-900.
- C. Single-Component, Nonsag, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use T.
1. Basis of Design Product: Subject to compliance with requirements, provide **Sika Corporation, Construction Products Division; Sikaflex - 1a**, equal product by one of the following, or approved equal:
    - a. BASF Building Systems.
    - b. Tremco Incorporated.

#### 2.04 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
1. Products: Subject to compliance with requirements, provide one of the following, or approved equal:
    - a. American Sealants, Inc.; ASI 174.
    - b. Pecora Corporation; AC-20+.
    - c. Sherwin Williams; 950A.
    - d. Tremco; Tremflex 834.

#### 2.05 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

## 2.06 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
  - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
    - a. Concrete.
    - b. Masonry.
    - c. Unglazed surfaces of ceramic tile.
  - 3. Remove laitance and form-release agents from concrete.

4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
  - a. Metal.
  - b. Glass.
  - c. Porcelain enamel.
  - d. Glazed surfaces of ceramic tile.

- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  1. Do not leave gaps between ends of sealant backings.
  2. Do not stretch, twist, puncture, or tear sealant backings.
  3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  1. Place sealants so they directly contact and fully wet joint substrates.
  2. Completely fill recesses in each joint configuration.
  3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or

curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

### 3.04 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### 3.05 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

### 3.06 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
  1. Joint Locations:
    - a. Control and expansion joints in unit masonry.
    - b. Perimeter joints between materials listed above and frames of doors, windows and louvers.
    - c. Control and expansion joints in ceilings and other overhead surfaces.
    - d. Other joints as indicated.
  2. Silicone Joint Sealant: Single component, nonsag, neutral curing, Class 100/50.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors, for each material.
- B. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
  1. Joint Locations:
    - a. Isolation joints in cast-in-place concrete slabs.
    - b. Penetrations in cast-in-place concrete slabs on grade.
    - c. Other joints as indicated.

2. Urethane Joint Sealant: Multicomponent, pourable, traffic grade, Class 25.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors, for each material.
- C. Joint-Sealant Application: Interior joints in vertical surfaces.
1. Joint Locations:
    - a. Joints between steel columns and all wall types.
    - b. Other joints as indicated.
  2. Urethane Joint Sealant: Multicomponent, nonsag, Class 50.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- D. Joint-Sealant Application: Interior joints in all other vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
    - a. Control and expansion joints on exposed interior surfaces of exterior walls.
    - b. Perimeter joints of exterior openings where indicated.
    - c. Tile control and expansion joints.
    - d. Vertical joints on exposed surfaces of interior unit masonry walls and partitions.
    - e. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
    - f. Other joints as indicated.
  2. Joint Sealant: Latex.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION





**DIVISION 09**

**FINISHES**

**SECTION 09 91 00**

**PAINTING**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

- A. Provide all the Painting work required to complete the work of the contract including all the Painting work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Painting work with all the other trades for the project. Provide all demolition and disposal work to complete the Painting work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section and each sub-Contractor for the entire project so that all the work can be properly and completely performed
- B. Painting work includes surface preparation and the application of paint systems on the following substrates:
  - 1. Existing metal doors and frames.
  - 2. Existing windows and frames.
  - 3. Existing metal fencing at observation platform (by misc. metals filed sub-bidder).
  - 4. New decorative site fencing (by misc. metals filed sub-bidder).

- C. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
  - 1. Painting includes field painting of exposed bare and covered pipes and ducts, conduits, hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.
- D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
  - 1. Finished metal surfaces include the following:
    - a. Anodized or coated aluminum.
    - b. Stainless steel.
    - c. Chromium plate.
    - d. Copper and copper alloys.
    - e. Bronze and brass.
  - 2. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- E. Related Sections include the following:
  - 1. Section 02 83 10 "Lead-Based Paint Awareness."
  - 2. Section 07 18 00 "Traffic Coatings" for vehicular and pedestrian traffic coatings and traffic marking paint.
  - 3. Section 07 18 13 "Elastomeric Coatings."
  - 4. Section 26 00 00 "Electrical" for painting of electrical equipment.

### 1.03 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
  - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
  - 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
  - 3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
  - 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

#### 1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
  2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
  3. Certification by the manufacturer that products supplied comply the Commonwealth of Massachusetts Ozone Transportation Commission (OTC) regulations controlling use of volatile organic compounds (VOCs).
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
1. Submit Samples on rigid backing, 8 inches square.
  2. Step coats on Samples to show each coat required for system.
  3. Label each coat of each Sample.
  4. Label each Sample for location and application area.
  5. Submit 2 Samples on the following substrates for Architect's review of color and texture only:
    - a. Stained or Natural Wood: 4-by-8-inch. Samples of natural- or stained-wood finish on representative wood surfaces.
- C. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.
- D. Product List: For each product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  2. VOC content.

#### 1.05 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For coatings to include in maintenance manuals. Include the following:
1. Area summary with Finish Schedule and area detail designating where each product, color, and finish is used.
  2. Product data pages.

3. Material safety data sheets.
4. Care and cleaning instructions.
5. Touch-up procedures.
6. Color samples of each color and finish (gloss level) used.

- B. Manual: Provide Sherwin Williams; “Custodian Project Color and Product Information” manual, or equal.

#### 1.06 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 1 gallon of each material and color applied.

#### 1.07 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

- B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
3. Final approval of color selections will be based on benchmark samples.
  - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.
4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## 1.08 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

## 1.09 PROJECT CONDITIONS

- A. Temporary Support Facilities: Furnish and install all temporary lifts, hoists, staging, scaffolding, rigging, labor and materials, and temporary support to perform all operations in connection with the installation of this Work. Remove all temporary support facilities when no longer required.
- B. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- C. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

- A. Basis of Design Products: Subject to compliance with requirements, provide products indicated by the following:
  - 1. Benjamin Moore & Co., including affiliate the following affiliate brands:
    - a. Corotech.
    - b. Lenmar Wood Finishes.
- B. Equal Products: Subject to compliance with requirements, provide equal products by one of the following, or approved equal:
  - 1. PPG Architectural Finishes, Inc.; Pittsburgh Paints.
  - 2. Pratt & Lambert.
  - 3. Sherwin-Williams Co.

## 2.02 PAINT, GENERAL

### A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

### B. Colors: As selected by Architect from manufacturer's full range.

## 2.03 EXTERIOR PRIMERS

### A. Exterior Galvanized Metal Primer: Factory-formulated galvanized metal primer for exterior application.

1. Benjamin Moore; Super Spec HP Acrylic Metal Primer No. P04: Applied at a dry film thickness of not less than 2.0 mils.

## 2.04 EXTERIOR PAINTS

### A. Exterior Full-Gloss Acrylic Enamel: Factory-formulated full-gloss waterborne acrylic-latex enamel for exterior metal application.

1. Benjamin Moore; Ultra Spec HP DTM Acrylic Gloss Enamel, HP28: Applied at a dry film thickness of not less than 2.3 mils.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
  1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

### 3.02 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove hardware, plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Remove loose, non-intact paint, which includes peeling, flaking and alligatoring or otherwise not adhering, by sanding, stripping or hand scraping.
- D. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
  1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

### 3.03 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
  1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

### 3.04 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.
  2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### 3.05 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.



FORT REVERE WATER TOWER  
TOWN OF HULL  
HULL, MASSACHUSETTS  
SOCOTEC JOB NO.: CB191842

SOCOTEC AE Consulting, LLC  
Boston, Massachusetts  
Tel: (617) 268-8977  
Fax: (617) 464-2971

- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION



**DIVISION 26**

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**SECTION 26 00 01**

**ELECTRICAL**  
**(FILED SUB-BID REQUIRED)**

PART 1 - GENERAL

1.01 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 26 00 01  
ELECTRICAL FILED SUB BID

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

1.02 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.03 REQUIREMENTS FOR FILING SUB-BIDS

- A. Time, Manner and Requirements for Submitting Sub-Bids:
1. Sub-bids for work under this Section shall be for the complete work and shall be filed in a sealed envelope with the Public Agency at a time and place as stipulated in the "Invitation to Bid."
  2. Sub-bidders must be DCAMM Certified in the listed trade and shall include a current DCAMM sub-bidder Certificate of Eligibility and Update Statement with the bid.
  3. Each sub-bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended.

4. Sub-bids filed with the Awarding Authority shall be accompanied by Bid Bond, Cash, Certified Check, Treasurer's Check, or Cashier's Check issued by a responsible bank or trust company payable to the City of Lawrence in the amount of 5 percent of the sub-bid. A sub-bid accompanied by any other form of bid deposit than those specified will be rejected.

B. All File Sub-Bidders shall provide all of their own:

1. Vertical access and hoisting to perform the work of their section. Vertical access shall also be provided for the Architect to review the work at any time requested by the Architect.
2. Provide all coring, demolition, and patching to perform the work of their section.
3. Design and install all fire stopping associated with and required for this trade. Submit firestopping design for review.
4. Coordination with the General Bidder and all the other File Sub-Bidders.
5. Disposal of all demolition debris and trash to perform the work of their section.
6. Provide As-Built drawings in CAD using the latest version of AutoCAD.

C. Sub Sub-Bid requirements: Sub-bids shall include performance of the complete work of this section, including any sub-trade classes of work, with employees on the sub-bidder's own payroll unless the sub-bidder identifies in Paragraph E of the bid form, the name of a sub-trade subcontractor that will perform each class of sub-trade work and the corresponding sub-trade subcontract sum.

#### 1.04 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including the following Specification Sections; which are combined for this Filed Sub-Bid category:

1. Section 26 00 01 "Electrical Filed Sub-Bid"
2. Section 26 00 00 "Electrical"

B. The Work of this Section is shown on the following Drawings:

G0-01, D1-02-D2-01, S1-01 – S5-03.

The Trade Contractor shall also review all other Drawings and all other Sections of the Specifications for coordination requirements therein affecting the Work of this Section, not just those pertaining to this Sub-trade.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

**DIVISION 26**

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**SECTION 26 00 00**

**ELECTRICAL**  
***(FILED SUB-BID REQUIRED)***

PART 1 - GENERAL

1.01 FILED SUB-BIDS

- A. Sub-bids shall be submitted for the Work of this Section in accordance with the provisions of M.G.L. c.149 §§44A-F. The time and place for submission of sub-bids are set forth in the Advertisement. The procedures and requirements for submitting sub-bids are set forth in the Instructions to Bidders.
- B. The work to be done under this Section 26 00 00 is described herein and on the contract electrical drawings.
  - a. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section. The listing of Contract Drawings above does not limit Filed Subcontractor's responsibility to determine full extent of work of this Section as required by all Drawings listed in the Drawing List on the Drawing Title Sheet, as modified by Addenda.
- C. ELECTRICAL is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- D. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- E. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- F. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, "NOTICE TO ALL BIDDERS", and the attention of the sub-bidders is directed thereto.

1.02 RELATED DOCUMENTS

- A. Include GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS and applicable parts of Division 01 as part of this Section.
- B. Examine all Project Specifications and Drawings for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

- D. The following definitions apply to the Drawings and Specifications;
1. Furnish: The term “furnish” is used to mean “supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.”
  2. Install: The term “install” is used to describe operations at project site including actual “unloading, unpacking, rigging in place, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.”
  3. Provide: The term “provide” means to “furnish and install, complete and ready for intended use.”
  4. Installer: An “installer” is the contractor or an entity engaged by the contractor, either as an employee, subcontractor, or sub-subcontractor for a performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

#### 1.03 RELATED WORK

- A. All specification sections associated with this project are related.

#### 1.04 DESCRIPTION OF WORK

- A. Examine Drawings and other Sections of Specifications for requirements that affect work of this Section.
- B. All equipment shall be installed in a neat and workmanlike manner, rectilinear to building structure.
- C. Address question regarding drawings in writing to architect before award of contract. Otherwise architect interpretation of meaning and intent of drawings shall be final.
- D. Visit site and exam conditions under which work must be performed. Report adverse conditions in writing to architect. Commencement of work shall be construed as complete acceptance of existing conditions including preparatory work done by others.
- E. Perform work and provide material and equipment as shown on Drawings and as specified or indicated in this Section of the Specifications. Completely coordinate work of this Section with work of other trades and provide a complete and fully functional installation. Drawings and Specifications form complimentary requirements; provide work specified and not shown, and work shown and not specified as though explicitly required by both. Although work is not specifically shown or specified, provide supplementary or miscellaneous items, appurtenances, devices and materials obviously necessary for a sound, secure and complete installation. Remove all debris caused by contractors' work.
- F. Drawings are diagrammatic and indicate general arrangement of systems and work included in Contract. It is not intended to specify or to show every offset, fitting or component; however, Contract Documents require components and materials whether or not indicated or specified as necessary to make the installation complete and

operational.

- G. Perform work strictly as required by rules, regulations, standards, codes, ordinances, and laws of local, state, and federal government, and other authorities that have lawful jurisdiction.
- H. Give notices, file plans, obtain permits and licenses, pay fees and obtain necessary approvals from authorities that have jurisdiction.
- I. As work progresses and for duration of Contract, maintain complete and separate set of prints of Contract Drawings at job site at all times. Record work completed and all changes from original Contract Drawings clearly and accurately, including work installed as a modification or addition to the original design.
- J. Work shall include, but shall not be limited to, the following:
  - 1. Perform all work shown on the plans. Not all work is shown but implied for complete operable systems.
  - 2. Removal and replacement of exterior lighting.
  - 3. Electrician shall provide all cutting and patching required the electrical trade.

#### 1.05 CODES, ORDINANCES, AND PERMITS

- A. Installation of systems and equipment provided under this section shall be done in strict accordance with Massachusetts Department of Public Safety Codes, Massachusetts Department of Environmental Protection, Massachusetts State Building Code and City Regulations having jurisdiction.
- B. All work, where applicable, shall conform to NFPA codes and all material shall be U.L. approved.
- C. All electrical apparatus furnished under this section shall be approved by the U.L. and shall be so labeled or listed where such is applicable.
- D. Give notices, file plans, obtain permits and licenses, pay fees and obtain necessary approvals from authorities having jurisdiction. Deliver certificates of inspection to Architect. No work shall be covered before examination and approval by Architect, inspectors, and authorities having jurisdiction. Replace imperfect or condemned work conforming to requirements, satisfactory to Architect, and without extra cost to the Owner. If work is covered before due inspection and approval, the installing contractors shall pay costs of uncovering and reinstalling the covering, whether it meets contract requirements or not.

#### 1.06 RECORD DRAWINGS

- A. Refer to DIVISION 01 - GENERAL REQUIREMENTS, of the Specifications for record drawings and procedures to be provided under this section.

#### 1.07 CLEANING

- A. During the progress of the Electrical work, clean up and remove all dust, dirt and other debris caused by this work. At completion, the Contractor shall clean all equipment,

conduit and wiring systems and leave all work in perfect operating condition.

#### 1.08 RESPONSIBILITY

- A. The structure and its appurtenances, clearances and the related services, such as plumbing, heating, ventilation and electric service have been planned to be legal, adequate and suitable for the installation of equipment specified under this section. The Owner will not assume any increase in cost caused by differing requirements peculiar to a particular make or type of equipment, and any incidental cost shall be borne by the Electrical Sub-Contractor. He shall be responsible for his work and equipment furnished and installed by him until the completion and final acceptance of this contract, and he shall replace any work which may be damaged, lost or stolen, without additional cost to the Owner.

#### 1.09 FIELD MEASUREMENTS

- A. The Electrical Contractor shall verify, in the field, all measurements necessary for the work and shall assume responsibility for their accuracy.

#### 1.10 PROTECTION OF MATERIALS, WORK, AND GROUNDS

- A. Materials, fixtures and equipment shall be properly protected and all openings shall be temporarily closed so as to prevent obstruction and damage.
- B. Protect and preserve all materials, supplies and equipment of every description and all work performed. Protect all existing equipment and property of any kind from damage during the operations. Damage shall be repaired or replaced promptly by the Contractor at his expense.

