CITY OF SALEM

INVITATION FOR BID

IFB #26-52-ENG

COLUMBUS AVENUE SEAWALL RECONSTRUCTION PROJECT

April 22, 2026

GENERAL BIDS DUE:

May 14, 2026, at 11:00 AM

Late Bid Submissions Will Be Rejected

DELIVER COMPLETED SUBMISSIONS TO:

City of Salem, MA
Purchasing Department
Attn: Anthony P. Delaney
Salem City Hall
93 Washington St, 2nd Floor
Salem, MA 01970

Questions to:
adelaney@salem.com

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BIDDING AND CONTRACT REQUIREMENTS

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Attachment F – Required Certifications

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COVER SHEET

The City of Salem reserves the right to reject any or all Bids, to omit any item or items called for, or to accept the bids(s) deemed in the best interest of the City. One Original and One copy of the General Bids must be submitted on or before 11:00 AM on May 14, 2026, to:

Anthony P. Delaney
Salem City Hall
93 Washington Street, 2nd Floor
Salem, MA 01970

The envelope containing the Bid and required information must be sealed and marked with Proposer's name, title of proposal, IFB number, and date of opening. The Proposer must sign all required signature pages in order for the proposal to be considered.

The Proposer acknowledges receipt of the following ADDENDA # _____

BUSINESS/INDIVIDUAL NAME _____

ADDRESS _____

CITY, STATE, ZIP CODE _____

TELEPHONE _____

EMAIL _____

INDIVIDUAL/AUTHORIZED SIGNATURE _____

AUTHORIZED OFFICER NAME (print) _____

DATE _____

By signing above, the authorized officer is certifying that a complete examination of all bid/RFP documents has been made and that the goods/services will be delivered within the time specified and at the prices stated.

All bidders must sign and submit with their bid the attached Required Certifications (Attachment F). Failure to do so will result in the bid being unresponsive and rejected.

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INSTRUCTIONS TO BIDDERS

1.01 – PROPOSAL

1. Sealed bids will be received at the time and place as designated by the Owner in the "Invitation For Bid".

2. Proposal envelopes shall be clearly marked "Sealed Bid" and addressed to: City of Salem, Purchasing Department, Salem City Hall, 93 Washington Street, Salem, MA 01970.

3. Bid envelopes shall have bidder's company name and address on the outside.

4. No claims for immunity or exceptions predicated upon misunderstanding or failure to correctly interpret the "Invitation for Bid" or the Contract Documents will be allowed.

1.02– BID SETS

1. Bid sets are available at the City website: https://www.salemma.gov/Bids.aspx . Bid sets are also available at the Purchasing Office, Salem City Hall, 93 Washington Street, Salem, Massachusetts.

1.03 – PRE-BID CONFERENCES AND SITE VISITS

1. A **mandatory pre-bid meeting/site visit** is scheduled for this project for May 6, 2026, at 11:00 AM at the Columbus Avenue Seawall located between 44 Columbus Avenue and 30 Bay View Avenue, Salem, Massachusetts.

1.04 – QUALIFICATION AND LICENSING

1. All Bidders are notified that they must be licensed under prevailing state and local laws and regulations governing the proposed work.

2. All work and materials shall comply in every respect with the building laws, state and town regulations, and the directions of the inspector of buildings and such building laws, regulations and directions are to be considered as a part of the Contract to which it relates.

1.05 – BID WITHDRAWAL

1. Withdrawal or modifications to bids will be allowed only if written notice of a Bidder's desire to withdraw or modify his/her bid is filed prior to the time of bid opening and at the place specified in the request for bids. A notice of a Bidder's desire to withdraw or modify a bid must be signed by the Bidder or his/her designated representative.

2. No bid may be withdrawn for a period of thirty (30) days after the scheduled closing time for the receipt of bids. The Owner reserves the right to accept or reject in whole or in part any or all bids, or take whatever other action that may be deemed to be in its best interest.

1.06 – LOCATION OF SITE

1. The project location is the Columbus Avenue Seawall located between 44 Columbus Avenue and 30 Bay View Avenue, Salem, Massachusetts 01970.

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1.07 – BID/CONTRACT DOCUMENTS

1. The Contract Documents consist of the following:

    1. Invitation for Bid.

    2. Instructions to Bidders and Form for General Bid.

    3. Sample Contract Agreement.

    4. Section C-700, Standard General Conditions of the Construction Contract.

    5. Performance and Payment Bonds.

    6. Technical Specifications.

    7. Attachments: Project Drawings, Sediment Samples, Regulatory Permit Documents, Right-of-Entry's, Prevailing Wage Rates, and Required Certifications.

    8. Addenda.

    9. City issued Purchase Order.

1.08 – OWNER

1 Where the term Owner is used in these Specifications, and other Contract Documents, same refers to City of Salem, Massachusetts, or its authorized representative.

1.09 – ENGINEER

1. Where the term Engineer appears in these Specifications, same refers to GZA GeoEnvironmental, Inc.

1.10 – CONTRACTOR

1 Where the term Contractor or General Contractor is used in the Specifications, it shall mean the Contractor mentioned as such in the Agreement.

2 Where reference is made to Subcontractors, such reference is intended for reasons of clarification and the relationship between the Contractor and said Subcontractors shall be in accordance with the General Conditions.

1.11 – EXPLANATION TO BIDDERS

1 No oral interpretation will be made. Any interpretations made to bidders will be in the form of an addendum to the Specifications and Drawings that will be forwarded to all bidders.

2. Discrepancies, omissions or doubts as to the meaning of Specifications and drawings should be communicated at once to the Purchasing Agent for interpretation. This request for clarification must be made in writing, via email (adelaney@salem.com), prior to the bid opening. Bidders should act promptly

and allow sufficient time for a reply to reach them before the submission of their bids and any interpretation made by the Purchasing Agent and/or the Engineer prior to receipt of bids shall be made a part of the Contract.

3. Requests for clarifications by a prospective Bidder regarding the specifications, or other bid documents must be presented in writing, via email (adelaney@salem.com), to the Purchasing Agent before the bids are opened. Requests shall include the project specification name and date, and shall be directed to the Purchasing Agent.

4. Verbal explanations or instructions will not be binding during the bidding process. Only written addenda are binding. Written addenda resulting from requests for clarifications will be delivered to all listed holders of the Bid Documents no later than (3) business days prior to the bid opening. Addenda may be issued after this date if deemed to be in the best interests of the City by the Purchasing Agent. All Bidders shall acknowledge the receipt of all addenda when submitting their bids.

5. In the absence of an interpretation by the Purchasing Agent and/or Engineer should the Specifications disagree in themselves or with the drawings, the better quality or the greater quantity of work or materials shall be estimated upon and, unless otherwise ordered, shall be furnished.

1.12 – CONDITIONS OF WORK

1 Each bidder shall carefully examine the Contract Documents, shall visit the site, and fully inform himself as to all existing and controlling conditions and limitations. The submission of a bid shall be conclusive evidence that the Bidder is familiar with all such conditions, including the nature, amount, and location of the work, the type of facilities needed preliminary to and during the execution of the work, the general and local conditions, labor conditions, and all other matters which might in any way affect or have a bearing on the work or its cost.