#### 1.11 DRAWINGS

- A. It is the intention of the Specifications and Drawings to call for finished work, tested and ready for operation. Any apparatus, appliance, material or work not shown on the Drawings, but mentioned in the Specifications or vice-versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, even if not particularly specified, shall be provided by the Contractor without additional expense to the Owner.
- B. The Drawings are generally diagrammatic. The locations of all items that are not definitely fixed by dimensions are approximate only. The exact locations must be determined at the project and shall have the approval of the Architect before being installed. The Contractor shall follow Drawings, including his shop drawings, in laying out work and shall check the Drawings of other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions. Where space conditions appear inadequate, notify the Architect before proceeding with the installation. The Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

#### 1.12 SUBMITTALS

- A. Submit shop drawings and product data within 30 days after award of contract. Check, stamp and mark with project name submittals before transmitting to Architect. Indicate



deviations from contract documents.

- B. Deviations from contract documents or proposed substitution of materials or equipment for those specified shall be requested in separate letter whether deviations are due to field conditions, standard shop practice, or other cause.
- C. Within four weeks (except as noted otherwise) after award of contract and before ordering materials or equipment. Submit list of proposed materials and equipment and indicate manufacturer's names, addresses and identifying data. No consideration will be given to partial lists submitted out of sequence.
- D. Substitutions for scheduled lighting equipment will be rejected unless substitution submittal is received within ten days of contract award.
- E. Schedule at least ten working days, exclusive of transmittal time for submittal review.
- F. Material and equipment requiring Shop Drawing and Product Data submittal shall include but shall not be limited to:
  - 1. Panelboard
  - 2. Disconnects
  - 3. Lighting fixture.
  - 4. LED drivers.
  - 5. Lighting control devices.
  - 6. Conduit and raceways.
  - 7. Wire and cable.
  - 8. Branch circuit wiring.
- G. Electrical Contractor shall refer to specification section for submittal requirements.

#### 1.13 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Provide in accordance with Division 1 for all equipment provided in this section.

#### 1.14 UNDERWRITERS' LABEL AND LISTING

- A. All electrical apparatus furnished under this Section shall be approved by the UL and shall be labeled or listed where such is applicable. Where custom-built equipment is specified and the UL label or listing is not applicable to the completed product, all components used in the construction of such equipment shall be labeled or listed by UL where such is applicable to the component.

#### 1.15 CUTTING AND PATCHING

- A. All cutting and patching necessary for the proper installation of work to be performed under this Section and subsections shall be performed by the Electrical Sub- Contractor.
- B. All work shall be fully coordinated with all phases of construction, in order to minimize the requirements for cutting and patching.
- C. Carefully fit around, close up, repair, patch, and point around the work specified herein to the entire satisfaction of the Architect.

- D. Fill and patch all openings or holes left in the existing structures by the removal of existing equipment by himself, his subcontractors or other filed subcontractors.
- E. All of this work shall be carefully done by workmen competent to do such work and with the proper and smallest tools applicable.
- F. Any cost caused by defective or ill-timed work shall be the contractor's responsibility therefore.
- G. Electrical Contractor shall refer to specification section 01700 for cutting and patching requirements.

#### 1.16 GUARANTEE

- A. Guarantee that all work installed will be free from any and all defects in workmanship and/or materials and that all apparatus will develop capacities and characteristics specified.
- B. If, during a period of one year from the date of final completion and acceptance of the work, any such defects in workmanship, material or performance appear, the Electrical Sub-Contractor will, without cost to the Owner, remedy such defects within a reasonable time to be specified in notice from the Architect.
- C. Correct all damage to insulation, paint or building caused by defects in his work, equipment, and its operation. Guarantee shall include startup, shutdown, maintenance, and 24-hour service during the guarantee period.
- D. Any apparatus that requires excessive service during the warranty period will be considered defective and shall be replaced.

#### 1.17 VERIFYING CONDITIONS

- A. Before commencing any work under this section, verify all governing dimensions and examine all adjoining work on which this work is in any way associated or connected. Failure to visit the jobsite will in no way relieve the Contractor from installing the work according to the intent of these specifications and at no additional cost to the Owner.
- B. Each bidder shall visit the site and inspect conditions affecting the proposed work. Failure to do so and misinterpretation of the Plans and Specifications resulting therefrom shall be entirely the responsibility of the bidder.

#### 1.18 STANDARDS

- A. The latest published issue of the standards, recommendations, or requirements of the following listed societies, associations, or institutes in effect at the date of Contract are part of this Specification. These shall be considered as minimum requirements; specific requirements of this specification and/or associated drawings shall have precedence. In case of conflict between published requirements, the Owner's representative shall determine which is to be followed.
  - 1. UL Underwriters' Laboratories, Inc.
  - 2. ANSI American National Standards Institute
  - 3. NEC National Electric Code

4. ASTM American Society for Testing and Materials
5. FIA Factory Insurance Association
6. IEEE Institute of Electrical and Electronic Engineers
7. OSHA Occupational Safety and Health Act
8. NEMA National Electrical Manufacturers Association

#### 1.19 WORKMANSHIP

- A. The entire work provided in this Specification shall be constructed and finished in every respect in a workmanlike and substantial manner. Equipment shall be securely installed plumb and/or level. No electrical equipment shall be supported by work of other trades.
- B. Obtain detailed information from the manufacturers of apparatus as to the proper method of installing and connecting equipment. Obtain all information from the General Contractor and other Subcontractors, which may be necessary to facilitate work and the completion of the whole project.
- C. Remove daily, all rubbish and debris and all refuse from workmen's lunches and at completion, remove all their surplus materials, and leave the work in clean condition acceptable to the Engineer.

#### 1.20 COOPERATION AND COORDINATION WITH OTHER TRADES

- A. The work shall be so performed that the progress of the entire building construction including all other trades shall not be delayed nor interfered with. Materials and apparatus shall be installed as fast as conditions of the building will permit and must be installed promptly when and as desired.
- B. Confer with all other trades relative to location of all apparatus and equipment to be installed and select locations so as not to conflict with work of other Sections. Any conflicts shall be referred immediately to the Architect for decision to prevent delay in installation of work. All work and materials placed in violation of this clause shall be readjusted to the Architect's satisfaction, at no expense to the Owner.
- C. Where work of this section will be installed in close proximity to work of other sections or where there is evidence that the work of this section will interfere with work of other sections, assist in working out space conditions to make satisfactory adjustment. Prepare and submit for approval 3/8" scale or larger working drawings and sections, clearly showing how this work is to be installed in relation to the work of other sections. If the work of this section is installed before coordinating with other trades or so as to cause interference with work of other trades, make changes necessary to protect conditions without extra charge.
- D. Keep fully informed as to the shape, size and position of all openings required for all apparatus and give information in advance to build openings into the work. Furnish and set in place all sleeves, pockets, supports and incidentals.
- E. This Subcontractor shall, with the approval of the Architect and without extra charge, make reasonable modifications in his work as required by normal structural

interferences, or by interference with work of other trades, or for proper execution of the work.

- F. This Subcontractor shall protect all materials and work of other trades from damage that may be caused by his work and shall make good any damages so caused.
- G. The contractor shall refer to Division 01 Specification Section 01 31 00 for coordination requirements. This contractor shall submit Requests for Information (RFI's) regarding the work of this section in accordance with the provisions of Division 01.

#### 1.21 FINAL ACCEPTANCE

- A. The work shall be so performed that the progress of the entire building construction, including all other trades, shall not be delayed or interfered with. Materials and apparatus shall be installed as fast as conditions permit and must be installed promptly when and as desired.
- B. Confer with all other trades relative to location of all apparatus and equipment to be installed and select locations so as not to conflict with work of other Sections. Any conflicts shall be referred immediately to the Architect for decision to prevent delay in installation of work. All work and materials placed in violation of this clause shall be readjusted to the Architect's satisfaction, at no expense to the Owner.
- C. Where work of this section will be installed in close proximity to work of other sections or where there is evidence that the work of this section will interfere with work of other sections, assist in working out space conditions to make satisfactory adjustment. If the work of this section is installed before coordinating with other trades or so as to cause interference with work of other trades, make changes necessary to protect conditions without extra charge.

### **PART 2 - PRODUCTS**

#### 2.01 GENERAL

- A. All materials and equipment necessary to make the installation complete in every detail shall be furnished and installed under this Contract, whether or not specifically indicated on the Drawings or specified herein. All materials and equipment shall be new.
- B. It is the intent of the Specifications that one manufacturer be selected, not a combination, for any particular classification of material; for example, all wire of one manufacturer, all switches of one manufacturer, etc., except specific material classifications in which delivery time becomes a problem. The Engineer may give specific exemption from the requirements.
- C. Where materials, equipment, apparatus, or other products are specified by manufacturer, brand name, type or catalog number, such designation is to establish standards of performance, quality, type, and style.

## 2.02 PULL BOXES AND CHANNELS

- A. Pull boxes shall be code gauge galvanized steel with screw covers to match. Where pull boxes are larger than 18"x18", hinged covers shall be provided. Pull boxes and wireways shall be as shown on Drawings and/or as required by NEC and/or job conditions, with steel barriers separating systems.
- B. Steel channel supports shall be minimum 1-5/8-inch mold strip steel with minimum 105-inch wall thickness, Unistrut P1000, Kindorf, Husky Products, or equal.
- C. Steel support rods or support bolts for conduits shall be 1/8-inch diameter for each inch or fraction thereof of diameter of conduit size, but no rod or bolt shall be less than 1/4-inch in diameter.
- D. Metal conduit fittings shall be of cast malleable iron, cadmium plated with neoprene gaskets and cast malleable iron covers. Fitting for use with conduit 1-1/4-inch diameter and smaller shall be "Form 35", those for use with conduit 1/1/2-inch diameter and larger shall be Mogol. Fitting shall be as manufactured by Appleton Electrical Co., Steel City, Crouse-Hinds, or approved equal.
- E. Expansion fitting shall be as manufactured by O. Z. Gedney, Electrical Manufacturing Co., Inc., or approved equal as manufactured by Crouse-Hinds or Appleton.

## 2.03 OUTLET BOXES AND ACCESSORIES

- A. Provide PVC or galvanized sheet steel outlet boxes for all outlets unless otherwise noted.
- B. All outlet boxes for pendant-mounted fixtures shall be galvanized, stamped steel furnished with a fixture stud, securely mounted to framing
- C. All outlet boxes for concealed work shall be galvanized, stamped steel; those for fixtures, furnished with a fixture stud.
- D. Outlet boxes shall be of size and type to accommodate (1) structural conditions, (2) size and number of raceways, conductors or cables entering, and (3) devices or fixtures for which they are required.
- E. Install blank plates on all outlet boxes, in which no apparatus is installed, which do not integrally provide a cover for the box.
- F. Special care shall be taken to set all boxes correctly square and true with the building finish.
- G. Fixture outlet boxes shall have 3/8-inch solid male fixture studs and auxiliary fixture stems shall be supported from 3/8-inch male fixture studs.

- H. Outlet boxes and accessories shall be as manufactured by Steel City, Appleton, Raco, or equal.

#### 2.04 RACEWAYS

- A. EMT conduit shall only be allowed for use in enclosed rooms. It will not be allowed in the open garage area:
  - 1. Electric metallic tubing (EMT) shall be electrogalvanized or sherardized steel. EMT shall be used in all exposed areas which are not subject to physical abuse. Couplings and connectors for electrical metallic tubing shall be galvanized steel set-screw. Tubing shall be as manufactured by Pyle National, Allied Tube and Conduit Corp., Wheatland Tube Company, or equal.
- B. Liquid-tight flexible metal conduit shall be galvanized steel with separate copper grounding conductor. The outer jacket shall be an extruded, moisture and oil proof, covering of polyvinyl chloride. Liquid-tight flexible metal conduit shall be used for the final connections to all roof top equipment and in all areas where motors and other equipment are subject to an oil or moisture type environment. Liquid-tight flexible metal conduit shall be manufactured by American Flexible Conduit, Eastern Wiring Conduit, International Metal Hose Company, or equal.
- C. Galvanized Rigid Steel Conduit (GRC) shall be made of zinc coated steel. GRC conduit shall be installed as shown on the Drawings, as specified, and in all areas subject to physical abuse.
- D. Steel support rods or support bolts for conduits shall be 1/8-inch diameter for each inch or fraction thereof of diameter of conduit size, but no rod or bolt shall be less than 1/4-inch in diameter.
- E. For 20 ampere branch circuit wiring furnish and install the number of individual conduits required to limit the number of conductors in each conduit to a number

which will not require derating to a value below 100 percent of the current rating of the circuit overcurrent protective device.

## 2.05 FIRESTOPPING

- A. Firestopping shall be installed by the Electrical Contractor for all new or existing electrical conduits which enter or pass through fire rated walls or floors. Fire seal fittings shall be used around cable, in sleeves, or in core drilled holes passing through fire rated walls and floors. Firestopping shall be T&B Fire-Seal, or equal by O.Z. Gedney or Minnesota Mining and Manufacturing Company.

## 2.06 WIRE AND CABLE

- A. Wiring shall be minimum of #12 AWG solid.
- B. Wire installed in conduit shall be Type THWN-THHN building wire, 600V, rated for 75 oC in wet locations and 90 oC in dry locations.
- C. All wire and cable shall be copper; no aluminum is permitted.
- D. Wire and cable shall be manufactured by Phelps Dodge Copper Products Corp., General Cable Co., Triangle Conduit and Cable Co., or equal.

## 2.07 WIRING DEVICES

- A. General
- B. All wiring devices shall be of a single manufacturer, as manufactured by Pass and Seymour, General Electric, Hubbell, Bryant Electric Company, Leviton, or equal. Manufacturers listed below establish minimum requirements. Coordinate color with Architect for wiring devices and wiring device plates.
- C. Thermal Switches
  - 1. Thermal switches shall be NEMA Type 1 toggle switch for normal duty with thermal overload relay and pilot light. Switch enclosures shall be of a type approved for the location and atmosphere in which it is mounted. Thermal switches shall be installed where required by Code.
  - 2. Thermal switches shall be as manufactured by Square D, General Electric, I.T.E., or equal.
- D. Receptacles - 20A Tamper Resistant Commercial Grade
  - 1. Duplex receptacles shall be grounding type, rated 20 amperes, 125 volts. Receptacles shall be back and side wired with screw type terminals. Screw

terminals shall be utilized. Receptacles shall have a mechanical shutter system for reliable tamper resistant design. Special receptacles for single equipment, where required, shall have additional grounding leg and shall be of capacity and configuration for the equipment to be connected.

- E. Receptacles - 20A GFI - Commercial Grade
  - 1. Provide GFI duplex receptacles as indicated on the Drawings. Receptacles shall each have GFI tripping (no feed-through is permitted). Receptacles shall be rated 20-amp, 125-volts similar, or equal to Pass and Seymour Model No. 2091-SI.
- F. Weatherproof Receptacles – Wet Locations
  - 1. Receptacles indicated to be weatherproof shall conform to NEC Article 406.8(B)(i). Receptacles shall have an enclosure that is weatherproof whether or not the attachment plug cap is inserted. Provide receptacle with cover equal to Pass & Seymour Cat. No. WIUC10-G (for grey) or WIUC10-C (for clear)

## 2.08 WIRE DEVICE PLATES

- A. Wall plates shall be provided for all receptacles, light switches, blank junction boxes, and special purpose outlets. Wall plates shall be:
  - B. Smooth type, no line, high strength, scratch resistance, thermoplastic.
  - C. All plates shall have color-matched mounting screws and conform to UL, CSA, and NEMA standards.
  - D. Wall plate color shall be selected by the Architect.
  - E. Device plates shall be by same manufacturer as devices.

## 2.09 PANELBOARDS

- A. Provide UL-listed safety dead-front lighting and power panelboards where shown on Drawings and as scheduled. Panelboards shall meet or exceed requirements of NEMA Standard Publication PB-1, and UL-50 and 67. Provide cabinets with flush hinges and combination catch and lock. Provide wiring gutters to accommodate large multiple feeder cables and lugs. Except as shown otherwise on Drawings, wiring gutters shall be at least 4" for lighting and 208 V panels and 6" for 480 V panels.



- B. Where two section panels are required, bolt boxes together to form one unit. Trim shall be two-piece construction with doors of equal size over each section.
- C. Provide molded case, bolt-on, thermal-magnetic trip, single, two or three pole branch circuit breakers as shown on Drawings. Multiple pole breakers shall be single handle, common-trip.
- D. Main buswork of panels shall carry at least full rating of feeder overcurrent device that supplies panel.
- E. Panel separate equipment ground bus for each panelboard.
- F. Power and lighting panels shall have heavy-duty, continuous, section vertical-hinged to box section for access to wiring gutters in addition to trim door. Increase size of panelboard gutters to accommodate compression connectors for aluminum conductors.
- G. Panelboards shall have integrated short circuit current rating equal to or greater than circuit breaker AIC ratings schedule on Drawings.
- H. Panels shall be by Square D, or equal by Eaton, GE, Siemens or approved equal.
- I. Provide surface metal tubs ready for painting.
- J. Provide bus connections for future overcurrent device with suitable insulation and bracing to maintain proper short circuit rating and voltage clearances, where required on Drawings. Provide for ready insertion of future breaker.
- K. Main bus bars shall be aluminum, sized as required by UL standards to limit temperature rise on current-carrying parts to 50oC above ambient 40oC maximum.
- L. Provide 1/2" spacers for panelboards mounted at exterior walls below grade to establish 1/2" air space behind panel.
- M. Provide typed panel directories that show use of each circuit and electrical characteristics of panelboard.

## 2.10 EXISTING PANELBOARDS

- A. The existing panelboards are suitable for 120/208-volts, 3 phase, 4 wire operation as previously installed.
- B. Where connections are made in existing panelboards, the panel index shall be revised to indicate the new loads served. All existing panelboards that do not have a circuit directory card mounted in a frame with noncombustible plastic cover shall have one

installed on the inside of the door. All directory cards shall be properly filled in, using a typewriter, and indicate areas and devices served by each unit.

- C. New circuit breakers added to existing panelboards shall be the same type and an interrupting capacity as existing panelboards and circuit breakers. Current limiting circuit breakers shall not be used.

## 2.11 NAMEPLATES

- A. Nameplates consisting of black plastic with white center, lettering to be 3/16-inch high, engraved through to white layer and properly fastened with brass screws shall be provided for the following equipment:
  - 1. Disconnect switches
  - 2. All panelboards and distribution switchboards
  - 3. Terminal cabinets
  - 4. Junction boxes larger than 4-11/16-inch

## 2.12 LIGHTING SYSTEMS

- A. General
  - 1. Provide lighting fixtures and equipment complete, wired and assembled as specified and shown on Drawings.
  - 2. This specification contains descriptive criteria. Where no manufacturer's name is listed as standard of quality, Architect's decision concerning the conformity of the product to Contract Documents requirements shall be final.
  - 3. In addition to submittals requirements of Part 1 of this Section, shop drawing and product data submittals shall include physical dimensions, specify types and mounting details.
    - a. Equipment and materials that require product sample submittal are shown on Drawings.
    - b. Submit written statement that verifies coordination of fixture mounting with ceiling systems as specified, with date of verification.
  - 4. Where lighting fixtures substitutions are allowed, in addition to submittal requirements, submit photometric report on substituted luminaire, prepared by independent laboratory. Report shall include candela values in at least three planes, except for axially symmetrical luminaires. Candela curves, foot-candle and lumen tables, and iso-footcandle contours are not acceptable. Submit product sample at Architect's request.

- B. Luminaires
  - 1. General
    - a. Provide factory-wired luminaires that meet UL 57 and ANSI C81 requirements, of dimensions and in locations as shown on Drawings.
    - b. Finish shall be uniform with no defects such as whirls, discoloration, sand or dust spots, cracks or chips. Steel rustproofing shall be by five-stage cleaning cycle and iron or zinc phosphate coating with rust inhibitor.
- C. Lens Diffusers
  - 1. Provide lenses of at least 1/8" thick, 100% clear acrylic, tinted acrylic or glass as shown on Drawings. Lenses shall not be inverted unless specified otherwise.
  - 2. Acrylic lenses shall meet or exceed Grade 8 requirements of ASTM D-788 Table 2.
  - 3. Acrylic lens prismatic pattern 20 shall have 1/8" square base male cones on base parallel to lens edge. Prism height shall be at least 0.05". Lens shall be KSH-20 or approved equal.

## 2.13 ADDRESSABLE FIRE DETECTION AND ALARM SYSTEM

- A. General
  - 1. The contractor shall modify the existing fire alarm system to accommodate new devices per the plans.
  - 2. At no time shall be building be without proper fire alarm coverage.
  - 3. Any and all fire alarm cable splicing is allowed in accordance with code requirements in a listed enclosure [NEC 760.30 (B)]
  - 4. The existing fire alarm system control panel is manufactured by Honeywell and is a Silent Knight panel SK-5208.
  - 5. All components and wiring added to the system shall be compatible with the existing system.
  - 6. Equipment shall be UL listed or approved and shall meet approval of local fire department and state fire marshall, authorities having jurisdiction and shall be in accordance with the applicable sections of the latest edition of the Massachusetts Electrical Code, ADA Code, NFPA 71, 72, 72E, and Life Safety Code #101.
  - 7. Each remote device shall have a unique code. All remote devices shall be under the control of the main system microprocessor.
  - 8. The Contractor shall be responsible for all fire alarm testing, reprogramming and certification charges.

B. Operation

1. Refer to dwgs for Sequence of Operations Matrix

C. Remote Devices

1. Smoke detectors shall be match existing type, photoelectric type with 3.0% nominal sensitivity. Smoke detectors shall be a plug-in unit which mounts to a twistlock base.
2. Heat detectors shall match existing type, low-profile, matte white, rated 135°F fixed temperature as shown on the Drawings.
3. Horn strobe units shall be installed flush-mounted. The visual strobe shall meet all requirements of the ADA Code. Strobe shall be rated as follows:
  - a. The lamp shall be a xenon strobe type or equivalent.
  - b. The color shall be clear or nominal white, i.e., non-filtered, or clear filtered white light.
  - c. The maximum pulse duration shall be two-tenths of one second (0.2 second) with a maximum duty cycle of 40 percent. The pulse duration is defined as the time interval between initial and final points of 10 percent of maximum signal
  - d. The intensity shall be a minimum of 75 candela
  - e. The flash rate shall be a minimum of 1 Hz and a maximum of 3 Hz.
  - f. Horn strobe units shall flash synchronously with other horn strobes and other strobe only devices in the same zone. System shall hold synchronization for a minimum of 15 minutes.
  - g. The audible portion of the device shall be rated to meet ADA Codes and shall meet the following criterion:
    - 1) The speakers shall produce a sound that exceeds the prevailing equivalent sound level in the room or space by at least 15 dba or exceeds any maximum sound level with a duration of 60 seconds, by 5 dba, whichever is louder. Sound levels for alarms shall not exceed 120 dba.
    - 2) No place in common corridors or hallways in which visual alarm signaling appliances are required shall be more than 50 feet from the signal. In corridors, visible notification appliances shall be provided not more than 15 feet from the end with a separation not greater than 100 feet per NFPA 7.5.4.2.5.
4. The sprinkler contractor shall provide water flow switches on the wet sprinkler piping systems. Should a sprinkler head release, water flow will cause a contact closure on the flow switch. The Electrical Contractor shall provide an addressable module adjacent to each water flow switch as shown on the Drawings. Activation of water flow switch shall cause fire alarm control panel

to alarm and transmit call to the Fire Department.

5. The sprinkler contractor shall provide a tamper switch on each control valve of the sprinkler system. Should valve be moved from its preset condition, this shall cause contact closure on the tamper switch. The Electrical Contractor shall provide an addressable module adjacent to each tamper switch as shown on the Drawings. Activation of tamper switch shall cause trouble alarm at the fire alarm control panel.
6. The sprinkler contractor shall provide a low pressure alarm device on the incoming sprinkler line for monitoring external street pressure. Should the street pressure drop below a predetermined value, low-pressure device shall cause a contact closure. The Electrical Contractor shall provide an addressable control module adjacent to the low pressure switch as shown on the Drawings. Activation of the low pressure switch shall cause a trouble condition at the main fire alarm control panel.
7. The sprinkler contractor shall provide a low pressure alarm device on the dry pipe sprinkler piping. Should air pressure drop below a predetermined value, low alarm pressure device will activate, causing a contact closure. The Electrical Contractor shall provide an addressable control module at each low-pressure switch as shown on the Drawings. Activation of low pressure device shall be annunciated as a trouble condition at the fire alarm control panel.
8. The sprinkler contractor shall provide a water pressure device on the dry pipe sprinkler system which acts like a water flow switch. Activation of a dry sprinkler head will cause contact closure at the water pressure device. The Electrical Contractor shall provide an addressable control module at each water pressure device as shown on the Drawings. Activation of the water pressure device shall cause the fire alarm panel to activate and transmit fire condition to the Fire Department.

D. Wiring and Conduit

1. All fire alarm wire and cable shall be UL listed for fire alarm use.
2. The electrical contractor shall coordinate the installation of the fire alarm equipment with the manufacturer. All conductors and wiring shall be installed per the manufacturers' recommendations.
3. The fire alarm system wiring shall be Class "A" with end-of-line resistors located in the FACP. Both alarm initiating circuits and communications loop circuits shall be Class "A" type.
4. For fire alarm wiring in concealed areas, fire alarm cable shall be plenum rated type FPLP, with red outer jacket. Installation shall meet requirements of NEC Article 770 and 725. Conductors shall be solid copper #14 minimum, with low-smoke, low-flame type jacket.
5. For fire alarm wiring in exposed areas, fire alarm wiring shall be type THHN insulation. Wire size shall be #14 AWG minimum. All wiring related to the fire

alarm system shall be installed in type GRS conduit.

6. All junction boxes shall be sprayed red and labeled "fire alarm".

E. Programming

1. The existing system shall be field programmed for all new added devices.
2. A hard copy of the final system configuration showing all inputs, outputs, descriptions, addresses, and programming matrixes shall be provided at final acceptance test.

F. Shop Drawings

1. Shop Drawings shall include both equipment catalog cuts (product data sheets) and one-line riser/interconnect diagrams.
2. Provide battery calculations showing 20% spare capability.
3. Catalog cuts shall indicate descriptive information and technical data and shall be supplied for all equipment including main fire alarm control panel and all remote devices.
4. One-line riser or interconnect drawing shall be supplied on 24"x36" size drawing. All fire alarm devices, power supplies, splice cabinets, and transmitting equipment shall be shown with interconnect wire size.

G. Warranty

1. Warrant all equipment and wiring free from mechanical and electrical defects for one year from the date of substantial completion.

H. Testing

1. The Electrical Contractor shall be responsible for all required fire alarm testing.
2. Prior to formal Fire Department Test, the Contractor shall conduct a preliminary test. The Electrical Contractor and the equipment manufacturer shall completely test the system. The Manufacturer shall issue a letter of acceptability stating that all system components are installed and all remote devices are functioning.
3. After letter of acceptability has been received for the preliminary test, the Electrical Contractor shall conduct the acceptance test, as many times as required. The Electrical Contractor, Equipment Manufacturers Representative, Owner's Representative, Fire Department Representative and Service Company Representative shall conduct the acceptance test in accordance with NFPA 72. Every building fire alarm device shall be tested to ensure proper operation and correct annunciation at the control panel. At least one half of all tests shall be performed on battery standby power.
4. Where application of heat would destroy any detector, it may be manually activated.

5. When the testing has been completed to the satisfaction of both the Contractor's Job Foreman and the Representatives of the Manufacturer and Owner, the electrician shall provide a completed Inspection and Testing Form per NFPA 72, Section 10.6.2.3.
6. The Contractor shall leave the fire alarm system in proper working order and, without additional expense to the owner, shall replace any defective materials or equipment provided by him under this contract within one year (365 days) from the date of final acceptance by the awarding authority.

## 2.14 LED LUMINAIRES AND DRIVERS

### A. All Luminaires

1. Comply with IES LM-79-08 Approved Method for measuring lumen maintenance of LED light sources.
2. Comply with IES LM-80-08 Approved Method for electrical and photometric measurement of SSL product.
3. LED's shall be Restriction of Hazardous Substances Directive (RoHS) compliant.
4. LED arrays shall be sealed, high performance, long life type; minimum 70% rated output at 50,000 hours.
5. LED luminaires shall deliver a minimum of 60 lumens per watt.
  - a. LED's shall be "Bin No. 1" quality
6. Drivers shall be solid state and accept 120 through 277 VAC at 60 Hz input.
7. The LED light source shall be fully dimmable with use of compatible dimmers switch designated for low voltage loads.
8. LED color temperatures: CRI> 85, 2700K as noted +/- 145K.
9. LED color temperatures: CRI> 85, 3000K as noted +/- 275K.
10. Luminaires shall have internal thermal protection.
11. Luminaires shall not draw power in the off state. Luminaires with integral occupancy, motion, photo-controls, or individually addressable luminaires with external control and intelligence are exempt from this requirement. The power draw for such luminaires shall not exceed 0.5 watts when in the off state.
12. Color spatial uniformity shall be within .004 of CIE 1976 diagram.
13. Color maintenance over rated life shall be within .007 of CIE 1976.
14. Indoor luminaires shall have a minimum CRI of 85.
15. Luminaire manufacturers shall adhere to device manufacturer guidelines, certification programs, and test procedures for thermal management
16. LED package(s)/module(s)/array(s) used in qualified luminaires shall deliver a minimum 70% of initial lumens, when installed, for a minimum of 50,000 hours.
17. Luminaires shall be fully accessible from below ceiling plane for changing drivers, power supplies and arrays.

- B. Power Supplies and Drivers
  - 1. Power Factor: 0.90 or higher
  - 2. Maximum driver case temperature not to exceed driver manufacturer recommended operation.
  - 3. Output operating frequency: 60Hz.
  - 4. Interference: EMI and RFI compliant with FCC 47 CFR Part 15.
  - 5. Total Harmonic Distortion Rating: 20% Maximum.
  - 6. Meet electrical and thermal conditions as described in LM-80 Section 5.0.
  - 7. Primary Current: Confirm primary current with Drawings.
  - 8. Secondary Current: Confirm secondary current specified by individual luminaire manufacturers.
  - 9. Compatibility: Certified by manufacturer for use with individually specified luminaire and individually specified control components.
  - 10. Solid-state control components to be integral or external per each specified luminaire. Remote control gear to be enclosed in Class 1, Class 2, or NEMA 3R enclosures as required.

## 2.15 LIGHTING FIXTURES

- A. Provide lighting fixtures, equipment and components where shown on Drawings, as listed in fixture schedules and as specified, wired and assembled. Provide approved aligner canopies, hangers and other appurtenances as required.
- B. Verify ceiling constructions, and provide fixtures, drivers, frames, rings and other accessories suitable for construction encountered.
- C. Coordinate installation of fixtures with installation of ceiling materials and suspension system.
  - 1. Ceiling-mounted fixtures shall be supported independent of hung ceiling with threaded rod or bow chain.
  - 2. In no case shall lighting fixtures be suspended from hung ceiling, conduit or duct. Fixtures shall be supported from structural members only.
  - 3. Provide unistrut below ducts from which to hang fixtures when fixture locations coincide with duct runs. Provide threaded rods to support unistrut.
  - 4. Investigate lighting fixture locations and supports to ensure that no interference exists between lighting fixture, supports and other equipment. Correct interferences as directed by Architect.

## 2.16 CCTV CAMERA/CONDUIT RELOCATION

- A. Coordinate all cabling and power requirements with the existing CCTV camera installation and the City's IT department. All cabling shall match existing in every aspect.
- B. Provide all CCTV system power cabling required for the relocation of cameras and conduit as noted on the dwgs.



- C. CCTV System Cabling; provide & terminate all cabling and conduit as required for a complete relocation of each CCTV camera as required by equipment manufacturer and the City of Lawrence.

## 2.17 CONDUIT REPLACEMENT AND RELOCATION

- A. Provide junction boxes, conduit and cable/conductor necessary to extend existing circuits as required.