2 The Contractor shall include all charges for labor, material, tools, staging, equipment and supervision that he/she deems necessary in order to complete, in a thoroughly professional and expeditious manner, all the work described hereafter. All work shall be according to code and approved by the proper authority. Material having salvage value shall become the property of the City of Salem. All other material and debris accumulated as a result of this operation shall become the property of the contractor and shall be removed from the premises by him/her. The premises are to be clean and neat, to the satisfaction of the City of Salem and/or designated Consultant.

1.13 – PERMITS, FEES AND NOTICES

1 The successful bidder shall secure all permits and licenses necessary for the proper execution and completion of the work.

2 The Owner will waive or pay for, as applicable, fees for all necessary permits.

1.14 – COOPERATION AND COORDINATION

1 The Owner has entered, or may enter, into separate contracts for work related to the work under this specification.

2 The successful bidder shall cooperate with said contractors and coordinate his work with the work of other trades so that construction will proceed in a rapid and orderly fashion.

1.15 – TIMELY COMPLETION AND LIQUIDATED DAMAGES

1 The Contractor shall start the work under this Contract on written notice on or around June 15, 2026. The Contractor shall start the work on the date set by the Owner and shall continue, without interruption, to completion with all the practical dispatch and regularity. The project shall reach substantial completion no later than June 1, 2027.

2 Liquidated damages in the amount of $500 per day may be enforced should the Contractor not complete the work in full by the dates stated.

1.16 – CONTRACT FORM

1 The successful Bidder will be notified of the award of the Contract in writing, and shall properly execute a contract in accordance with the construction contract agreement within five (5) working days after receipt of such notification.

1.17 – ADDENDA

1 The Owner may, during the bidding period, advise the Bidders by addenda of additions, omissions, or alterations in the Specifications and drawings. All such changes shall become a part of the contract and shall be included in the work covered by the Proposal.

2 No addenda will be issued later than three (3) days prior to the date set for receipt of bids, unless deemed to be in the public's best interest to do so by the Purchasing Agent.

1.18 – TAXES

1 The Owner is exempt from all purchaser taxes. Tax Exempt Number will be supplied to the successful bidder.

1.19 – PROPOSAL SECURITY

1 Each Bidder shall submit with his bid a Bid Security in the amount of five percent (5%) of the total bid price. The Bid Security shall consist of Cash, Certified Check, or Bidder's Bond.

1.20 – LABOR/MATERIALS PAYMENT BOND & PERFORMANCE BOND

1 Before Contract signing, the Contractor shall furnish the Owner with a Labor/Materials Payment Bond and a Performance Bond both in the amount of one hundred percent (100%) of the Contract price, to insure completion of work and payment for all labor and materials furnished on the project.

2 The bonds shall be written in conformance with Massachusetts General Laws, Chapter 149, Section 29, as amended.

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1.21 – CONTRACTOR'S LIABILITY INSURANCE

1 See the insurance requirements and minimum coverage amounts listed in the attached Sample Contract Agreement.

1.22 – COMPETENCY OF BIDDERS AND REFERENCES

1 No contract will be awarded to any person, firm, or corporation that is in arrears or is in default to the Owner upon any debt or contract, or that is a defaulter, as surety or otherwise, upon any obligation to the Owner, or has failed to perform faithfully any previous contract with the Owner.

2 All Bidders must supply a list of references for similar projects performed over the last five years providing names, addresses and contract person with telephone number on each project. **This reference list is to be submitted with the bid**.

3 Bidders must provide a qualified stone mason with demonstrated proficiency in stone masonry construction/restoration practices. Documentation in the form of at least three (3) successfully completed stone masonry projects of similar type and scale shall be presented with the bid.

1.23 – AWARD & EXECUTION OF CONTRACT

1 This contract shall be awarded to the lowest responsible and eligible bidder based upon the grand total as indicated on the bid price sheet and as in accordance with MGL Ch. 149. Such a bidder must possess the skill, ability and integrity necessary for the faithful performance of the work and shall establish his ability to comply with the schedule of work outlined in the Contract section. The term "lowest responsible and eligible bidder" as used herein shall mean the bidder whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work within the time limit allowed.

2 The selected General Bidder must agree to commence work within five (5) days of execution of a General Contract and to substantially complete all Work in accordance with the phasing schedule contained in the Contract Documents.

1.24 – PAYMENT OF MA PREVAILING WAGE

1 Attached copies of Prevailing Wage Rates and the Statement of Compliance forms from Mass. Dept. of Labor and Industries shall apply to the labor required to perform all work. Those rates must be reviewed and complied with. Certified Weekly Payroll documents shall be sent to the Purchasing Office, 93 Washington Street, 2nd Floor, Salem, MA 01970 or emailed directly to adelaney@salem.com. They shall be sent three (3) business days after the close of the previous work week.

1.25 – PREPARATION OF GENERAL BIDS

1 Each General Bid shall be submitted on the prescribed FORM FOR GENERAL BID.

2 Each General Bid shall submit one original copy of their bid to the City.

3 Every bid which is not accompanied by a bid deposit, in the amount of five percent (5%) of the total bid price, or which does not otherwise conform to sections 44A-44H, inclusive, of Chapter 149 of the General Laws, or which is on a form not completely filled in, or which is incomplete, conditional or obscure, or which contains any addition not called for, will be rejected. All blank spaces on the bid form shall be filled in, in ink or type- written, in words and figures, without alterations or erasures. Use figures alone only where no space is provided for words. Every bid shall be signed in longhand by the Bidder and shall give the Bidder's business address.

4 All bids for this Project are subject to the provisions of Massachusetts General Laws (Ter. Ed.), Chapter 30, Section 39M as amended and Chapter 149, Sections 44A through 44L inclusive and Chapter 149, Sections 26 through 27D inclusive.

1.26 – SUBMISSION OF GENERAL BIDS

1 Each General Bid shall be submitted on the FORM FOR GENERAL BID furnished by the Owner, or copied from the bound Project Manual. All blank spaces shall be filled in, in ink or typewritten, in words or figures without alterations or erasure. Use figures alone only where no space is provided for words. The FORM FOR GENERAL BID must be signed in longhand by the General Bidder and shall give the general bidder's business address. The Form for General Bid, including the Bid Security, shall be enclosed in a sealed envelope with the following plainly marked on the outside:

GENERAL BID FOR:
COLUMBUS AVENUE SEAWALL RECONSTRUCTION PROJECT

If the Bid is mailed, the Bidder shall enclose his sealed Bid in an outer envelope, addressed as follows:

FROM: General Bidder's Name and Business Address
COLUMBUS AVENUE SEAWALL RECONSTRUCTION PROJECT

To: Anthony P. Delaney
Salem City Hall
93 Washington St., 2nd Floor
Salem, MA 01970

1 Each General Bidder shall include the following with their Bid:

a. Form for the General-Bid

b. Bid Security

c. Reference List

d. Attachment F- Required Certifications

e. Acknowledgement of Addenda

2 All bidders are cautioned to allow ample time for transmittal of Bids. Bids received after the specified time and date will not be accepted nor recognized. The time of receipt will determine the acceptability of mailed bids, regardless of postmark.

3 Any bid may be withdrawn prior to the time scheduled for the opening of such bids or authorized postponement thereof. No bid may be withdrawn for thirty (30) days, Saturdays, Sundays and legal holidays excluded, after opening of General Bids. No telephone or telegraphic bid, change in bid or withdrawal of bid will be received nor recognized

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FORM FOR GENERAL BID

To: City of Salem, Massachusetts, Awarding Authority

From: _____ Contractor

A. COLUMBUS AVENUE SEAWALL RECONSTRUCTION PROJECT

1 BASE BID: The undersigned proposes to furnish all labor and materials required for Project located in Salem, Massachusetts, in accordance with the Contract Documents. The following Base Bid Pricing reflect the respective bid item breakdowns indicated in Table 1 following the Bid Summary

_____ Dollars

(Total Base Bid price in words, which governs)

(_____)

(Total Base Bid price amount in numbers)

TABLE NO. 1 – BASE BID				
ITEM NO.	QUANTITY	ITEM OF WORK WITH UNIT PRICE IN WORDS	UNIT PRICE	TOTAL PRICE
02002-1	1 LS	Mobilization and Demobilization at_____ _____ Dollars & Cents/Lump Sum		
02002-2	Allowance	Implementation of Storm Contingency Plan at *Twenty-Five Thousand* Dollars & Cents/Allowance	$25,000.00	$25,000.00
02002-3	Allowance	Implementation of Traffic Management Plan at *Sixty-Six Thousand* Dollars & Cents/Allowance	$66,000.00	$66,000.00
02100-1	1 LS	Demolition, Removal and Disposal at_____ _____ Dollars & Cents/Lump Sum		
02100-2	Allowance	Implementation of Rodent Control at *Ten Thousand* Dollars & Cents/Allowance	$10,000.00	$10,000.00
02200-1	50 CY	Gravel Borrow at_____ _____ Dollars & Cents/Cubic Yard		
02200-2	150 CY	Crushed Stone at_____ _____ Dollars & Cents/Cubic Yard		

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TABLE NO. 1 – BASE BID				
ITEM NO.	QUANTITY	ITEM OF WORK WITH UNIT PRICE IN WORDS	UNIT PRICE	TOTAL PRICE
02200-3	1,000 SY	Filter Fabric at_____ _____ Dollars & Cents/Square Yard		
02250-1	484 LF	Wall Reconstruction at_____ _____ Dollars & Cents/Linear Foot		
02250-2	1,400 Ton	Stone Blocks at_____ _____ Dollars & Cents/Ton		
02250-3	250 CY	Concrete Footing at_____ _____ Dollars & Cents/Cubic Yard		
02250-4	1 LS	Landing Reconstruction at_____ _____ Dollars & Cents/Lump Sum		
02250-5	1 LS	Flood Gate Barrier at_____ _____ Dollars & Cents/Lump Sum		
02250-6	11 EA	Stone Pillars/ Planters at_____ _____ Dollars & Cents/Each		
02495-1	1 LS	Miscellaneous Site Improvements at_____ _____ Dollars & Cents/Lump Sum		
02500-1	1 LS	Salt Marsh at_____ _____ Dollars & Cents/Lump Sum		
TOTAL BASE BID PRICE IN WORDS:			TOTAL BASE BID PRICE:	

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Owner reserves the right to add or delete items from this list. The price of the contract shall be adjusted accordingly. The price set forth herein includes any and all costs and expenses of whatever source or nature for the work to be performed pursuant to the terms and conditions of the Contract Documents.

If awarded the contract, the undersigned hereby agrees to sign said contract and to furnish the necessary bonds within five (5) working days after being requested to do so by the Owner.

The undersigned has examined the location of the proposed work and is familiar with the Contract Documents and the local conditions at the place where the work is to be done.

The undersigned has carefully checked all of the above figures and understands that the Owner will not be responsible for any errors or omissions on the part of the undersigned in making up this bid.

The undersigned hereby certifies that this bid is genuine, and not sham or collusive, or made in the interest or in behalf of any person not herein named, and that the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid or any other person, firm or corporation to refrain from bidding and that the undersigned has not in any manner sought by collusion to secure for himself or herself an advantage over any other bidder.

Enclosed find bidder's bond or certified check in the amount of five (5%) percent of the bid for _____($_____) to guarantee execution of contract and furnishing of the necessary bonds as above provided, if awarded the contract.

The undersigned has satisfied him/herself by personal examination of the location of proposed work, and by such other measures as they may prefer, as to the actual conditions and requirements of the work, and shall not, after submission of the bid, dispute, complain or assert that there was any misunderstanding in regard to the nature or amount of the work to be done.

B. ADDENDA: This Bidder has received, and this bid includes the following addenda of which receipt is hereby acknowledged:

Date	Number	Date	Number
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

C. CONTRACT: The undersigned agrees that, if he is selected as general contractor, he will within ten (10) 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.

D. EXAMINED CONDITIONS & DOCUMENTS: The undersigned Bidder hereby declares that he has visited the site, the conditions present, and has carefully examined the Contract Documents, together with all

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Addenda issued, received and acknowledged, and has familiarized himself with the legal requirements (federal, state, and local laws, ordinances, and rule and regulations) and other conditions which may affect the cost, progress or performance of Work, and has made independent investigations, deemed necessary by the Bidder.

E. LABOR: The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that he will comply fully with all laws and regulations applicable to awards made subject to section forty-four A of Chapter 149 of the Massachusetts General Laws.

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

G. OSHA COMPLIANCE CERTIFICATION: The undersigned agrees that if he is selected as the contractor, he will comply with the provisions of M.G.L. Chapter 30, Section 39S. The undersigned certifies, under penalties of perjury, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

H. TAXES: As required by MGL, Chapter 62C, s49A, the undersigned certifies that the bidder has complied with all laws of the Commonwealth relating to taxes.

I. DEBARMENT: The undersigned further certifies under penalties of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under provisions of Section 29F of Chapter 29, or any other applicable debarment provisions of any other Chapter of the General Laws or any rule or regulation promulgated thereunder.

J. TIME OF COMPLETION: If selected Contractor the undersigned agrees to begin and complete the work as specified in the Contract Documents.

K. AUTHORITY RIGHTS: The Bidder understands the Awarding Authorities right to reject any and all bids. Should the Invitation to Bid, Instruction to Bidders, Form For General Bid, Conditions of the Contract, Plans or Specifications require submission of special data to accompany the Bid, the Awarding Authority reserves the right to rule the bidder’s failure to submit such data an informality and to receive said data subsequently, within a reasonable time as set by the Authority.

The Bidder acknowledges that no proposal may be withdrawn for 30 days, Saturdays, Sundays, and legal holidays excluded, after opening of bids per MGL c. 149, 44A(3).

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Date: _____

Name of Bidder: _____

By: _____ _____

(Signature) (Title of Person Signing Bid)

_____

(Business Address)

_____

(City and State)

_____

Telephone Fax E-Mail

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REFERENCES FORM

Bidders Name: _____

Bidders Address: _____

_____

Bidder must provide references for similar projects performed within the past five years. Bidders must provide a qualified stone mason with demonstrated proficiency in stone masonry construction/restoration practices. Documentation in the form of at least three (3) successfully completed stone masonry projects of similar type and scale shall be presented with the bid. Attach additional pages if necessary.