## PART 3 - EXECUTION

### 3.01 DEMOLITION

- A. Refer to Architectural Section General Conditions and Supplementary General Conditions.
- B. The Electrical demolition work shall be performed by the Electrical Contractor in cooperation with the other trades and as scheduled and approved by the Owner.
- C. The Electrical Contractor shall visit the site before submitting his bid to familiarize himself with the existing conditions and the extent of his work. No extra compensation will be allowed for work required to be performed or to overcome existing conditions, by failure to visit the site.
- D. Upon authorization by the Owner to proceed, the Electrical Contractor shall test, trace and label all existing lighting and power branch or feeder conductors to panels, terminal/pull boxes, and any wiring to outlets or special equipment located within the areas being renovated under this contract.
  - 1. All circuits or feeders found to originate from sources (panels, pull boxes, junction boxes) being removed that extend to lighting and power, equipment or services on other floors or to adjoining areas not being renovated shall remain active. These circuits or feeders shall be re-circuited or rerouted to new panels or sources to suit the new construction conditions. Extensions of feeders of branch circuit wiring and conduit shall be sized to match existing and shall be copper and of similar electrical characteristics and insulation. All work shall be coordinated with new construction.
- E. All power sources feeding circuits, feeders or equipment that are to be removed shall be disconnected at their source prior to the removal of any work. Raceways and wiring shall be removed in its entirety.
- F. All existing electrical power wiring, raceways, panels, pull boxes, junction boxes, lighting fixtures, devices and supports not shown on plans shall remain, unless area is to be revised only to the extent shown on contract drawings.
- G. All work shall be provided in strict accordance with the Massachusetts Electrical Code, National Codes and all Local Codes, and to the approval of the Engineer, Owner and Architect.

- H. Prior to removal from the site, all electrical equipment, conduit and wire shall be examined by the Owner to determine if any materials will be retained for maintenance or salvage purposes. If none of the material is to be retained all materials shall be removed from the site by this Contractor.
- I. All wiring feeding areas that are not part of this contract shall be interrupted only by permission and scheduling with the User's and the Owner's representative.
- J. Any non-exposed electrical conduit or wiring uncovered by the removal of existing partitions, walls or ceilings that penetrates limits of this contract and that supplies power to circuits or equipment that are to remain, shall be relocated or rerouted to suit the field conditions including new construction.
- K. All existing electrical work, conduit, junction boxes, circuits, splices, etc. to remain shall be left in satisfactory operating condition in compliance with all codes and conditions as specified under this contract.
- L. All conflicts between existing concealed electrical work and the installation of new work of any trade shall be brought to the attention of the Engineer for resolution prior to proceeding with the work.
- M. Adequate access shall be provided for all new or relocated equipment, pull or junction boxes to comply with codes.
- N. The locations of existing equipment to remain including piping, ductwork, conduits, etc., are shown in an approximate way only. The Contractor shall determine shall determine the exact location of all existing equipment before commencing work. He agrees to be fully responsible for any and all damages which might be occasioned by his failure to exactly locate and protect any and all equipment.

### 3.02 MATERIALS AND WORKMANSHIP

- A. Work shall be executed in workmanlike manner and shall present neat, rectilinear and mechanical appearance when completed. Maintain maximum headroom at all times. Do not run conduits or wiring exposed unless shown exposed on drawings. Material and equipment shall be new and installed according to manufacturer's recommended best practice so that completed installation shall operate safely and efficiently.

### 3.03 CONTINUITY OF SERVICES

- A. Do not interrupt existing services without Owner's and Architect's approvals.

### 3.04 SPECIAL RESPONSIBILITIES

- A. Coordinate work of this Section with work of other Sections.
  - 1. Provide information about items furnished under this Section to be installed under other Sections, as necessary.
  - 2. Obtain detailed information from manufacturers of equipment provided under this Section as to proper methods of installation.
  - 3. Obtain final roughing dimensions and other information as needed for complete

installation of items furnished under other Sections or by Owner.

4. Keep fully informed of shape, size and position of openings required for material and equipment provided under this and other Sections. Ensure that openings required for work of this Section are coordinated with work of other Sections. Provide cutting and patching as necessary.
- B. Coordinate installation and pay backcharges to City Building and Fire Departments.

### 3.05 WIRING METHODS

- A. Install wire and cable in approved raceways as specified and as approved by authorities that have jurisdiction. Surface metal raceways shall not be used unless explicitly specified and shown on Drawings. Do not use surface raceways on floor. Do not use armored cable except as approved by local code for lighting and receptacle circuits in suspended ceilings and stud-wall partitions. Homeruns for lighting circuits shall be 3-phase, 4-wire run in conduit.
- B. Unless specified or shown on Drawings otherwise, install conduit and GRS concealed. Unless specified or shown otherwise, conduit and GRS may be run exposed on unfinished walls and unfurred basement ceilings and in unfinished penthouses, attics and roof spaces. Provide stand-off clips for conduits on exterior masonry walls.

### 3.06 WIRING DEVICE PLATES

- A. Plates shall be installed with all four edges in continuous contact with finished wall surfaces without the use of mats or similar devices. Plaster fillings will not be permitted. Plates shall be installed with an alignment tolerance of 1/16". The use of sectional-type device plates will not be permitted. Plates installed in wet locations shall be gasketed and provided with a hinged, gasketed cover, unless otherwise specified.

### 3.07 INSTALLATION OF LIGHT FIXTURES

- A. Coordinate installation of fixtures with installation of ceiling materials and suspension systems.
- B. Do not install fixtures until work of other trades that may damage fixtures is completed.
- C. Investigate lighting fixture locations and supports to ensure that no interference exists with hangers, ducts, sprinklers, pipes and other equipment.
- D. Provide plaster frames for fixtures recessed in gypsum board or plaster ceiling.
- E. Do not suspend or support lighting fixtures or safety chains from hung ceiling conduit or duct. Support fixtures with threaded rod from structural members only.
- F. Provide unistrut below ducts where fixture locations coincide with duct runs. Provide threaded rods to support unistrut.
- G. Luminaires shall be compatible with flexible wiring system.
- H. Patch spray-on fireproofing damaged during installation.

- I. Support surface-mounted luminaries at least two concealed points to prevent rotation.
- J. Mounting height of wall-mounted luminaries shall be shown on Drawings.
- K. Locate ceiling-mounted fixtures as shown on reflected ceiling plans. Locate wall- and floor-mounted fixtures as shown on Electrical Drawings.

### 3.08 CONDUIT REPLACEMENT AND RELOCATION

- A. Provide junction boxes, conduit and cable/conductor necessary to extend existing circuits as required.

### 3.09 GROUNDING

- A. Provide all ground in accordance with NEC requirements.
- B. Provide green insulated grounding conductor in same raceway with associated phase conductors, as follows:
  - 1. From green 10-32 washer-in-head machine screw in ceiling outlet box or junction box through flexible metallic conduit to ground terminal in fixture.

### 3.10 TESTING, INSPECTION AND CLEANING

- A. Test and inspect work provided under this Section as required by Contract Documents, codes, standards and authorities that have jurisdiction, to satisfaction of Architect. Notify Architect and authorities at least 48 hours before testing or inspection. Do not cover work before testing or inspection.
- B. Test wiring and connections for continuity and grounds before fixtures are connected; demonstrate insulation resistance by megger test as required. Insulation resistance between conductors and grounds for secondary distributions systems shall meet NEC requirements.
- C. Test lighting fixtures with specified lamps in place for 10 hours; check fixtures in sections. Do not operate lamps other than for testing before final inspection by Architect. Replace lamps that fail within 90 days after acceptance by Architect within Contract Price.
- D. Provide necessary testing equipment and testing.
- E. Failure or defects in workmanship or materials revealed by tests or inspection shall be corrected promptly and retested. Replace defective material.
- F. Equipment
  - 1. After completion of project, clean the exterior surface of equipment included in this section, including concrete residue.

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#### **PART 4 - MEASUREMENT AND PAYMENT**

##### **4.01 GENERAL**

- A. No separate measurement or payment will be made for work required under this Section. All costs in connection therewith shall be considered incidental to the item or items of work to which they pertain. The contractor is requested to provide breakout cost for the work listed below:

1. Breakout Payment Items:

ITEM NO.	DESCRIPTION	UNIT
260000.001	CONDUIT REPLACEMENT	LF

The contractor shall provide a linear foot breakout cost for removal of corroded 1" conduit. This cost shall include the removal of damaged conduit and conductors within, installation of new junction boxes on either end of the damaged conduit, installation of new GRS conduit and installation of new cable within the conduit (4)#10&#10G.

260000.002	JUNCTION BOX REPLACEMENT	EA
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The contractor shall provide a breakout cost for removal of each damaged or corroded junction box. This cost shall include the removal of the damaged junction box and installation of a new junction box to replace the existing. The existing conductors within shall be maintained and reused. Splices shall be provided as necessary to extend existing conductors.

**END OF SECTION**



**DIVISION 31**

**EARTHWORK**

**SECTION 31 10 00**

**SITE CLEARING**

**PART 1-GENERAL**

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:
1. Protecting existing trees and vegetation to remain, including temporary fencing for trees in close proximity to construction operations.
  2. Removing existing trees and vegetation indicated to be removed.
  3. Clearing and grubbing.
  4. Stripping and stockpiling topsoil.
  5. Removing above and below grade site improvements.
  6. Protection of Existing Utilities.
  7. Utility Demolition as required to accommodate new construction.
  8. Protection and Abandonment of Utilities.
  9. Disconnecting, capping or sealing of utilities as required.
- B. Alternates: Not Applicable.
- C. Items to Be Installed Only: Not Applicable.
- D. Items to Be Furnished Only: Not Applicable.
- E. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
1. Section 31 20 00 – EXCAVATION & FILL FOR UTILITIES AND PAVEMENT for soil materials, excavating, backfilling, and site grading and removal of site utilities.
  2. Section 31 25 00 – EROSION AND SEDIMENTATION CONTROLS for required erosion and sedimentation control measures.

### 1.3 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.
- B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

### 1.4 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain the Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

### 1.5 SUBMITTALS

- A. Refer to Section 01 33 00 – SUBMITTAL PROCEDURES, for submittal provisions and procedures.
  - 1. Schedule indicating proposed sequence of operations for demolition work for review prior to start of work. Include coordination for shutoff, capping, and continuation of utility services as required, together with details for dust and noise protection.
    - a. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
    - b. Coordinate with Owner's continuing occupation of portions of existing building, adjacent buildings, and with Owner's partial occupancy of completed portions of proposed building or additions.
  - 2. Preconstruction survey photographs sufficiently detailed, of existing conditions of existing buildings, trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
- B. Record drawings, according to Section 01 77 00 - CONTRACT CLOSEOUT identifying and accurately locating capped utilities and other subsurface structural, electrical, and mechanical conditions.

### 1.6 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.



1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Owner's Representative and authorities having jurisdiction.
  2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on the Owner's premises where indicated.
- C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- D. Do not commence site clearing operations until erosion and sedimentation control measures are in place.
- E. Protection of Existing Improvements: Provide protection necessary to prevent damage to existing improvements indicated to remain in place or outside of the limit of work. Protect improvements on adjoining properties and on the Owner's property.
1. Restore improvements damaged by Contractor's clearing activities to their original condition, at no additional expense to the Owner.

#### 1.7 EXAMINATION OF SITE AND DOCUMENTS

- A. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of a lack of knowledge of existing conditions as indicated in the Construction Documents, or obvious from observation of the site.
- B. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period and formed his own conclusions as to the full requirements of the work involved.

### **PART 2-PRODUCTS (NOT USED)**

### **PART 3-EXECUTION**

#### 3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain from damage during construction.
1. Restore damaged improvements to their original condition, as acceptable to the Owner's Representative.

### 3.2 TREE PROTECTION

- A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.
  - 1. Do not store construction materials, debris, or excavated material within fenced area.
  - 2. Do not permit vehicles, equipment, or foot traffic within fenced area.
  - 3. Maintain fenced area free of weeds and trash.
  - 4. Except as otherwise directed, cutting and trimming of existing trees will not be permitted.
- B. Do not excavate within tree protection zones, unless otherwise indicated.
- C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
  - 1. Cover exposed roots with burlap and water regularly.
  - 2. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
  - 3. Coat cut faces of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
  - 4. Backfill with soil as soon as possible.
- D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by the Designer.
  - 1. Employ an arborist, licensed in jurisdiction where Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
  - 2. Replace trees that cannot be repaired and restored to full-growth status, as determined by the Designer.

### 3.3 UTILITIES

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
  - 1. Arrange with utility companies to shut off indicated utilities. The Contractor is responsible for coordinating and scheduling with the authorities having jurisdiction the removal and/or abandonment of existing utilities as required to complete the work.
- B. Existing Utilities: Do not interrupt utilities serving facilities occupied by the Owner's Representative or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify the Owner's Representative not less than two days in advance of proposed utility interruptions.
  2. Do not proceed with utility interruptions without the Owner's Representative's written permission.
- C. Utility pipes designated to be abandoned in place shall be plugged at their ends with watertight brick masonry or cement mortar with a minimum thickness of 8 inches.
- D. Utility pipes designated to be removed shall consist of the complete removal and disposal of the entire length of pipe and backfill and compaction of the void with ordinary borrow. When the void is within the footprint of the new building, gravel borrow shall be used to backfill the void.
- E. Utility structures designated to be abandoned in place shall have their cast iron castings removed and disposed, inlet and outlet pipes plugged, the bottom of the structures shall be broken, the void of the structure shall be backfilled and compacted with ordinary borrow, and the top of the structure shall be removed so that it is at least 36 inches below finished grade.
- F. Utility structures designated to be removed shall consist of the removal and disposal of cast iron castings, plugging of inlet and outlet pipes, removal of the structure, and backfill and compaction of the void with ordinary borrow. When the void is within the footprint of the new building, gravel borrow shall be used to backfill the void.

### 3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.
1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
  2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
  3. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
  4. Use only hand methods for grubbing within tree protection zone.
  5. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

### 3.5 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.

## **SITE CLEARING**

- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
  - 1. Remove subsoil and nonsoil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust or contamination by air-borne weed seed.
  - 1. Limit height of topsoil stockpiles to 72 inches.
  - 2. Do not stockpile topsoil within tree protection zones.

### 3.6 EXCESS TOPSOIL

- A. Topsoil that has been stripped and stockpiled, but is not needed after the completion of all final topsoil spreading and grassing, shall be removed and legally disposed of off site by the Contractor per local, state, and federal standards.

### 3.7 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
  - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
  - 2. Paint cut ends of steel reinforcement in concrete to remain to prevent corrosion.

### 3.8 DISPOSAL

- A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off the Owner's property.
  - 1. Burning on site is prohibited.
  - 2. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

### 3.9 CLEANUP AND REPAIR

- A. General: Upon completion of demolition work, remove tools, equipment, and demolished materials from site.

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- B. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by site demolition work.

END OF SECTION



**DIVISION 31**

**EARTHWORK**

**SECTION 31 23 00**

**EXCAVATION & FILL FOR UTILITIES AND PAVEMENT**

**PART 1 - GENERAL**

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section (excluding earthwork for building and retaining wall construction), including but not limited to the following:
1. Excavation, backfill, and compaction for pavements, pads, utility trenches and structures, and landscaping.
  2. Preparation and protection of subgrades.
  3. Removal of underground utilities as applicable.
  4. Excavation of all unsuitable materials encountered below indicated subgrade elevations.
  5. Placement of subbase course for concrete pavements.
  6. Placement of subbase and base course for asphalt paving.
  7. Bedding for utility trenches.
  8. Dewatering and support of excavation of trenches and excavations.
  9. Removal of items covered by Section 012200 - UNIT PRICES as applicable.
  10. Disposal of unsuitable or excess excavated material.
  11. Coordinate with all trades for complete building and site utility systems.
  12. Coordination with maintenance of safe path of travel for the public.
- B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
1. SECTION 31 20 00 - EARTHWORK for building related soil materials, excavating and backfilling requirements.
  2. SECTION 31 10 00 - SITE CLEARING for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements.
  3. SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROLS for temporary erosion and sedimentation control measures.
  4. Division 02, 22, 23, and 26 Sections for installing underground mechanical and electrical utilities and buried mechanical and electrical structures.

5. SECTION 334000 – STORM DRAINAGE UTILITIES for installing underground drain pipes, manholes, area drains, water quality structures, and water storage tanks.

### 1.3 DEFINITIONS

- A. Backfill: Soil material or Controlled Density Fill (CDF) used to fill an excavation.
  1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Course placed between the subbase course and hot-mix asphalt paving and concrete paving.
- C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Dewatering includes lowering the water table and intercepting seepage which would otherwise emerge from the slopes or bottom of the excavation; increasing the stability of excavated slopes; preventing loss of material from beneath the slopes or bottom of the excavation; reducing lateral loads on sheeting and bracing; improving the excavation and hauling characteristics of sandy soil; preventing rupture of heaving of the bottom of any excavation; and disposing of pumped water.
  1. Normal dewatering is defined as using conventional pumps installed in open excavations ditches, or sumps.
- F. Drainage Course: Course supporting the pavement that also minimizes upward capillary flow of pore water.
- G. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
  1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by the Owner's Representative or the Designer. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
  2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
  3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by the Owner's Representative or the Designer. Unauthorized excavation, as well as remedial work directed by Designer, shall be without additional compensation.
- H. Fill: Soil materials used to raise existing grades.