Reference:_____ Contact:_____

Address: _____ Phone: _____

_____ Fax: _____

Description and date of Project: _____

_____

Reference:_____ Contact:_____

Address: _____ Phone: _____

_____ Fax: _____

Description and date of Project: _____

_____

Reference:_____ Contact:_____

Address: _____ Phone: _____

_____ Fax: _____

Description and date of Project: _____

_____

Reference:_____ Contact:_____

Address: _____ Phone: _____

_____ Fax: _____

Description and date of Project: _____

_____

USE ADDITIONAL PAGES IF NECESSARY

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CORPORATE VOTE

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

_____ held on _____ at which all the Directors were present or waived notice, it was voted that _____, _____ of this company, be and he/she hereby is authorized to execute contracts and bonds in the name and behalf of said company, and affix its Corporate Seal thereto, and such execution of any contract or obligation in this company's name on its behalf by _____, shall be binding upon this company.

A TRUE COPY ATTEST:

Clerk,

Date of this Contract

_____

I hereby certify that I am the Clerk of _____, that _____ is duly elected _____ of said company, and the above vote has not been amended or rescinded and remains in full force and effect as of the date of this contract.

_____
Clerk Corporate Seal

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF _____,

_____
Notary Public

If a corporation complete above or attach to each signed copy of the bid/written request/quotation, a notarized copy of vote of corporation authorizing the signatory to sign this bid/written request/quotation form. If attesting clerk is the same person as the individual executing this contract, have signature notarized above.

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SAMPLE CONTRACT AGREEMENT

CITY OF SALEM
CONTRACT FOR SERVICES
Over $10,000

This agreement is made and entered into by and between the City of Salem (hereinafter the CITY), a municipal corporation organized and existing under the laws of the Commonwealth of Massachusetts, and _____ (hereinafter the CONTRACTOR).

ARTICLE I. DEFINITION.
This CONTRACT as used herein shall mean these articles, and the "contract documents" which include but are not limited to the following identified items and all documents, and forms submitted therewith, or attached hereby.

- ❒ Attachment A: Scope of Services, and/or other bid package materials
- ❒ Attachment B: Additional Contract Terms and Conditions
- ❒ Attachment C: Statement of Corporate Authority
- ❒ Addenda: _____

ARTICLE II. AMOUNT AND DURATION.
This CONTRACT in an amount not to exceed $_____ shall commence on or about _____ and shall terminate no later than _____, unless a written amendment to renew or extend this CONTRACT is executed in accordance with the provisions of this CONTRACT.

ARTICLE III. PERFORMANCE.
The Contractor agrees to provide all goods and/or services set forth in Invitation for Bids, Documents, Scope of Services, and the CONTRACTOR's bid _____ and/or as outlined in ATTACHMENT A - SCOPE OF SERVICES.

ARTICLE IV. TERMINATION.
Without Cause. The CITY may terminate this CONTRACT on sixty (60) calendar days notice, or may suspend this CONTRACT for up to sixty (60) calendar days upon receipt of notice, when in the best interests of the City by providing notice to the CONTRACTOR, which shall be in writing and shall be deemed delivered and received when given in person to the CONTRACTOR, or when received by fax, express mail, certified mail return receipt requested, regular mail postage prepaid or delivered by any other appropriate method evidencing actual receipt by the CONTRACTOR.

For Cause. If the CONTRACTOR is determined by the CITY to be in default of any term or condition of CONTRACT, the CITY may terminate this contract on thirty (30) days notice by providing notice to the CONTRACTOR, which shall be in writing and shall be deemed delivered and received when given in person to the CONTRACTOR, or when received by fax, express mail, certified mail return receipt requested, regular mail postage prepaid or delivered by any other appropriate method evidencing actual receipt by the CONTRACTOR. If the CITY is determined by the CONTRACTOR to be in default of any term or condition of this CONTRACT the CONTRACTOR may terminate this contract on thirty (30) days notice by providing notice to the CITY, which shall be in writing and shall be deemed delivered and received when given in person to the CITY, or when received by fax, express mail, certified mail return receipt requested, regular mail postage prepaid or delivered by any other appropriate method evidencing actual receipt by the CITY.

Default. The following shall constitute events of default under this CONTRACT: a) any material misrepresentation made by the CONTRACTOR to the CITY, b) any failure to perform any of its obligations under this CONTRACT including, but not limited to the following: (i) failure to commence performance of this CONTRACT at the time specified in this CONTRACT due to a reason or circumstance within the CONTRACTOR'S reasonable control, (ii) failure to perform this CONTRACT with sufficient personnel and equipment or with sufficient material to ensure the completion of this CONTRACT within the specified time due to a reason or circumstance within the CONTRACTOR'S reasonable control, (iii) failure to performance this CONTRACT in a manner reasonably satisfactory to the CITY, (iv) failure to promptly re-perform with reasonable time the services that were

rejected by the CITY as unsatisfactory, or erroneous, (v) discontinuance of the services for reasons not beyond the CONTRACTOR'S reasonable control, (vi) failure to comply with a material term of this CONTRACT, including, but not limited to, the provision of insurance and nondiscrimination, and (vii) any other acts specifically and expressly stated in this CONTRACT as constituting a basis for termination of this CONTRACT, and (viii) failure to comply with any and all requirements of state law, and/or regulations, and City ordinances, and/or regulations.

ARTICLE V. REMEDIES OF THE CITY.

The CITY may deduct the cost of any substitute contract or performance for expenses, losses, and all damages, including incidental and consequential damages as a result of any event of non-conformance or non-performance of the CONTRACTOR in complying with the terms of this CONTRACT, and shall withhold such expenses, losses, and damages from sums due, or to become due.

ARTICLE VI. REMEDIES OF THE CONTRACTOR.

If the damages, other than loss, non-conformance, or non-performance, are actually sustained by the CONTRACTOR due to any act or omission for which the CITY is legally responsible the CITY shall allow a sum equal to the amount of such damages sustained by the Contractor as determined by the CITY in writing, provided the Contractor shall have provided to all signatories of the contract a detailed written statement of such damages and cause thereof within 30 days of the act of omission by the CITY.

ARTICLE VII. ASSIGNABILITY.

The CONTRACTOR shall not assign, subcontract or in any way transfer any interest in this contract without the prior written consent of the Procurement Officer of said City. In the event of such occurrence the City reserves the right to deal with any assignee subcontractor or transferee directly and the contractor agrees to remain bound by all terms and conditions of this contract in accordance with its original tenor. The provisions of this CONTRACT shall be binding upon, and shall inure to the benefit of, the successors and assigns of the CONTRACTOR and any public body or bodies succeeding the interests of the CITY.

ARTICLE VIII. INDEMNIFICATION.

The CONTRACTOR shall assume the defense, indemnify and hold harmless the CITY, the CITY'S agents and employees, from and against all losses and all claims, demands, payments, suits, actions, recoveries and judgments of every nature and description brought or recovered against them by reason of acts, in actions, omissions, negligence, reckless or intentional misconduct of the said CONTRACTOR, its agent(s), officers, employees, or subcontractors; in the execution of the work or in guarding the same. Unless otherwise provided by law, the CITY may elect to indemnify the CONTRACTOR for claims arising in tort if it is determined that the CONTRACTOR performed its obligations under this CONTRACT pursuant to the direct supervision and control of the CITY or its designated agent(s).

ARTICLE IX. WORKER'S COMPENSATION AND OTHER INSURANCE.

The CONTRACTOR shall provide by insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 of the General Laws of Massachusetts (The Worker's Compensation Act) to all employees of the CONTRACTOR who are subject to the provisions of Chapter 152 of the General Laws of Massachusetts.