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- I. **Rock:** Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material as defined in Section 312316, Rock Removal, that cannot be removed by normal rock excavating equipment without systematic drilling, ram hammering, ripping, or blasting, when permitted.
- J. **Structures:** Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- K. **Subbase Course:** Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- L. **Subgrade:** Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- M. **Utilities:** Onsite underground pipes, conduits, ducts, and cables, as well as underground services within buildings.
- N. **Unsuitable Soils:** Excavated soils that are determined by the Designer to not be reusable as fill or backfill on-site due to gradation, moisture content, and/or the presence of deleterious materials.

#### 1.4 SUBMITTALS

- A. Refer to Section 01 33 00 – SUBMITTAL PROCEDURES, for submittal provisions and procedures.
- B. **Product Data:** For the following:
  - 1. Each type of plastic warning tape.
  - 2. Geotextile.
  - 3. Controlled Density Fill, including design mixture.
- C. **Material Test Reports:** From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
  - 1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
  - 2. Laboratory compaction curve according to ASTM D 1557 for each onsite and borrow soil material proposed for fill and backfill.
- D. **Dewatering system:** Contractor shall submit, for record, drawings and design data prepared, stamped, and signed by a registered professional engineer in the Commonwealth of Massachusetts who is experienced in groundwater control system design. The submittal shall show arrangement locations, and details of wells and well points and sump pumps; locations of risers, headers, filters, pumps, power units, all

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treatment components, and discharge lines; and means of discharge, control of sediment, and disposal of water. The submittal of the dewatering system will not relieve the Contractor from the responsibility for the adequacy of the dewatering system to achieve the required results specified in these Specifications and all permit requirements.

1. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
  2. Include a written plan for dewatering operations including control procedures to be adapted if dewatering problems arise.
  3. Include design calculations demonstrating adequacy of the proposed dewatering system and equipment.
  4. Provisions and methods of sediment removal and disposal of water.
  5. All permits required for the work.
- E. Support of Excavation: Contractor shall submit, for record, proposed excavation support systems (if required). The proposed lateral support systems shall be designed and stamped by a registered professional engineer licensed in the Commonwealth of Massachusetts. Despite the submittal of the design of excavation support and protection systems, the Contractor shall remain solely responsible for the adequacy and safety of materials and methods used in construction. Include the following as a minimum on the drawings:
1. Details, arrangements, and methods of construction of the proposed system(s).
  2. The method of installation and installation equipment.
  3. The elevation of struts, shores, and tiebacks, as applicable, and permissible depth to which excavation may be carried before such supports are installed.
  4. The excavation depths, the depth below the main excavation to which the support system will be installed, and the maximum design load to be carried by various members of the support system.
  5. Design calculations including references to design methods used, assumptions, design parameters, design soil profile, material properties, allowable stresses, and other pertinent information stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.
  6. The location of existing utilities, facilities and/or structures nearby.
- F. Pre-Excavation Photographs and Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins. Maintain catalog of up-to-date photographs at the site.
- G. Plan to Maintain Safe Path of Travel: Submit plans for maintaining safe paths of travel for the general public during the entire project, including requirement for police details of necessary.

## **EXCAVATION AND FILL FOR UTILITIES AND PAVEMENT**

## 1.5 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by the Owner or others unless permitted in writing by the Owner's Representative and then only after arranging to provide temporary utility services according to requirements indicated.
1. Notify the Owner's Representative not less than two days in advance of proposed utility interruptions.
  2. Do not proceed with utility interruptions without the Owner's Representative's written permission.
  3. Contact utility-locator service for area where Project is located before excavating.
    - a. The Contractor shall notify "Dig Safe" at 1-888-DIG-SAFE prior to commencing any excavation work.
- B. Demolish and completely remove from site existing underground utilities and structures indicated to be removed. Coordinate with utility companies to shut off services if lines are active.
- C. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by geotechnical engineer. Neither the Owner nor the Geotechnical Engineer will be responsible for interpretations or conclusions drawn from the data.
1. The geotechnical report does not represent, and shall not be construed to represent a guarantee of subsurface conditions.
  2. Interpretation of this data for purposes of construction is the responsibility of the Contractor. It is the Contractor's responsibility to make interpretations and draw conclusions with respect to the character of materials to be encountered and groundwater conditions at the site and their impact upon Contractor's work based on his expert knowledge of the area, construction dewatering methods, and support of excavation methods.
  3. Make additional test borings and conduct other exploratory operations necessary for dewatering and excavation support and protection.
  4. The geotechnical report is referenced elsewhere in the Project Manual.
- D. Survey Work: Contractor shall engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.
1. During earth moving operations, installation of excavation support and protection systems and dewatering, regularly resurvey benchmarks, maintaining an

accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Owner's Representative if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

- E. The Contractor shall not close or obstruct any street, sidewalk, or passageway without written permission from authorities having jurisdiction unless otherwise indicated on the Contract Drawings. The Contractor shall conduct the construction operations as to minimize interference with the use of roads, driveways, or other facilities near enough to the project to be affected by the work.
- F. The Contractor shall provide police details when working in roadways as required by local jurisdictional authorities. The Contractor shall pay for any and all police details.

#### 1.6 EXCAVATION SUPPORT AND PROTECTION

- A. The Contractor shall furnish, install, monitor and maintain excavation support and protection systems (sheeting, shoring, and bracing) at locations necessary to support the sides of excavations and resist soil and hydrostatic pressure and superimposed and construction loads; to prevent danger to persons or damage to adjacent pavements, facilities, utilities, or structures; to prevent injurious caving or erosion or the loss of ground; and to maintain pedestrian and vehicular traffic as required by the Contract Documents, the Contractor's sequence of construction, and as directed by the Owner's Representative.
- B. In all sheeting, shoring and bracing operations, care shall be taken to prevent collapse of excavations, injury to persons or damage to adjacent structures, facilities, utilities, and services. Any injuries to persons shall be the responsibility of the Contractor; and any damage to the work occurring as a result of settlement, water or earth pressure, or other causes due to inadequate bracing or other construction operations of the Contractor shall be satisfactorily repaired and made good by the Contractor, at no additional cost to the Owner.
- C. The excavation support system shall be of sufficient strength and be provided with adequate bracing to support all loads to which it will be subjected. The excavation support system shall be designed to prevent any movement of earth that would diminish the width of the excavation or damage or endanger adjacent structures.
- D. Where sheeting is to be used, it shall be driven ahead of excavation operations to the extent practicable so as to avoid the loss of material from behind the sheeting; where voids occur outside of the sheeting, they shall be filled immediately with ordinary fill, thoroughly compacted.
- E. The Contractor shall leave in place all sheeting and bracing at the locations and within the limits ordered by the Owner's Representative in writing. The Contractor shall cut

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off the sheeting at elevations as indicated on the Contract Drawings or to be determined with the approval of the Owner's Representative.

- F. The Contractor shall comply with all federal, state, and local safety regulations, and requirements.

#### 1.7 DEWATERING

- A. The Contractor shall provide, at his own expense, adequate pumping and drainage facilities to maintain the excavated area sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction procedures nor cause excessive disturbance of underlying natural ground. The flows of all water resulting from pumping shall be managed so as not to cause erosion, siltation of drainage systems, or damage to adjacent property.
- B. Any damage resulting from the failure of the dewatering operations of the Contractor, and any damage resulting from the failure of the Contractor to maintain all the areas of work in a suitable dry condition, shall be repaired by the Contractor, as directed by the Owner's Representative and/or the Designer, at no additional cost to the Owner. The Contractor's pumping and dewatering operations shall be carried out in such a manner as to prevent damage to the Contract work and so that no loss of ground will result from these operations. Precautions shall be taken to protect new work from flooding during storms or from other causes. Pumping shall be continuous to protect the work and/or to maintain satisfactory progress.
- C. All pipelines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected. Water from the trenches, excavations, and stormwater management operations shall be disposed of in such a manner as to avoid public nuisance, injury to public health or the environment, damage to public or private property, or damage to the work completed or in progress.
- D. The Contractor shall control the grading in the areas surrounding all excavations so that the surface of the ground will be properly sloped to prevent water from running into the excavated area. Where required, temporary ditches shall be provided to control drainage. Upon completion of the work and when directed, all areas shall be restored by the Contractor in a satisfactory manner and as directed.
- E. Remove dewatering system when no longer required for construction.
- F. The Contractor shall obtain and maintain all required local, state, and federal permits necessary for construction dewatering for the duration of dewatering activities including all chemical testing required for disposal and discharge of dewatering effluent. The Contractor shall be responsible for treatment of water, if necessary, to meet minimum discharge criteria specified in the permits.

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## 1.8 QUALITY CONTROL

- A. Inspection and testing will be performed by the Contractor to ensure that the materials placed meet the requirements in this section. Fill materials imported from off-site sources shall be chemically and geotechnically tested once for every 2,000 tons of material.
- B. If fill soils are not obtained from a commercial gravel pit, the Contractor shall provide certified analytical testing of offsite backfill to demonstrate that the soil does not exceed the limitations for MCP reference/reportable concentrations. Analyses shall include RCRA-8 metals, Extractable and Volatile Petroleum Hydrocarbons (EPH/VPH), and Volatile Organic Compounds (by EPA Method 8260B/5035). No testing will be required of imported fill soils obtained from a commercial gravel pit, provided the soils are free of odors, discoloration, staining or other conditions indicative of contamination, in the opinion of the Geotechnical Engineer and/or the Designer.
- C. Tests and analysis of soil material will be performed in accordance with ASTM D422, ASTM D1557, ASTM D2922, ASTM D3017 and ASTM D4318.
- D. If tests indicate materials do not meet specified requirements, the Contractor shall identify an alternative borrow source, test the new material, and submit results to the Designer at no cost to Owner.

## 1.9 LAYOUT AND GRADES

- A. The Contractor is responsible for establishing vertical and horizontal control for the work and shall establish permanent bench marks and replace as directed any that are destroyed or disturbed. The Contractor shall maintain sufficient reference points at all times during construction to properly perform site grading. The existing survey benchmark shall be protected throughout the construction project.
- B. Finished grades, contours, and elevations indicated on the Drawings describe final surface elevation for completed construction. The words “finished grade” as used herein shall mean final grade elevations indicated on the Drawings. Spot elevations shall govern over proposed contours. Where not otherwise indicated, project site areas shall be given uniform slope between points and existing established grades.

## 1.10 QUALITY ASSURANCE

- A. Field inspection and testing may be performed by a Geotechnical Engineer at the Owner’s expense to supplement the Contractor’s Quality Control testing. Classification of all materials will be made by the Geotechnical Engineer whose decision shall be final and binding on the Contractor.

- B. The Contractor shall be responsible for managing and tracking all materials excavated and placed in stockpiles for testing.
- C. Comply with governing EPA notification regulations before beginning dewatering. Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. The Contractor is responsible for the adequacy of the dewatering systems.
  - 1. The dewatering systems shall be capable of effectively reducing the hydrostatic pressure and lowering the groundwater levels to a minimum of 2 feet below excavation bottom, unless otherwise directed by the Designer, so that all excavation bottoms are firm and dry.
  - 2. The dewatering system shall be capable of maintaining a dry and stable subgrade until the structures, pipes, and appurtenance to be built therein have been completed to the extent that they will not be floated or otherwise damaged.
  - 3. The dewatering system and excavation support shall be designed so that the lowering of the groundwater level outside the excavation does not adversely affect adjacent structures, utilities or other improvements.
- E. The Owner will perform in place density tests in accordance with ASTM D2922 or D3017 as the Work progresses, to determine the degree of compaction. Any corrective work required as a result of such tests, such as additional compaction, or a decrease in the thickness of layers, shall be performed by the Contractor at no additional expense to Owner. In place density testing shall be made at the Contractor's expense by a qualified geotechnical testing laboratory.
- F. The Designer's duties do not include the supervision or direction of the actual work by the Contractor, his employees or agents. Neither the presence of the Designer nor any observation and testing by the Geotechnical Engineer shall excuse the Contractor from defects discovered in his Work at that time or subsequent to the testing.
- G. Contractor shall assist the Owner's Testing Laboratory in performing in-place density testing at a minimum frequency of one test per lift but no less than one test per 200 cubic yards of material placed in any one lift. Compaction testing will be performed in accordance with ASTM D1557, D2922, and D3017.
- H. Subgrades shall be approved for compactness and material composition prior to placing subsequent lifts. If inspections indicate Work does not meet specified requirements, the work shall be removed, replaced, and compacted at no additional cost to Owner.

#### 1.11 REGULATORY REQUIREMENTS

- A. Comply with the Safety and Health regulations of the U.S. Department of Labor set forth in 29 CFR, Part 1926, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety "Rules and Regulations for the Prevention of

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Accidents in Construction Operations (454 CMR 10.0 et seq.). Contractors shall be familiar with the requirements of these regulations.

1. All excavations shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P), State, and local requirements. Where conflict between OSHA, State, and local regulations exists, the most stringent requirements shall apply.
- B. Comply with governing EPA notification regulations before, during, and upon completion of dewatering. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Comply with all rules, regulations, laws, and ordinances of the municipality, the Commonwealth of Massachusetts, and other authorities having jurisdiction over the project site or work. All labor, materials, equipment, and services necessary to make the work comply with requirements shall be provided by the Contractor without additional cost to the Owner.
- D. The Contractor shall obtain and pay for all permits and licenses required to complete the work specified herein and indicated on the Contract Drawings.

#### 1.12 EXAMINATION OF SITE AND DOCUMENTS

- A. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of a lack of knowledge of existing conditions as indicated in the Contract Documents, or obvious from observation of the site.
- B. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period and formed his own conclusions as to the full requirements of the work involved.



**PART 2-PRODUCTS**

**2.1 SOIL MATERIALS**

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Ordinary Borrow: Ordinary borrow shall meet the requirements of MassDOT M1.01.0. It shall be well-graded, natural inorganic soil containing no stone greater than 6 inches maximum dimension. The materials shall be free of trash, ice, snow, tree stumps, roots, and other organic and deleterious materials. It shall be free of highly plastic clays, of all materials subject to decay, or other materials that will corrode piping or metals. Ordinary borrow shall have a maximum dry density of not less than 110 pounds per cubic foot. It shall be of such a nature and character that it can be compacted to the specified densities. Topsoil shall not be considered ordinary borrow. Existing available fill materials from onsite excavations may be reused as ordinary borrow if it meets the above requirements. It shall be graded within the following limits:

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer by Weight</u>
6 inch	100
No. 10	30-90
No. 40	10-70
No. 200	0-15

- E. Gravel Borrow: Gravel borrow shall meet the requirements of MassDOT M1.03.0, Type B. It shall be an inert, hard, durable sand and gravel or stone soil obtained from an offsite commercial source. It shall be free of ice, snow, roots, sod, rubbish, oil, hazardous material, and other deleterious or organic matter. It shall be graded within the following limits:

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer by Weight</u>
3 inch	100
½ inch	50-85

No. 4	40-75
No. 50	8-28
No. 200	0-10

- F.  $\frac{3}{4}$ " Crushed Stone:  $\frac{3}{4}$ " crushed stone shall meet the requirements of MassDOT M2.01.4. It shall consist of durable crushed rock or crushed gravel stone, free of ice, snow, sand, silt, clay, loam, shale, or other deleterious or organic matter. It shall be graded within the following limits:

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer by Weight</u>
1 inch	100
$\frac{3}{4}$ inch	90-100
$\frac{1}{2}$ inch	10-50
$\frac{3}{8}$ inch	0-20
No. 4	0-5

- G. 1-1/2" Crushed Stone: 1-1/2" crushed stone shall meet the requirements of MassDOT M2.01.1. It shall consist of durable crushed rock or crushed gravel stone, free of ice, snow, sand, silt, clay, loam, shale, or other deleterious or organic matter. It shall be graded within the following limits:

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer by Weight</u>
2 inch	100
1-1/2 inch	95-100
1 inch	35-70
$\frac{3}{4}$ inch	0-25

- H. Dense Graded Crushed Stone: Dense graded crushed stone shall meet the requirements of MassDOT M2.01.7. It shall consist of a mixture of crusher-run aggregate of crushed stone mixed with natural sand and gravel soil obtained from an offsite commercial source. It shall be free of ice, snow, roots, sod, rubbish, soil, hazardous material, and other deleterious or organic matter. It shall be graded within the following limits:

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer by Weight</u>
2 inch	100
1-1/2 inch	70-100
$\frac{3}{4}$ inch	50-85
No. 4	30-55
No. 40	8-24
No. 200	3-10

- I. Sand: Sand shall meet the requirements of MassDOT M1.04.1. It shall consist of clean inert, hard, durable grains of quartz or other hard durable rock, free from clay, organics, surface coatings, or other deleterious or organic matter. It shall be graded within the following limits:

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer by Weight</u>
½ inch	100
3/8 inch	85-100
No. 4	60-100
No. 16	35-80
No. 50	10-55
No. 100	2-10

- J. Controlled Density Fill (CDF) shall be a cement concrete backfill material that flows like a liquid, supports like a solid when cured, and levels without tamping or vibrating to reach 100 percent compaction. CDF shall meet the requirements of MassDOT Specifications M4.08.00 for Type 1E (Very Flowable, Excavatable) or type 2E (Flowable, Excavatable) CDF. The mix formulation will be submitted to the Designer for review prior to placement of the material in the project.
- K. Reuse of Excavated Rock: Excavated on-site rock materials processed by the Contractor meeting the gradation limits for ¾" Crushed Stone, 1-1/2" Crushed Stone, Dense Graded Crushed Stone, and Stone for Pipe Ends contained herein may be segregated and reused as approved by the Owner.