Failure to provide and continue in force such insurance during the period of this contract shall be deemed a material breach of this contract, shall operate as an immediate termination thereof, and CONTRACTOR shall indemnify the CITY for all losses, claims, and actions resulting from the failure to provide the insurance required by this Article.

Prior to commencement of any work and until completion of its work under this CONTRACT shall maintain the following insurance coverage, at its cost, from insurance acceptable to the CITY, giving evidence of such coverage to the CITY prior to execution of this CONTRACT, a copy of such insurance coverage to be attached herewith:

General - The Vendor shall before commencing performance of the Contract be responsible for providing and maintaining insurance coverage in force for the life of the Contract of the kind and in adequate amounts to secure all of the obligations under the Contract and with insurance companies licensed to write insurance in the Commonwealth of Massachusetts. All

such insurance carried shall not be less than the kinds and amounts designated herein, and the Vendor agrees that the stipulation herein of the kinds and limits of coverage shall in no way limit the liability of the Vendor to any such kinds and amounts of insurance coverage. All policies issued shall indemnify and save harmless the City of Salem, its agents and employees from any and all claims for damages to persons or property as may rise out of the performance of this Contract.

Vendor's Comprehensive General Public Liability and Property Damage Liability Insurance - The Vendor shall carry Comprehensive General Liability Insurance providing for a limit of not less than One Million Dollars ($1,000,000.00) for all damages arising out of bodily injury to or death of one person, and subject to that limit for each person, a total limit of not less than Two Million Dollars ($2,000,000.00) for all damages arising out of bodily injuries or death of two or more persons in any one accident; and Vendor's Comprehensive Property Damage Liability Insurance providing for a limit of not less than One Million Dollars ($1,00,000.00) for all damages arising out of injury to or destruction of property in any one accident, and subject to that limit per accident, a total (or aggregate) limit or not less than Two Million Dollars ($2,000,000.00) for all damages arising out of injury to or destruction of property during the policy period.

Comprehensive Automotive and Property Damage Insurance - The Vendor shall carry Automobile Insurance covering all owned vehicles, hired vehicles or non-owned vehicles under the control of the Vendor while performing work under the Contract in the amount of not less than One Million Dollars ($1,000,000.00) for all damages arising out of bodily injuries to or death of one person and subject to that limit for each person, a total of not less than Two Million Dollars ($2,000,000.00) for all damages arising out of bodily injuries to or death of two or more persons in any one accident; and Property Damage coverage in the amount of not less than One Million Dollars (1,000,000.00) for all damages to or destruction of property.

Excess Umbrella Liability Policy - $1,000,000.00

The Vendor must carry Workman's Compensation Insurance in the amounts prescribed under Massachusetts State Law and meet all other City and State Laws and Regulations.

No cancellation(s) of such insurance, whether by the insurer or by the insured party shall be valid unless written notice thereof is given by the parties proposing cancellation to the other party and to the City of Salem at least fifteen (15) days prior to the intended effective date thereof, which date shall be expressed in said notice, which shall be sent by registered mail, return receipt requested. These provisions shall apply to the legal representative(s), trustee in bankruptcy, receiver, assignee, trustee, and successor(s) in interest of the Vendor.

All insurance coverage shall be at the sole expense of the Vendor and shall be placed with such company as may be acceptable to the City of Salem and shall constitute a material part of the contract documents.

Failure to provide written proof to City and continue in force such insurance as aforesaid shall be deemed a material breach of the contract, and may constitute sufficient grounds for immediate termination of the same.

All required insurance must be endorsed to name the CITY as Additional Insured. The General Liability policy shall be endorsed to waive the insurer's rights of subrogation against the City. All policies and certificate for insurance must contain language that the insurance shall not be canceled, materially changed or non-renewed without at least thirty (30) days advance written notice to the CITY. The CONTRACTOR under this CONTRACT shall not allow it subcontractors to begin work until similar insurance has been so obtained and certificates of insurance approved by the CONTRACTOR.

ARTICLE X. CORPORATE CONTRACTOR.

If CONTRACTOR is a corporation, CONTRACTOR shall endorse the Certificate of Corporate Authority for the CONTRACTORS' signatory, or shall otherwise provide a form similar in nature and substance acceptable to the CITY.

If CONTRACTOR is a non-profit corporation, CONTRACTOR shall provide satisfactory proof of present status as a non-profit corporation. Such proof shall be in the form of a certification from the Massachusetts Secretary of State's office and/or from the Internal Revenue Service and shall provide the Federal Tax Identification Number of the non-profit corporation. This

agreement shall not be enforceable against the CITY unless and until the CONTRACTOR complies with this section. Failure to inform the CITY in writing of revocation, or other loss of non-profit status shall be deemed a material breach of this contract and operate as an immediate termination thereof.

ARTICLE XI. SUBJECT TO APPROPRIATION.

The obligations of the CITY under this CONTRACT shall be subject to appropriation. In the absence of appropriation this CONTRACT shall be immediately terminated without liability for damages, penalties, or other charges.

In the requisite circumstances, the obligations of the CITY under this CONTRACT shall be subject to the formal award of the state, federal grant.

ARTICLE XII. DOCUMENTS, MATERIALS, ETC.

Any materials, reports, information, data, etc. given to or prepared or assembled by the CONTRACTOR under this CONTRACT are to be kept confidential and shall not be made available to any individual or organization by the CONTRACTOR (except agents, servants, or employees of the CONTRACTOR) without the prior written approval of the CITY, except as otherwise required by law. The CONTRATOR understands that he/she/it may acquire or have access to "personal data" otherwise kept by the CITY. The CONTRACTOR shall comply with the provisions Chapter 66A of the General Laws of Massachusetts as it relates to public documents, and all other state and federal laws and regulations relating to confidentiality, security privacy and use of confidential data.

Any materials produced in whole or in part under this CONTRACT shall not be subject to copyright, except by the CITY, in the United States or any other country. The CITY shall have unrestricted authority to, without payment of any royalty, commission, or additional fee of any type or nature, publicly disclose, reproduce, distribute and otherwise use, and authorize others to use, in whole or in part, any reports, data or other materials prepared under this CONTRACT.

All data, reports, programs, software, equipment, furnishings, and any other documentation or product paid for by the CITY shall vest in the CITY at the termination of this CONTRACT. The CONTRACTOR shall at all times, during or after termination of this CONTRACT, obtain the prior written approval of the CITY before making any statement bearing on the work performed or data collected under this CONTRACT to the press or issues any material for publication through any medium.

ARTICLE XIII. AUDIT, INSPECTION, RECORD KEEPING.

At any time during normal business hours, and as often as the CITY may deem it reasonably necessary, there shall be made available in the office of the CONTRACTOR for the purpose of audit, examination, and/or to make excerpts or transcripts, all records, contracts, invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this agreement.

Further the CONTRACTOR agrees to make its work papers, records and other evidence of audit available to the CITY for a period of three years after final payment under his CONTRACT. The CITY shall be entitled to reproduce any or all such documents at its own expense, for which provision shall be made at such time.

ARTICLE XIV. WEEKLY PAYROLL RECORDS REPORT.

In accordance with Massachusetts General Law c. 149, s. 27B, a true and accurate record must be kept of all individuals employed on a public works construction project for which prevailing wage rates are applicable.

In addition, every contractor and subcontractor is required to submit, on a weekly basis, a copy of their weekly payroll records to the awarding authority. Once collected, the awarding authority is also required to preserve those records for three years.

ARTICLE XV. CONFLICT OF INTEREST.

CITY. No officer, member or employee of the CITY and no members of its governing body who exercise any function or responsibility in review or approval of the undertaking or carrying out of this CONTRACT shall participate in any decision

relating to the CONTRACT which affects his/her personal interests or the interest of any corporation, partnership, or association in which he/she has a direct or indirect pecuniary interest. None of the services to be provided by the CONTRACTOR shall be used for any partisan political activity or further the election or defeat of any candidate for political office in the CITY. Compliance with this section shall be material to the CONTRACT.

CONTRACTOR. CONTRACTOR agrees that his/her/its agents, servants, and employees have neither presently nor during the period of this CONTRACT any interest direct or indirect which would impair, detract, or conflict in any manner or degree with the performance of services required under this CONTRACT. The CONTRACTOR, his/her/its agents, servants or employees further stipulates that in the performance of this CONTRACT, no person having any such interest shall be employed. Conflicts of Interest include but are not limited to (a) immediate family relationships with officials of the CITY, (b) instances where the CONTRACTOR, his/her/it agents, servants or employees during the period of this CONTRACT was connected as an officer, employee or member of the governing body of the CITY, and (c) instances where the CONTRACTOR has an interest in any CITY department, its agents, servants or employees or parcels of land within the CITY. Compliance with this section shall be material to the CONTRACT.

ARTICLE XVI. PAYMENT.

The CITY agrees to make all reasonable efforts to pay to the CONTRACTOR the sum set forth in the CONTRACTOR'S bid or proposal within thirty (30) days of receipt of an invoice at the Office of the City Auditor detailing the work completed.

Subject to pending statutory appeal rights, CONTRACTOR agrees that all sums otherwise due and payable to the CITY for outstanding taxes, fines, fees and or other municipal charges may be deducted from the sum(s) otherwise payable under this CONTRACT prior to disbursement to the CONTRACTOR.

ARTICLE XVII. CONFLICT.

In the event there is a conflict between these Articles and any attachments, then the attachments shall supersede these Articles.

ARTICLE XVIII. WAIVER AND AMENDMENT.

Amendments, or waivers of any additional term, condition, covenant, duty or obligation contained in this CONTRACT may be made only by written amendment executed by all signatories to the original agreement, prior to the effective date of the amendment.

To the extent allowed by law, all conditions, duties, and obligations contained in this CONTRACT may be waived only by written agreement by both parties.

Forbearance or indulgence in any form or manner by a party shall not be construed as a waiver, nor in any manner limit the legal or equitable remedies available to that party. No waiver by either party of any default or breach shall constitute a waiver of any subsequent default or breach of a similar or different matter.

ARTICLE XIX. CERTIFICATION.

IN WITNESS WHEREOF, THE CONTRACTOR CERTIFIES, UNDER THE PAINS AND PENALTIES OF PERJURY, THAT THE CONTRACTOR IS IN COMPLIANCE WITH EACH OF THE FOLLOWING:

TAXES. PURSUANT to M.G.L. c. 62C, s. 49A, the CONTRACTOR has filed all state tax returns and complied with all laws of the Commonwealth relating to taxes.

DEBARMENT. The CONTRACTOR is not currently debarred or suspended by the Commonwealth of Massachusetts, or any of its entities or subdivisions.

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AMERICANS WITH DISABILITIES ACT. The CONTRACTOR is aware of the recently enacted Americans with Disabilities Act which prohibits discrimination based upon disability and shall meet any relevant standards, and/or conditions set out in the bid/proposal documents, bid/proposal specifications.

ARTICLE XX. FORUM AND CHOICE OF LAW

This CONTRACT and any performance herein shall be governed by and be construed in accordance with the laws of Commonwealth. Any and all proceedings or actions relating to subject matter herein shall be brought and maintained in the courts of the Commonwealth or the federal district court sitting in the Commonwealth, which shall have exclusive jurisdiction thereof. This paragraph shall not be construed to limit any other legal rights of the parties.

IN WITNESS WHEREOF the parties have hereto and to three other identical instruments set forth their hands the day and year first above written.

THE CITY:

_____
Dominick Pangallo,
Mayor

_____
Anthony P. Delaney,
Chief Procurement Officer

Approved as to form:

_____
Elizabeth Rennard, Esq.,
City Solicitor

Approved as Contract Manager:

_____
Jay Carroll
City Engineer

I certify that funds have been encumbered
in the amount of : $

_____
Anna Freedman,
Finance Director

THE CONTRACTOR:

_____
Authorized Signature

_____
Print Name

_____
Print Title

_____
Company

_____
Status (Corporate/Non- Corporate)

_____
Taxpayer Identification Number

_____
Date

IFB #26-52-ENG

CERTIFICATE OF CORPORATE AUTHORITY

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:

PERFORMANCE BOND

Contractor	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Contract**
Name: City of Salem	Description *(name and location)*:
Mailing address *(principal place of business)*:	Columbus Avenue Seawall Reconstruction Project (IFB #26-52-ENG)
93 Washington Street, Salem, MA 01970	Contract Price:
	Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

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

Contractor as Principal	Surety
_____	_____
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature)(Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____

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

EJCDC® C-610, Performance Bond.
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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

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statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

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

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

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

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

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

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

16. Modifications to this Bond are as follows: None.

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PAYMENT BOND

Contractor	**Surety**
Name: Address *(principal place of business)*:	Name: Address *(principal place of business)*:
Owner	**Contract**
Name: City of Salem Mailing address *(principal place of business)*: 93 Washington Street, Salem, MA 01970	Description *(name and location)*: Columbus Avenue Seawall Reconstruction Project (IFB #26-52-ENG) Contract Price: Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

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

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

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

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

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

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

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

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

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

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

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

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

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

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

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

    7.2. Pay or arrange for payment of any undisputed amounts.

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

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

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

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

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

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

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

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

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

16. Definitions

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

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

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16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

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

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

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

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

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

18. Modifications to this Bond are as follows: None.

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

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GUIDELINES FOR USE OF EJCDC® C-700, STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

1.0 PURPOSE AND INTENDED USE OF THE DOCUMENT

EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), is the foundation document for the EJCDC Construction Series. The General Conditions define the basic rights, responsibilities, risk allocations, and contractual relationship of the Owner and Contractor, and establish how the Contract is to be administered.

2.0 OTHER DOCUMENTS

EJCDC documents are intended to be used as a system and changes in one EJCDC document may require a corresponding change in other documents. Other EJCDC documents may also serve as a reference to provide insight or guidance for the preparation of this document.

These General Conditions have been prepared for use with either EJCDC® C-520, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price), or EJCDC® C-525, Agreement Between Owner and Contractor for Construction Contract (Cost-Plus-Fee) (2018 Editions). The provisions of the General Conditions and the Agreement are interrelated, and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018).

The full EJCDC Construction series of documents is discussed in the EJCDC® C-001, Commentary on the 2018 EJCDC Construction Documents (2018).

3.0 ORGANIZATION OF INFORMATION

All parties involved in a construction project benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. Careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition) when preparing documents. EJCDC® N-122/AIA® A521 is available at no charge from the EJCDC website, www.ejcdc.org, and from the websites of EJCDC's sponsoring organizations.

If CSI MasterFormat™ is used for organizing the Project Manual, consult CSI MasterFormat™ for the appropriate document number (e.g., under 00 11 00, Advertisements and Invitations), and accordingly number the document and its pages.