## 2.2 GEOTEXTILES

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; complying with AASHTO M 288 and the following, measured per test methods referenced:
1. Survivability: Class 2; AASHTO M 288.
  2. Elongation: 50% minimum; ASTM D 4632
  3. Grab Tensile Strength: 160 lbs.; ASTM D 4632.
  4. Trapezoid Tear Strength: 60 lbs.; ASTM D 4533.
  5. CBR Puncture Strength: 410 lbs.; ASTM D 6241
  6. Apparent Opening Size: No. 70 sieve maximum; ASTM D 4751.
  7. Permittivity: 1.50 sec-1 minimum; ASTM D 4491
  8. UV Stability: 70% after 500 hours' exposure; ASTM D 4355.
- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; complying with AASHTO M 288 and the following, measured per test methods referenced:

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1. Survivability: Class 1; AASHTO M 288.
2. Elongation: 15% maximum; ASTM D 4632
3. Grab Tensile Strength: 315 lbs.; ASTM D 4632.
4. Trapezoidal Tear Strength: 120 lbs.; ASTM D 4533.
5. Puncture Strength: 1,000 lbs.; ASTM D 6241.
6. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
7. Permittivity: 0.05 sec-1 minimum; ASTM D 4491.
8. UV Stability: 70% after 500 hours' exposure; ASTM D 4355.

### 2.3 ACCESSORIES

- A. Detectable Underground Warning Tapes: Acid and alkali-resistant polyethylene plastic film warning tape, 6-inches wide by 4-mils minimum thickness, with continuously printed caption in black letters "CAUTION - xxxxxx LINE BURIED BELOW." The text and color of the tape shall be as shown in the table below. The tape shall have a metallic core encased in a protective jacket for corrosion protection and be detectable by a metal detector when the tape is buried up to 2.5-feet deep.

Color	Utility
Safety Red	Electric
High Visibility Safety Yellow	Gas, Oil, Steam
Safety Alert Orange	Telephone, Communications, Cable Television
Safety Precaution Blue	Water System, Irrigation
Safety Green	Sanitary Sewer, Storm Sewer
White	Proposed Excavation

### 2.4 USES OF MATERIALS

- A. Fill materials listed in Paragraph 2.1 above shall be utilized as follows and as otherwise indicated on the Drawings, specified or directed.
- B. Gravel Borrow:
1. As fill and base coarse soils below cement concrete and hot-mix asphalt pavements as shown on the Contract Drawings.
  2. Trench backfill within paved areas.
  3. Bedding for ductile iron drain, water, and sewer piping.

- C. Dense Graded Crushed Stone:
  - 1. As base course soils below cement concrete and hot-mix asphalt pavement as shown on the Contract Drawings.
- D. ¾-inch and 1-1/2-inch Crushed Stone:
  - 1. Base for drain manholes, catch basins, sewer manholes, and utility structures.
  - 2. Bedding for drain pipe and sewer pipe.
  - 3. Around perforated drain lines.
  - 4. To stabilize wet subgrade conditions.
  - 5. Elsewhere as shown on the Drawings or specified herein.
  - 6. To aid in dewatering.
- E. Sand:
  - 1. Bedding for drain, water, sewer, and other utility piping.
  - 2. Elsewhere as shown on the Drawings or specified herein.
- F. Ordinary Borrow:
  - 1. For general site fill outside of the proposed building footprint, concrete, and bituminous concrete areas.
  - 2. Trench backfill material outside of paved areas.
  - 3. Elsewhere as shown on the Drawings or specified herein.
- G. Geotextiles:
  - 1. Subsurface non-woven Drainage Geotextile shall fully wrap 3-4-inch Crushed Stone.
  - 2. Use to prevent soil intrusion into drains and/or to assist in stabilizing soil subgrades prior to placement of fill materials.
  - 3. Subsurface woven separation geotextile as separation material between crushed stone and gravel borrow base materials below cement concrete and hot-mix asphalt pavement as shown on the Contract Drawings.
  - 4. Where indicated or shown in the Contract Drawings.
- H. Controlled Density Fill (CDF):
  - 1. CDF shall be used as shown on the Contract Drawings.
  - 2. CDF shall be used if directed by the DESIGNER as fill at the limits of the excavation areas.

## **PART 3 - EXECUTION**

### **3.1 GENERAL REQUIREMENTS**

- A. The Contract Drawings indicate the proposed finish alignment, elevation, and grade of the work. Establish the line and grade in close conformity with the Contract Drawings.

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- B. The Contractor is responsible for establishing construction phasing, means, and methods and interim grading and temporary conditions required to attain the finish product required by the Contract Documents. The Contractor is responsible for all construction, protection, movement, and maintenance of stockpiles. Establish and maintain suitable benchmarks and grade control to accurately perform the work.
- C. No excavation shall be deposited or stockpiled at any time to endanger portions of new or existing structures, either by direct pressure or indirectly by overloading banks contiguous to the operation. Material, if stockpiled, shall be stored so as not to interfere with the established sequence of the construction. If there is not sufficient area available for stockpiling within the limits of the project, the Contractor will be required to furnish his own area for stockpiling.
- D. When the plans require excavation in areas in close proximity to existing buildings, roads, structures and utilities it shall be the responsibility of the Contractor at his expense to use satisfactory means and methods to protect and maintain the stability of such roads, and structures located immediately adjacent to but outside the limits of excavations.

### 3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Section 31 10 00 - SITE CLEARING.
- C. Protect and maintain erosion and sedimentation controls, which are specified in Section 31 25 00 – EROSION AND SEDIMENTATION CONTROLS, during earthwork operations.
- D. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

### 3.3 DEWATERING

- A. Provide Dewatering as required to maintain dry excavations.
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

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1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
  2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.
  3. Where soil has been softened or eroded by flooding, equipment, traffic or placement of fill or concrete during unfavorable weather or such other conditions, it shall be removed and replaced by the Contractor with suitable material and at the Contractor's expense. The necessity and extent of such removals shall be determined by the Designer.
- D. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.
- E. Monitor dewatering systems continuously.
- F. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
1. Space well points or wells at intervals required to provide sufficient dewatering.
  2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.
- G. Before excavating below ground-water level, place system into operation to lower water to specified levels. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.
- H. Provide an adequate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Install sufficient dewatering equipment to drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.
1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
- I. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
1. Maintain piezometric water level a minimum of 24 inches below surface of excavation.
- J. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others. Provide sumps,

## **EXCAVATION AND FILL FOR UTILITIES AND PAVEMENT**

sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.

- K. Provide standby equipment on site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, restore damaged structures and foundation soils at no additional expense to the Owner.
  - 1. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.
- L. Damages: Promptly repair damages to adjacent facilities caused by dewatering operations.

### 3.4 EXCAVATION SUPPORT AND PROTECTION

- A. Work shall not be started until all materials and equipment necessary for the construction are either on the site of the work or satisfactorily available for immediate use as required.
- B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.
  - 1. Shore, support and protect utilities encountered.
- C. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Owner's Representative and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- D. Locate excavation support and protection systems clear of permanent construction so that forming and finishing of concrete surfaces or installation of improvements is not impeded.
- E. The excavation support and protection systems shall be securely and satisfactorily braced to withstand all pressures to which it may be subjected and be sufficiently tight to minimize lowering of the groundwater level outside the excavation.
- F. Monitor excavation support and protection systems daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or other evidence of movement to ensure that excavation support and protection systems remain stable.

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- G. Promptly repair damages to adjacent facilities caused by installing excavation support and protection systems.
- H. Responsibility for the satisfactory construction and maintenance of the excavation support system, complete in place, shall rest with the Contractor. Any work done, including incidental construction, which is not acceptable for the intended purpose shall be either repaired or removed and reconstructed by the Contractor at his expense.
- I. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.
  - 1. Remove excavation support and protection systems to a minimum depth of 48 inches below overlaying construction and abandon remainder.
  - 2. Fill voids immediately with approved backfill compacted to density specified herein.
  - 3. Repair or replace, as approved by Owner's Representative, adjacent work damaged or displaced by the installation, performance, and removal of the excavation support and protection systems.

### 3.5 EXCAVATION, GENERAL

- A. **Unclassified Excavation:** Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
  - 2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
    - a. 24 inches outside of concrete forms.
    - b. 6 inches outside of minimum required dimensions of concrete cast against grade.
    - c. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.
- B. Provide sheeting, shoring and bracing to complete and protect all excavated areas, are required for safety and compliance with OSHA. Cost for sheeting, shoring and bracing shall be included as a part of the contract price for completing the work and Owner shall make no separate payment for this work.
- C. Perform excavation work in accordance with all applicable Federal, State, and Local regulations regarding safe excavation work.

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- D. Excavation in the area of existing utilities. Expose utilities by hand or other excavation methods that will prevent damage. Required excavation near electric, gas, water lines, and fiber-optic telecommunication lines shall be hand dug within 3 feet of the lines.
- E. Do not excavate to full depths when freezing temperatures may be expected unless subgrades are protected from freezing.

### 3.6 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
  - 1. Excavation for Underground Tanks, Manholes, Basins, Mechanical and/or Electrical Utility Structures, Drainage and Sewer Systems, Infiltration Systems, and Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

### 3.7 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

### 3.8 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
  - 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
  - 1. Clearance: 12 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
  - 1. For pipes and conduit less than 6 inches in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.

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2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.
3. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

### 3.9 SUBGRADE INSPECTION

- A. Notify the Owner's Representative when excavations have reached required subgrade.
- B. If the Owner's Representative, Geotechnical Engineer and/or the Designer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll granular subgrade below structures and pavements with heavy vibrating drum roller to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
  1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
  2. Proof-roll with approved equipment weighing not less than 15 tons.
  3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Designer, and replace with compacted backfill or fill as directed.
- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Geotechnical Engineer and/or the Designer, without additional compensation.
- E. Protect all subgrades from disturbance.
  1. Place Gravel Borrow or Crushed Stone wrapped in non-woven geotextile over clayey, silty or wet footing subgrades. Fill shall not be placed in standing water.
  2. Grade around prepared subgrade areas to direct stormwater runoff away from the work area.
  3. Protect subgrades from frost at all times during construction. Fill should not be placed over frozen soil.

### 3.10 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavations under site improvement construction or utility pipe as directed by Designer. Lean concrete fill, with 28-day compressive strength of 2500 psi may be used when approved by Designer.

### 3.11 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials (from off-site sources) and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
  - 2. Stockpile soil materials in a location, acceptable to the Owner's Representative, that will preclude having to relocate stockpiled soil materials that would otherwise delay or impact the Work.

### 3.12 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
  - 2. Surveying locations of underground utilities for Record Documents.
  - 3. Testing and inspecting underground utilities.
  - 4. Removing concrete formwork.
  - 5. Removing trash and debris.
  - 6. Removing temporary shoring and bracing, and sheeting.
  - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on previously placed and compacted fill and/or subgrades free of mud, frost, snow, or ice.
- C. Excavated on-site natural soils may be used as Ordinary Fill, provided the material can be placed and compacted as required herein and at the approval of the Designer.
- D. The Contractor shall not commence backfilling operations without approval of the Owner's Representative and/or the Designer.
- E. The Contractor shall maintain a dry and firm subgrade throughout construction. De-watering shall be performed as needed at the Contractor's expense.
- F. The Contractor shall strip the existing subgrade of any vegetation, topsoil, organics, debris, or other unsuitable materials. The subgrade shall be proof compacted using a vibratory roller to treat any loose or disturbed areas and to provide a dense uniform surface.
- G. After the subgrade has been prepared, fill material shall be placed and built-up in successive layers until the required elevations are reached. No fill shall be placed on a frozen surface, nor shall snow, ice, or other frozen materials be included in fill. Wet

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materials containing moisture in excess of the amount necessary for satisfactory placement or compaction shall not be used.

- H. All fill shall be brought up in essentially level lifts and shall be placed in levels by standard methods. Layers of fill outside of utility trenches shall not exceed nine (9) inches in uncompacted thickness before compaction, unless otherwise specified, or as required for proper subgrade stabilization.
- I. Filling operations shall continue until the fill has been brought up to the finished slopes, lines, and grades making proper allowances for thickness of the overlying topsoil.
- J. The entire surface of the work shall be maintained free from ruts and in the condition that will permit construction equipment to travel over any section readily. The top surface of each layer shall be made level or slightly sloped toward the center of the filled area.
- K. Backfilling shall not be performed when weather conditions or the conditions of the materials are such that, in the opinion of the Geotechnical Engineer or the Designer, work cannot be performed satisfactorily.

### 3.13 BACKFILLING AGAINST STRUCTURES

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Backfilling against masonry or concrete shall not be done until permitted by the Owner's Representative. The Contractor shall not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking or other damage.
- C. As soon as practicable after the structures are structurally adequate and other necessary work has been satisfactorily completed and approved, special leakage tests of the structures shall be made by the Contractor, as required by the Owner's Representative. After the satisfactory completion of leakage tests and the satisfactory completion of any other required work in connection with the structures, the backfilling around the structures shall proceed using suitable and approved excavation material.
- D. The best of the backfill material shall be used for backfilling within 2-feet of the structure. Just prior to placing backfill, the areas shall be cleaned of all excess construction material and debris and the bottom of excavations shall be in a thoroughly compacted condition.
- E. Symmetrical backfill loading shall be maintained. Special care shall be taken to prevent any wedging action or eccentric loading upon or against the structures. During backfilling operations, care shall be exercised that the equipment used will not

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overload the structures in passing over and compacting these fills. Except as otherwise specified or directed, backfill shall be placed in layers not more than 12 inches in loose depth and each layer of backfill shall be compacted thoroughly and evenly using approved types of mechanical equipment. Each pass of the equipment shall cover the entire area of each layer of backfill.

- F. In compacting and other operations, the Contractor shall conduct his operations in a manner to prevent damage to structures due to passage of heavy equipment over, or adjacent to, structures, and any damage thereto shall be made good by the Contractor at no additional expense to the Owner.

### 3.14 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Section 033000 - CAST-IN-PLACE CONCRETE.
- D. Provide 4-inch- thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.
- E. Place and compact initial backfill of subbase material free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.
  - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- F. Backfill voids with satisfactory soil while installing and removing shoring and bracing.
- G. Backfill material shall be placed in maximum 6-inch lifts and mechanically compacted as specified herein.
- H. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- I. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

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- J. Any trenches or excavations improperly backfilled or where settlement occurs shall be reopened, to the depth required for proper compaction, then refilled and compacted with the surface restored to the required grade and condition, at no additional expense to the Owner.
- K. During filling and backfilling operations, pipelines will be checked by the Owner's Representative to determine whether any displacement of the pipe has occurred. If the observation of the pipelines shows poor alignment, displaced pipe or any other defects they shall be remedied in a manner satisfactory to the Owner's Representative at no additional cost to the Owner.