4.0 EDITING THIS DOCUMENT

Remove these Guidelines for Use. Some users may also prefer to remove the two cover pages.

Although it is permissible to revise the Standard EJCDC Text of C-700 (the content beginning at page 1 and continuing to the end), it is common practice to leave the Standard EJCDC Text of C-700 intact and unaltered, with modifications and supplementation of C-700's provisions set forth in EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018). If the Standard Text itself is revised, the

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1. The term "Standard EJCDC Text" for C-700 refers to all text prepared by EJCDC in the main body of the document. Document covers, logos, footers, instructions, or copyright notices are not Standard EJCDC Text for this purpose.
2. During the drafting or negotiating process for C-700, it is important that the two contracting parties are both aware of any changes that have been made to the Standard EJCDC Text. Thus, if a draft or version of C-700 purports to be or appears to be an EJCDC document, the user must plainly show all changes to the Standard EJCDC Text, using "Track Changes" (redline/strikeout), highlighting, or other means of clearly indicating additions and deletions.
3. If C-700 has been revised or altered and is subsequently presented to third parties (such as potential bidders, grant agencies, lenders, or sureties) as an EJCDC document, then the changes to the Standard EJCDC Text must be shown, or the third parties must receive access to a version that shows the changes.
4. Once the document is ready to be finalized (and if applicable executed by the contracting parties), it is no longer necessary to continue to show changes to the Standard EJCDC Text. The user may produce a final version of the document in a format in which all changes are accepted, and the document at that point does not need to include any "Track Changes," redline/strikeout, highlighting, or other indication of additions and deletions to the Standard EJCDC Text.

5.0 LICENSE AGREEMENT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

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

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

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

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

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

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

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

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

10. *Claim*

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

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requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

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

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

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

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

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

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

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

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

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

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recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

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

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

24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

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

26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

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

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

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

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

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

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

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

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

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

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

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

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

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

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

41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

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

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43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.

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

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

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

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

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

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

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1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

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

1. does not conform to the Contract Documents;

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

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

E. *Furnish, Install, Perform, Provide*

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

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

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

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

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F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

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

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

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

2.02 *Copies of Documents*

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

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

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

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

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

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into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

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

2.05 *Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

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

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

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

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

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ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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

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

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

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

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

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

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

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

3.02 *Reference Standards*

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

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

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

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inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

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

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

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

B. *Resolving Discrepancies*

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

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

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

3.04 *Requirements of the Contract Documents*

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

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

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

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

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

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

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

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

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

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established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

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

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

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

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

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D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

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

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

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

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

5.02 *Use of Site and Other Areas*

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

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

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

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

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

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and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

5.03 *Subsurface and Physical Conditions*

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

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

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

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

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

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

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

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

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

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

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

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Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

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

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

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

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

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

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

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3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

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

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

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

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

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or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

c. Contractor gave the notice required in Paragraph 5.05.B.

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

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

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

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

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

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of construction to be employed by Contractor, and safety precautions and programs incident thereto;

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

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

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

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

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

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conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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

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

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

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Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

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

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

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

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

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

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

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

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

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Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

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

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

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

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

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L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

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4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

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

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

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Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

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6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

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

7.03 *Labor; Working Hours*

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

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B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

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

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

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

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

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

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

4) is not objectionable to Owner.

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

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

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

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

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

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

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

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

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

    a. will certify that the proposed substitute item will:

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

        2) be similar in substance to the item specified; and

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

    b. will state:

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

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

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

    c. will identify:

        1) all variations of the proposed substitute item from the item specified; and

        2) available engineering, sales, maintenance, repair, and replacement services.

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

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

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

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

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

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

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

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

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

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

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

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

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

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

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

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

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

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

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7.09 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

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

7.11 *Laws and Regulations*

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

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

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

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7.13 *Safety and Protection*

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

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

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

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

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

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

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

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I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

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

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

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

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

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

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

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3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

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

C. *Engineer's Review of Shop Drawings and Samples*

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

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

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document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

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

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

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

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

   c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

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d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

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

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

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

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

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

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

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9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

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

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

7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

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D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

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

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

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

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

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

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

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

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

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

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

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

8.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

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B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

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9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

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

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

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

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

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ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

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

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

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

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

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E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

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

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

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

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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

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

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

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

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ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

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

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

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

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

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

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

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B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

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1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:
   1. A mutually acceptable fixed fee; or
   2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
      a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
      b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
      c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
      d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
      e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
      f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

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11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

    a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

    b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

    The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

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Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

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

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

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

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

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

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and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

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

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

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

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

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

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

13.01 *Cost of the Work*

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

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

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

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

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

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

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

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

5. Other costs consisting of the following:

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

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

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consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

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

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

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

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

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

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

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

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

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

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

6. Expenses incurred in preparing and advancing Claims.

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

D. *Contractor's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

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Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 *Allowances*

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

B. *Cash Allowances*: Contractor agrees that:

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

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

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

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

13.03 *Unit Price Work*

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

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

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

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

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thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

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

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

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

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

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

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D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

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

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

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

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

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

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

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

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

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losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

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

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

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or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

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establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

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

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

C. *Review of Applications*

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

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

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

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

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

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

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

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

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

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

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

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

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

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

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

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

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

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

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

    e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

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

E. *Reductions in Payment by Owner*

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

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

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

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

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

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

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

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

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

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

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

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

l. Other items entitle Owner to a set-off against the amount recommended.

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

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

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submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

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

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

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

15.04 *Partial Use or Occupancy*

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

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significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

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

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

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

   a. all documentation called for in the Contract Documents;

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

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

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d. a list of all duly pending Change Proposals and Claims; and

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

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

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appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

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

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
2. correct such defective Work;
3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

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

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

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F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

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

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

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

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

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

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

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

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

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

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

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

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

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

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

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provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

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

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

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

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

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

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

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

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

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18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

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TECHNICAL SPECIFICATIONS

SECTION 01000	General Requirements
SECTION 02002	Mobilization and Demobilization
SECTION 02100	Demolition, Removal and Disposal
SECTION 02200	Earthwork
SECTION 02250	Wall and Landing Reconstruction
SECTION 02495	Miscellaneous Site Improvements
SECTION 02500	Salt Marsh
SECTION 03300	Marine Concrete

SECTION 01000

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. Work is as described on the Contract Drawings and Specifications herein, for the reconstruction of the Columbus Avenue Seawall within Juniper Cover, in Salem, Massachusetts. The Base Bid includes, but is not limited to, all survey, supervision, labor, materials, tools and equipment, safety, quality control, and mobilization and demobilization necessary to perform the following:

1. Mobilization of equipment and materials to the site.
2. Furnish and install DEP signage.
3. Develop and provide a storm contingency plan and traffic management plan.
4. Install and maintain temporary measures to protect existing site features to remain in place during the work.
5. Install and maintain temporary pedestrian and vehicular traffic barriers including, but not limited to; fencing, traffic cones, signage, and/or concrete barriers, as required; to delineate, and secure areas of construction activity.
6. Remove and store existing site features to be restored in-kind, that are not protected in place.
7. Demolish and remove the existing stone masonry seawall, existing stone landing and steps, existing concrete steps, and existing paved sidewalk. Salvage suitable granite block stones for use in the wall and landing reconstruction.
8. Remove and dispose of visible debris and raveled stones along the existing landing.
9. Remove and dispose of existing deleterious and unsuitable excavated material.
10. Perform rodent control and if necessary, extermination, as necessary, before, during, and throughout demolition activities for the proposed work.
11. Reconstruction of approximately 484 linear feet of new mortared granite block seawall with reinforced cast-in-place concrete footing.
12. Reconstruction of granite block topped landing and steps with reinforced cast-in-place concrete core and footing.
13. Construction of stone masonry wall pillar/extensions.
14. Reconstruction of concrete access steps and furnish and installation of new hinged flood gate barrier.
15. Reconstruction of reinforced concrete sidewalk.
16. Reset and restore existing site features removed or impacted during construction, including, but not limited to; asphalt roads and driveways, granite curb, grassed buffer strips, benches, signage, utilities and outfall pipes pre-construction locations and conditions prior to the completion of work.
17. Removal and installation of new relocated timber post outhauls.

18. Removal and installation of new salt-tolerant shrubs and grasses.
19. Salt marsh protection/ enhancement including the installation of biodegradable high-density coir rolls, placement of clean sand nourishment fill wrapped in biodegradable erosion control blanket with void/eroded areas, and installation of new salt marsh plugs.
20. Management and disposal of all associated demolition and construction debris.
21. Complete incidental site work.
22. Complete site, laydown areas, and Contractor's access location restoration and demobilization.

1.2 RELATED SECTIONS

02002 MOBILIZATION AND DEMOBILIZATION
02100 DEMOLITION, REMOVAL AND DISPOSAL
02200 EARTHWORK
02250 WALL AND LANDING RECONSTRUCTION
02495 MISCELLANEOUS SITE IMPROVEMENTS
02500 SALT MARSH
03300 MARINE CONCRETE

1.3 CONTRACTOR USE OF SITE AND ACCESS

A. All work and trucking shall occur from 7:30 AM to 4:30 PM, Monday through Friday. Alternate work hours or weekend work may be allowed with the permission of the City of Salem (City or Owner), at the City's sole discretion. No work will be permitted Holidays, except as approved or required by the City.

B. Site access shall be from along Columbus Avenue. Land-based equipment will be used to perform the work from the landside of the seawall. **Material storage and staging is anticipated to occur along the landside of the seawall and within a portion of Columbus Avenue**. The Contractor shall be responsible for coordination of material deliveries, staging/stockpiling of materials, and construction. The Contractor shall coordinate final site access and staging/stockpiling areas with the Engineer and the City.

C. Material storage and Contractor staging areas shall be kept to a minimum and coordinated with the City. Equipment location, access, staging areas, and limits to be coordinated with the Owner.

D. Construction activity shall be staged to minimize interference with the public travel ways, adjacent residences, and other adjacent areas. Access shall be maintained to any building or roadway that is connected to any work included in this contract.

E. The Contractor shall submit a storm contingency plan that outlines provisions for relocation or securing equipment and materials in the event that a significant storm or flood event is forecasted.

F. The Contractor shall minimize the disturbance to the existing beach shoreline, roadway, adjacent buildings, walls, parking areas, walkways, lawns, planters, vegetation, and other miscellaneous site features.

G. The Contractor shall repair, at its own expense, any damage caused to public or private property; remove from the site all debris, excess materials, tools, and equipment; and shall leave the premises in a neat and orderly condition, to the satisfaction of the Engineer and the Owner.

H. The Contractor shall restore site access locations and staging areas to their original pre-construction condition to the satisfaction of the Engineer and the Owner.

I. The Contractor shall notify "Dig Safe" and local utilities and services as applicable prior to commencement of any work. The Contractor shall protect existing services against damage for the duration of the work.

J. If the Contractor, in the course of work, uncovers or otherwise encounters any artifacts, whether historic or prehistoric, the Contractor shall notify the Engineer immediately and stop all work in that vicinity until directed by the Engineer.

K. If the Contractor, in the course of excavation, uncovers or otherwise encounters any suspected hazardous or unidentified substances, the Contractor shall notify the Engineer immediately and stop all work in that vicinity until directed by the Engineer.

L. The Contractor shall coordinate temporary roadway closures, re-routing, and access limitations with the Engineer and the Owner, as necessary. The Contractor shall obtain governing authority's written permission, when required, to close or obstruct streets, walks and adjacent facilities. Provide alternate routes around closed or obstructed traffic ways, when required by governing authorities.

1.4 DELIVERY OF MATERIAL AND EQUIPMENT

A. The Contractor shall determine appropriate route for delivery of materials and equipment to the project site. The Contractor shall verify with the governing agency, and conform to, restrictions and load limitations along proposed hauling routes. Contractor to submit documentation that the hauling route and method of delivery meet restrictions and load limits, as applicable. The Contractor shall coordinate equipment, staging, deliveries, and other site usage with the Owner.

1.5 CONSTRUCTION SCHEDULES AND SUBMITTALS

A. Unless otherwise specified, within ten (10) calendar days from the Notice to Proceed, the Contractor shall submit to the Engineer and the Owner a complete schedule of values for all items that shall be paid for under this Contract. This schedule of values shall show all relative costs to the item as bid, such as the costs of material, labor, mobilization and demobilization, survey, supervision and all incidentals to the item.

B. The Contractor shall also provide a complete breakdown of all items that shall be paid for under this Contract, including Lump Sum items. This breakdown shall show all relative costs to the item as bid, such as the costs of material, labor, delivery, inspection, and all incidentals to the item.

C. Contractor shall submit a list of equipment to be used on the site, including but not limited to: excavator, backhoe, dump-truck, skid steer, and other land-based equipment required to complete the work.

D. The Contractor shall submit to the Engineer and the Owner a schedule of proposed operations within ten (10) calendar days after the award of the contract. The Construction schedule shall be maintained on site for review during site meetings. If a major change is made to the schedule, the updated schedule shall be submitted to the Engineer and Owner immediately. Should the Contractor find that they cannot maintain the schedule as originally intended, the Contractor shall immediately submit a revised schedule without being requested to do so by the Owner or Engineer.

E. Contractor shall submit a work plan procedure detailing sequences of operations including positioning of equipment and materials.

F. The Contractor shall submit a storm contingency plan that outlines provisions for relocation or securing equipment and materials in the event that a significant storm or flooding event is forecasted.

G. The Contractor shall submit pre-construction photographs and survey in accordance with section 1.9 and as required by the Contract Documents.

H. The Contractor shall submit to the Owner for approval, their plan for project survey control within seven (7) days of the notice to proceed and before actual work commences on the project site.

I. The Contractor shall be required to coordinate delivery of materials under this contract with the Owner and the Engineer. Contractor shall be required to provide periodic schedule updates for coordinating deliveries.

J. The Contractor shall submit shop drawings, product data, and information as required by sections of these Specifications and Contract Documents.

K. Contractor shall submit a temporary erosion and sediment control plan and temporary barrier, fencing and signage plan showing the limits for approval.

L. Contractor shall install a DEP sign showing “MA DEP File Number 064-0796” at the entrance to the site.

1.6 DATUM

A. Vertical datum used for this project is North American Vertical Datum 1988 (NAVD88). A conversion between NAVD88 and Mean High Water (MHW) and Mean Low Water (MLW) is shown on the Drawings.

B. This project involves tidal work. Bidders are advised to consult the Tide Tables