### 3.15 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  - 1. Under grass and planted areas, use satisfactory soil material.
  - 2. Under walks and pavements, use satisfactory soil material.
- C. Place soil fills on subgrades free of mud, frost, snow, or ice.

### 3.16 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.
  - 3. Fill material shall not be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, fill operations shall not be resumed until the moisture content and the density of the previously placed fill are as specified.

### 3.17 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

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- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:

Area	ASTM Density Degree of Compaction
Pavement and walkway base course	95%
Pavement and walkway subgrade	95%
General fill below pavement and walkway sub-base	95%
Trench backfill - below pavements - below landscaped areas - below structures	95% 92% 95%
All other areas	90%

1. Under structures and pavement, proof-compact existing subgrade. Compact each layer of backfill soil material at 95 percent of the soils' maximum dry density (per ASTM D 1557). Fill areas within the 1H:1V influence zone of foundations and retaining wall footings shall also be compacted to 95 percent of the soils' maximum dry density (per ASTM D 1557).
  2. Under walkways, scarify and re-compact top 6 inches below subgrade to 95 percent of the soils' maximum dry density (per ASTM D 1557). Fill and base course material within 2 feet of the finished asphalt or concrete pavement grade shall be compacted to 95 percent of the soils' maximum dry density (per ASTM D 1557).
  3. For utility trenches in paved areas, compact each layer of initial and final backfill soil material to at least 95 percent of the soils' maximum dry density (per ASTM D 1557).
  4. For utility trenches in lawn or unpaved areas, compact each layer of backfill soil material to at least 92 percent of the soils' maximum dry density (per ASTM D 1557).
  5. Under lawn or unpaved areas, scarify and re-compact top 6 inches below subgrade and compact each layer of backfill or fill soil material to at least 90 percent of the soils' maximum dry density (per ASTM D 1557).
- D. In confined areas, place Crushed Stone in maximum 6-inch lifts and compact each lift with at least 4 passes of a vibratory plate compactor to a firm and unyielding surface. In open areas, place Crushed Stone in maximum 12-inch lifts and compact each lift with at least four passes of a vibratory drum roller with a minimum static

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weight of 10,000 pounds. Crushed stone fill shall be wrapped on all sides with non-woven filter fabric.

### 3.18 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  - 1. Provide a smooth transition between adjacent existing grades and new grades.
  - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
  - 1. Lawn or Unpaved Areas: Plus or minus 1 inch.
  - 2. Walks: Plus or minus 1 inch.
  - 3. Pavements: Plus or minus 1/2 inch.

### 3.19 SUBSURFACE DRAINAGE

- A. Subdrainage Pipe: Specified in Division 2 Section "Subdrainage."
- B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
  - 1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 1557.
- C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with 1 layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
  - 1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 1557.
  - 2. Place and compact impervious fill over drainage backfill in 6-inch-thick compacted layers to final subgrade.

### 3.20 SUBBASE AND BASE COURSES

- A. Place subbase and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase and base course under pavements and walks as follows:

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1. Install separation geotextile fabric on prepared subgrade, where indicated on the Contract Drawings, according to manufacturer's written instructions, overlapping sides and ends.
  2. Place base course material over subbase course under hot-mix asphalt pavement.
  3. Shape subbase and base course to required crown elevations and cross-slope grades.
  4. Place subbase and base course 6 inches or less in compacted thickness in a single layer.
  5. Place subbase and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
  6. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
- C. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

### 3.21 DRAINAGE COURSE

- A. Place drainage course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact drainage course under pavements, walkways and cast-in-place concrete slabs-on-grade as follows:
  1. Install subdrainage geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
  2. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

### 3.22 FIELD QUALITY CONTROL

- A. Independent Testing Agency: Cooperate with the Independent Testing Agency engaged by the Owner for field quality control activities for the Work of this Section. Refer also to Section 014325 - TESTING AGENCY SERVICES.
- B. Cooperate with field quality control personnel.
- C. Additional inspections and retesting of materials which fail to comply with specified material and installation requirements shall be performed at Contractor's expense.

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- D. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than 3 tests.
  2. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 150 feet or less of trench length, but no fewer than 2 tests.
- F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained. Costs related to retesting due to unacceptable quality of work and failures discovered by the testing shall be borne by the Contractor.
- G. Notify the Independent Testing Agency a minimum of 72 hours prior to start of earthwork operations, to comply with Code requirement that a registered design professional be present at all times during backfill to assure adequate compaction with no bridging effects. The services of the Testing Agency, Geotechnical Engineer, and the Designer shall include but not be limited to the following:
1. Observation during excavation, backfilling, and compaction.
  2. Laboratory testing and analysis of fill materials specified or proposed for use as required.
  3. Observation of construction and performance of water content, gradation, and compactions tests at a frequency and at locations that he/she shall select. The results of these test will be submitted to the Owner's Representative so that the Contractor can take such action as is required to remedy any indicated deficiencies.
  4. Observation of proof-compaction of exposed subgrades. Proof-compaction may be waived if, in the opinion of the Geotechnical Engineer, disturbance will occur and cause loss of strength of underlying soil.
- H. The Contractor shall make provisions for allowing observations and testing of Contractor's Work by the Testing Agency and the Geotechnical Engineer, and the Designer. The presence of the Testing Agency, Geotechnical Engineering, and/or the Designer does not include supervision or direction of the actual work by the Contractor, his/her employees, or agents. Neither the presence of the Testing Agency, Geotechnical Engineer, and/or the Designer nor any observations and testing performed by those entities or any notice or failure to give notice, shall excuse the Contractor from defect discovered in his/her work.

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### 3.23 PROTECTION

- A. No excavation will be permitted below a line drawn downwards at 2 horizontal to 1 vertical from the underside of the closest edge of any proposed in-place footing or utility at a higher elevation without providing adequate sheeting and bracing or underpinning to prevent loss of support of the footing or utility.
- B. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- C. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace soil material to depth as directed by Designer; reshape and recompact.
- D. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### 3.24 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Contractor shall remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION

**DIVISION 31**

**EARTHWORK**

**SECTION 31 25 00**

**EROSION AND SEDIMENTATION CONTROLS**

**PART 1-GENERAL**

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:
1. Control measures to prevent all erosion, siltation, and sedimentation of wetlands, waterways, construction areas, adjacent areas and off-site areas.
  2. Control measures shall be accomplished adjacent to or in the following work areas:
    - a. Soil stockpiles and on-site storage and staging areas.
    - b. Cut and fill slopes and other stripped and graded areas.
    - c. Constructed and existing swales and ditches.
    - d. At edge of wetlands areas, if applicable, as shown on Drawings.
  3. The Contract Drawings indicate the minimum requirements for sedimentation and erosion control. The Contractor shall install all measures needed to control sediment and erosion as required by the Contractor and Sub-contractor's construction methods and operations, the weather conditions, and as directed by the Engineer.
  4. Additional means of protection shall be provided by the Contractor as required for continued or unforeseen erosion problems, at no additional cost to the Owner.
  5. Periodic maintenance of all sediment control structures shall be provided to ensure intended purpose is accomplished. Sediment control measures shall be in working condition at the end of each day.
  6. After any significant rainfall, sediment control structures shall be inspected for integrity. Any damaged device shall be corrected immediately.
- B. Alternates: Not Applicable.
- C. Items to Be Installed Only: Not Applicable.
- D. Items to Be Furnished Only: Not Applicable.
- E. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 31 10 00 – SITE CLEARING for protection of existing trees and other vegetation to remain.
2. Section 31 23 00 – EXCAVATION & FILL FOR UTILITIES AND PAVEMENT for soil materials, excavating, backfilling, and site grading and removal of site utilities.

### 1.3 SUBMITTALS

- A. Refer to Section 01 33 00 – SUBMITTAL PROCEDURES, for submittal provisions and procedures.
  1. LEED Supporting Documentation: Submit LEED supporting documentation as outlined in Section 01 81 10 SUSTAINABLE DESIGN REQUIREMENTS for materials and products that have been extracted, harvested, or recovered, as well as manufactured within 500 miles of the project site.

### 1.4 QUALITY ASSURANCE

- A. When applicable, comply with the requirements of Stormwater Pollution Prevention Plan prepared for the NPDES permit, which are incorporated herein by reference, and all other applicable requirements of governing authorities having jurisdiction. The specifications and drawings are not represented as being comprehensive, but rather convey the intent to provide complete slope protection and erosion control for both the project site and adjacent property.
  1. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to a sediment and erosion control plan specific to the site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- B. Erosion control measures shall be established at the beginning of construction and maintained during the entire period of construction. On-site areas which are subject to severe erosion, and off-site areas which are especially vulnerable to damage from erosion and/or sedimentation, are to be identified and receive special attention.
- C. The Contractor shall install and maintain sedimentation control devices during construction to prevent the movement of sediment from the construction site to off site areas, into adjacent water bodies via surface runoff or into underground drainage systems. Measures to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at no additional cost to the Owner.
- D. All land-disturbing activities are to be planned and conducted to minimize the size of the area to be exposed at any one time, and the length of time of exposure.
- E. Surface water runoff originating upgrade of exposed areas should be controlled to reduce erosion and sediment loss during the period of exposure.

## **EROSION AND SEDIMENTATION CONTROLS**

- F. When the increase in the peak rates and velocity of storm water runoff resulting from a land-disturbing activity is sufficient to cause accelerated erosion of the receiving stream bed, provide measures to control both the velocity and rate of release so as to minimize accelerated erosion and increased sedimentation of the stream.
- G. All land-disturbing activities are to be planned and conducted so as to minimize off-site sedimentation damage.
- H. The Contractor is responsible for cleaning out and disposing of all sediment once the storage capacity of the sediment facility is reduced by one-half.
- I. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- J. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

#### 1.5 REFERENCE STANDARDS

- A. The following standards are applicable to the work of this Section to the extent referenced herein:
  - 1. "Massachusetts Erosion and Sedimentation Control Guidelines for Urban and Suburban Areas, A Guide for Planners, Designers and Municipal Officials", prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, dated March 1997, reprinted May 2003.

#### 1.6 EXAMINATION OF SITE AND DOCUMENTS

- A. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of a lack of knowledge of existing conditions as indicated in the Contract Documents, or obvious from observation of the site.
- B. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period and formed his own conclusions as to the full requirements of the work involved.

#### 1.7 PERMITS, CODES, AND REGULATIONS

- A. Comply with all rules, regulations, laws, and ordinances of the City and State, and all other authorities having jurisdiction over the project site. All labor, materials, equipment, and services necessary to make the work comply with such requirements shall be provided by the Contractor without additional cost to the Owner.
- B. Comply with all applicable regulations of the Commonwealth of Massachusetts Department of Environmental Protection (DEP) and the EPA.

### **EROSION AND SEDIMENTATION CONTROLS**

- C. The Contractor shall comply with the requirements of the NPDES CGP for this project.

## **PART 2-PRODUCTS**

### **2.1 MATERIALS**

- A. Straw Bales: Wire or nylon bound bales of straw, oriented around sides, rather than over and under.
- B. Stakes: Stakes for bales shall be one of the following materials: Wood stakes of sound hardwood 2 by 2 inches in size or steel reinforcing bars of at least No. 4 size. Lengths shall be approximately three feet.
- C. Straw Wattles
1. Straw wattles shall consist of weed free rice straw inside biodegradable netting. Straw wattles shall measure at least nine (9) inches in diameter.
  2. Stakes for wattles shall be one of the following materials. Lengths shall be approximately two feet (2').
    - a. Wood stakes of sound hardwood, one inch by one inch (1" x 1") in size.
    - b. Steel reinforcing bars of at least No. 4 size.
- D. Siltation Fence
1. Fabricated or prefabricated unit consisting of the following filter fabric properties:

a. Grab Tensile Strength (lbs)	124	ASTM D4632
b. Elongation at Failure (%)	15	ASTM D4632
c. Mullen Burst Strength (PSI)	280-300	ASTM D3786
d. Puncture Strength (lbs)	60-65	ASTM D4833
e. Water Flow Rate (gal/min/sf)	8-10	ASTM D4491
f. Apparent Opening Size (Sieve)	30	ASTM D4751
g. Ultraviolet Radiation Stability (%)	70-80	ASTM D4355
  2. Use only commercially available fabric that is certified in writing by the manufacturer for the purpose intended.
  3. Acceptable fabric materials include "Mirafi Envirofence" by Mirafi Construction Products, "Style 2130" by Amoco Fabrics Co., and "IVI 3617C Silt Fence" by Indian Valley Industries, Inc., or approved equal by the Engineer.
  4. Silt fence posts: Posts may be wood or metal. Wood post shall be a minimum 1¼ inch by 1¼ inch by 5 feet long hardwood stakes commonly used to support siltation fabric. Metal posts shall be a minimum of 1 inch wide and 5 feet long. Posts shall be spaced at a maximum distance of 8 feet on center.
  5. Provide suitable heavy nylon cord for securing abutting silt fence posts.



- E. Fencing: Steel posts shall be standard 6-foot long metal stamped drive stakes commonly used to support snow fences. Fencing shall be new four-foot height wood lath snow fencing. Provide suitable steel staples or heavy nylon cord for securing filter cloth to support system.
- F. Crushed Stone: Crushed stone shall consist of durable crushed rock or durable crushed gravel stone, free from ice and snow, sand, clay, loam, or other deleterious or organic material. The crushed stone shall be uniformly blended and shall conform to the following requirements.

<b>Percent Passing by Weight</b>		
<b>Sieve Size</b>	<b>1 1/2-inch Stone</b>	<b>3/4-inch Stone</b>
2-inch	100	---
1 1/2-inch	95-100	---
1 1/4-inch	---	---
1-inch	35-70	100
3/4-inch	0-25	90-100
1/2-inch	---	10-50
3/8-inch	---	0-20
No. 4	---	0-5

- G. Protective Measures: As temporary coverings on ground areas subject to erosion, provide one of the following protective measures, and as directed by the Designer with concurrence of the Owner's Representative:
  1. Hay or straw temporary mulch, 100 pounds per 1,000 square feet.
  2. Wood fiber cellulose temporary mulch, 35 pounds per 1,000 square feet.
  3. Tackifier for anchoring mulch or straw shall be a non-petroleum based liquid bonding agent specifically made for anchoring hay or straw.
  4. Provide natural (jute, wood excelsior) or man-made (glass fiber) covering with suitable staples or anchors to secure to ground surface. Note that wire staples and non-biodegradable coverings shall not be used for any area that will be mown turf.
  5. Temporary vegetative cover for graded areas shall be undamaged, air dry threshed straw or hay free of undesirable weed seed.
- H. Temporary Covers for Drainage Structures
  1. Filter fabric for use as temporary covers for drainage structures shall be the same as noted above for siltation fence.
  2. Wire mesh for use at temporary drainage structure covers shall be 6" x 6", W2.9 welded wire mesh.
  3. Crushed stone shall be as specified herein before.

4. Silt-Sac, Hydro-FloGard + Plus Catch Basin Insert, Ultra-DrainGuard Insert, or approved equal, may be used in lieu of hay bales and filter fabric at catch basins.

## **PART 3-EXECUTION**

### **3.1 GENERAL REQUIREMENTS**

- A. The Contractor shall provide suitable and adequate means of sedimentation and erosion control during construction. Control measures shall prevent all erosion, siltation, and sedimentation of waterways, drainage systems, construction areas, adjacent areas and off-site areas. Work shall be accomplished on and/or adjacent to the following work areas:
  1. Earthwork stockpiles and on-site storage and staging areas.
  2. Cut and fill slopes and other stripped and exposed graded areas.
  3. Constructed and existing swales and ditches.
  4. Unestablished lawns and seeded embankments.
- B. Means of protection as noted on the Contract Drawings indicate the minimum provisions necessary. Additional means of protection shall be provided by the Contractor as required for continued or unforeseen erosion problems, at no additional expense to the Owner.
- C. Periodic maintenance of all sediment control installations shall be provided to ensure intended purposes are accomplished. Sediment control measures shall be in working condition at the end of each day.
- D. After any significant rainfall, sediment control devices shall be inspected for integrity. Any damaged device shall be corrected immediately.
- E. The Contractor shall provide adequate means of control of runoff, as to not detrimentally impact downstream conditions during construction. The Contractor shall plan his operations so that permanent drainage mitigation systems such as detention/retention/infiltration basins and chambers are in place and properly functioning prior to connecting upland drainage flows to these systems. The Contractor shall plan his operations such that downstream drainage mitigation measures are in place and functioning before attempting to tie in upgradient drainage systems.
- F. In the event that the Contractor is unable to sequence the work so that construction of the permanent drainage mitigation systems precedes the upland work, then the Contractor shall submit a plan indicating his proposed methods of otherwise controlling runoff from the site.
- G. The "Massachusetts Erosion and Sedimentation Control Guidelines for Urban and Suburban Areas" should be consulted as a guide for the selection and installation of Best Management Practices to suit the conditions encountered.

### 3.2 STRAW BALE BARRIERS

- A. Excavation shall be to the width of the bale and the length of the proposed barrier to a minimum depth of 4 inches.
- B. Bales shall be placed in a single row, lengthwise on proposed line, with ends of adjacent bales tightly abutting one another. In swales and ditches, the barrier shall extend to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale.
- C. Staking shall be accomplished to securely anchor bales by driving at least two stakes or rebars through each bale to a minimum depth of 18 inches.
- D. The gaps between bales shall be filled by wedging straw in the gaps to prevent water from escaping between the bales.
- E. The excavated soil shall be backfilled against the barrier. Backfill shall conform to ground level on the downhill side and shall be built up to 4 inches on the uphill side. Loose straw shall then be scattered over the area immediately uphill from a straw barrier.
- F. Inspection shall be frequent and repair or replacement shall be made promptly as needed.
- G. Bales shall be removed when they have served their usefulness so as not to block or impede stormwater flows or drainage.

### 3.3 STRAW WATTLE BARRIERS

- A. Install straw wattles in locations as shown on Contract Drawings and as directed.
  - 1. Wattles shall be placed in a row with ends overlapping a minimum of two (2) feet.
  - 2. Each wattle shall be embedded in the soil a minimum of two (2) and a maximum of six (6) inches.
  - 3. Wattles shall be securely anchored in place by stakes or rebars driven through the wattles and a minimum twelve (12) inches into the soil. Stakes shall be placed four (4) feet on center.
- B. Inspection shall be frequent and repair or replacement shall be made as needed.
- C. Wattles shall be removed when they have served their usefulness so as not to block or impede stormwater flows or drainage.

### 3.4 SILT FENCING

- A. Excavate a 6-inch trench along the upstream side of the desired fence location.
- B. Drive fence posts a minimum of 1'-6" into the ground. Install fence, well-staked at maximum eight-foot intervals in locations as shown on Drawings. Secure fabric to fence and bury fabric end within the six-inch deep trench cut.

- C. Lay lower 12 inches of silt fence into the trench, 6 inches deep and 6 inches wide. Backfill trench and compact.
- D. Overlap joints in fabric at post to prevent leakage of silt at seam.
- E. Inspect siltation fence after major storm events and periodically and remove accumulated sediment and debris. If a breach or failure of the siltation fence occurs, the fence shall immediately be restored.

### 3.5 EROSION CONTROL GRASSING

- A. Grassing shall be applied according to the Massachusetts Erosion and Sedimentation Control Guidelines for Urban and Suburban Areas, A Guide for Planners, Designers and Municipal Officials.

### 3.6 INLET PROTECTION

- A. Install silt fence or straw bales around inlet as specified herein.
- B. Install temporary covers at drainage structure locations that may be subject to erosion infiltration and as directed by the Engineer.
- C. Inspect drainage structures periodically. Remove sediment accumulation and regrade or replace materials as required.

### 3.7 DUST CONTROL

- A. Throughout the construction period the Contractor shall carry on an active program for the control of fugitive dust within all site construction zones, or areas disturbed as a result of construction. Control methods shall include the following: Apply calcium chloride at a uniform rate of one and one-half (1 ½) pounds per square yard in areas subject to blowing. For emergency control of dust apply water to affected areas. The source of supply and the method of application for water are the responsibility of the contractor.
- B. The frequency and methods of application for fugitive dust control shall be as directed by the Designer with concurrence by the Owner's Representative.

### 3.8 TEMPORARY PROTECTIVE COVERINGS

- A. Place temporary soil coverings to control erosion and sedimentation on all disturbed or graded areas as required by the construction methods employed and as directed by the Engineer. Erosion control matting shall be installed in all areas seeded or hydroseeded with slopes of one vertical foot to three-foot horizontal, or steeper, immediately after such areas have been seeded and a hay mulch applied as follows:
  - 1. The area to receive matting shall have been recently seeded and shall have a smooth surface free front stones, clods or depressions.

2. Roll out of the matting perpendicular to the slope, do not stretch the fabric. In drainage swales, center the fabric along the flow line. Install the matting in a check slot at the top and bottom of the slope and at the edges of the area to be covered. Check slots shall be six inches deep and six inches wide. Fabric shall extend down one wall of the check slot and across the full width of the base. Overlap edges of matting rolls four (4) inches minimum and overlap the ends eighteen (18) inches minimum.
  3. Install staples in check slots, edges, center, and ends of rolls by driving specified steel staples two feet on center over the entire area to be covered except at check slots and ends of rolls, where staples shall be placed six inches on center. All staples shall be driven below finished grade.
  4. Fill check slots with loam and tamp firmly.
  5. Reseed check slots and all disturbed areas per Specifications.
  6. Following matting installation, roll the entire area with a smooth drum roller weighing between fifty and seventy-five (50-75) pounds per linear foot of roller. The finished installation of matting shall be firmly in contact with the seeded area and provide a smooth, finished appearance free from lumps or depressions.
- B. Install erosion control matting as a temporary ground cover in all disturbed or graded areas subject to erosion and as directed by the Engineer. The temporary ground cover shall protect the site from erosion until a full permanent lawn can be installed. Install and anchor in place temporary erosion control matting in accordance with manufacturer's printed instructions or as directed by the Engineer and remove all temporary erosion control matting prior to installation of a permanent lawn.
- C. Inspect protective coverings periodically and reset or replace materials as required.
- 3.9 TEMPORARY PROTECTIVE COVERINGS (AFTER GROWING SEASON)
- A. Place temporary covering for erosion and sedimentation control on all areas that have been graded and left exposed after October 30. Contractor shall have the choice to use either or both of the methods described herein.
  - B. Hay or straw shall be anchored in-place by one of the following methods and as approved by the Designer with concurrence by the Owner's Representative: Mechanical "crimping" with a tractor drawn device specifically devised to cut mulch into top two inches of soil surface or application of non-petroleum based liquid tackifier, applied at a rate and in accordance with manufacturer's instructions for specific mulch material utilized.
  - C. Placement of mesh or blanket matting and anchoring in place shall be in accordance with manufacturer's printed instructions.
  - D. Inspect protective coverings periodically and reset or replace materials as required.

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### 3.10 REMOVAL AND FINAL CLEANUP

- A. Once the site has been fully stabilized against erosion, and with the approval of the Owner's Representative remove sediment control devices and all accumulated silt. Dispose of silt and waste materials offsite. Regrade all areas disturbed during this process and stabilize against erosion with surfacing materials as indicated.

END OF SECTION

**DIVISION 32**

**EXTERIOR IMPROVEMENTS**

**SECTION 32 13 13**

**CONCRETE PAVING**

**PART 1-GENERAL**

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:
  - 1. Cement concrete paving, including driveway aprons, and walkways.
- B. Alternates: Not Applicable.
- C. Items to Be Installed Only: Not Applicable.
- D. Items to Be Furnished Only: Not Applicable.
- E. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
  - 1. Section 03 30 00 - CAST-IN-PLACE CONCRETE for general building applications of concrete.
  - 2. Section 31 20 00 - EARTH MOVING for subgrade preparation, grading, and subbase course.

1.3 SUBMITTALS

- A. Refer to Section 01 33 00 – SUBMITTAL PROCEDURES, for submittal provisions and procedures.
- B. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
- C. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- D. Qualification Data: For manufacturer and testing agency.

- E. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
  - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.
- F. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:
  - 1. Cementitious materials.
  - 2. Steel reinforcement and reinforcement accessories.
  - 3. Fiber reinforcement.
  - 4. Admixtures.
  - 5. Curing compounds.
  - 6. Applied finish materials.
  - 7. Joint fillers.
- G. Field quality-control test reports.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.
  - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the local authorities having jurisdiction for concrete asphalt paving work.
  - 1. Comply with requirements of the Americans with Disabilities Act (ADA) and the Massachusetts Architectural Access Board (MAAB). If these requirements cannot be met with the grades and slopes indicated on the plans, notify the Designer immediately.
  - 2. Comply with requirements of the local authorities having jurisdiction concerning the location and construction of accessible curb cuts.
- C. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.
- D. Mockups: Cast mockups of full-size sections of concrete pavement to demonstrate typical joints, surface finish, texture, color, and standard of workmanship.
  - 1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Designer.



2. Notify Designer seven days in advance of dates and times when mockups will be constructed.
  3. Obtain Designer's approval of mockups before starting construction.
  4. Maintain approved mockups during construction in an undisturbed condition as a standard for judging the completed pavement.
  5. Demolish and remove approved mockups from the site when directed by Designer.
  6. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.
1. Before submitting design mixtures, review concrete pavement mixture design and examine procedures for ensuring quality of concrete materials and concrete pavement construction practices. Require representatives, including the following, of each entity directly concerned with concrete pavement, to attend conference:
    - a. Contractor's superintendent.
    - b. Independent testing agency responsible for concrete design mixtures.
    - c. Ready-mix concrete producer.
    - d. Concrete pavement subcontractor.
    - e. Owner's Representative.

## 1.5 ADA AND MAAB COMPLIANCE

- A. Comply with American with Disabilities Act (ADA) and the requirements of the Massachusetts Architectural Access Board (MAAB).
1. Slopes: Walkways as defined by Section 22.1 of 521 CMR, shall be graded to a maximum of 4.5%. The cross-pitch (perpendicular to travel) for walkways and paths shall be constructed at 1.5%. The slopes of ramps and side slopes on handicap curb cuts as defined by Section 21.1 of 521 CMR shall be constructed at 7% maximum. Ramps as defined in Section 24.1 of 521 CMR, shall be constructed to a maximum slope of 7%.
  2. The Contractor is to assume that sidewalk grades will be verified and checked with a 2-foot long electronic 'smart level'.
  3. A 5'-0" minimum level area of 1.5% pitch shall be provided at entrances to buildings. Puddling or ponding of water at the entrances will not be accepted.
  4. Handicap parking spaces and access aisles shall be graded level with the slope not to exceed 1.8% in any direction.

5. The requirements specified hereinabove shall supercede the grades indicated on the Drawings. If these requirements cannot be met with the grades indicated on the Drawings, the Designer shall be notified immediately for direction.

## 1.6 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Environmental Limitations: Do not apply concrete materials if subgrade is wet or excessively damp, or if rain is imminent or expected before time required for adequate cure.
- C. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces, at a minimum ambient or surface temperature of 55 deg F for water-based materials, and not exceeding 95 deg F.

## PART 2-PRODUCTS

### 2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
  1. Use flexible or curved forms for curves with a radius 100 feet or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces and contains no PCBs or other restricted chemicals.

### 2.2 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- B. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.
- C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
- D. Galvanized Reinforcing Bars: ASTM A 767/A 767M, Class II zinc coated, hot-dip galvanized after fabrication and bending; with ASTM A 615/A 615M, Grade 60 deformed bars.
- E. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60, deformed bars; assembled with clips.
- F. Plain Steel Wire: ASTM A 82, as drawn.
- G. Deformed-Steel Wire: ASTM A 496.

- H. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.
- I. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.
- J. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice."
- K. Zinc Repair Material: ASTM A 780.

### 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use one of the following cementitious materials, of the same type, brand, and source throughout the Project:
  - 1. Portland Cement: ASTM C 150, Type I or II. Supplement with the following:
    - a. Fly Ash: ASTM C 618, Class C or F.
    - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33, Class 4S coarse aggregate, uniformly graded. Provide aggregates from a single source.
- C. Water: ASTM C 94/C 94M.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: ASTM C 494/C 494M, of type suitable for application, certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

### 2.4 FIBER REINFORCEMENT

- A. Synthetic Fiber: Monofilament or fibrillated polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III.

### 2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

- E. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- F. White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.

## 2.6 AUXILIARY MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1752, cork or self-expanding cork.
- B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.
- C. Pavement-Marking Paint: Acrylic/latex type, low VOC, waterborne emulsion, lead, and chromate free, ready mixed, complying with FS TT-P-1952, with drying time of less than 45 minutes.
  - 1. Color: As indicated.
- D. Detectable Warning Panels shall have dome geometry in accordance with ADA Regulations for Detectable Warning on Curb Ramps. They shall be raised truncated domes with a nominal diameter of 0.9-inches, a nominal height of 0.2-inches, and a center-to-center spacing of 1.6 inches to 2.4-inches. Panels shall be 24-inches deep in the direction of travel and the full width of the proposed ramp. The panel shall be a homogeneous glass and carbon reinforced composite, which is colorfast, and UV stable. The panel is to be colored throughout and not a painted coating. The color is to be contrasting to the background sidewalk color. The panels shall have a compressive strength in excess of 10,000 psi, flexural strength in excess of 3,000 psi and a slip resistance in excess of 0.8 wet or dry.

## 2.7 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, with the following properties:
  - 1. Compressive Strength (28 Days): 4,000 psi.
  - 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
  - 3. Slump Limit: 4 inches, plus or minus 1 inch.
  - 4. Air Content: 5 percent plus or minus 1.5 percent for 3/4-inch nominal maximum aggregate size.
- B. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

- C. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:
  - 1. Fly Ash or Pozzolan: 25 percent.
  - 2. Ground Granulated Blast-Furnace Slag: 50 percent.
  - 3. Combined Fly Ash or Pozzolan, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or pozzolan not exceeding 25 percent.
- D. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate, but not less than 1.0 lb./cu. yd.

## 2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116. Furnish batch certificates for each batch discharged and used in the Work.
  - 1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
  - 1. For concrete mixes of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
  - 2. For concrete mixes larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
  - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

## PART 3-EXECUTION

### 3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- C. Proceed with paving only after unsatisfactory conditions have been corrected.

### 3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

### 3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

### 3.4 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, buildings, frost pads, other fixed objects, and where indicated.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, to match jointing of existing adjacent concrete pavement.
- E. Edging: Tool edges of pavement and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

### 3.5 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Moisten subbase to provide a uniform dampened condition at time concrete is placed.
- C. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

- D. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- E. Screed pavement surfaces with a straight edge and strike off.
- F. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- G. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing, to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
  - 2. Do not use frozen materials or materials containing ice or snow.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.

### 3.6 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
  - 1. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8-inch-deep with a stiff-bristled broom, perpendicular to line of traffic.
- C. Slip-Resistive Aggregate Finish: Before final floating, spread slip-resistive aggregate finish on pavement surface according to manufacturer's written instructions.
  - 1. Cure concrete with curing compound recommended by slip-resistive aggregate manufacturer. Apply curing compound immediately after final finishing.
  - 2. After curing, lightly work surface with a steel wire brush or abrasive stone and water to expose nonslip aggregate.

### 3.7 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb./sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture-retaining-cover curing or curing compound, as follows:
  - 1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - 2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

### 3.8 PAVEMENT TOLERANCES

- A. Accessibility: Comply with requirements of Massachusetts Architectural Access Board and ADAAG requirements. Remove and replace paving that does not meet required tolerances when measured with a 2-foot straight edge.
- B. Comply with tolerances of ACI 117 and as follows:
  - 1. Elevation: 1/4 inch.
  - 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
  - 3. Surface: Gap below 10-foot- long, unlevelled straightedge not to exceed 1/4 inch.
  - 4. Joint Spacing: 3 inches.
  - 5. Contraction Joint Depth: Plus 1/4 inch, no minus.
  - 6. Joint Width: Plus 1/8 inch, no minus.



### 3.9 FIELD QUALITY CONTROL

- A. Independent Testing Agency: Cooperate with the Independent Testing Agency engaged by Owner for field quality control activities for the Work of this Section. Refer also to Section 014325 - TESTING AGENCY SERVICES.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
  - 1. Testing Frequency: Obtain at least 1 composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.
    - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  - 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
  - 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
  - 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
  - 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
  - 6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
    - a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Designer, Owner's Representative, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Designer but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Designer.
- G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.10 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.
- B. Drill test cores, where directed by Designer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION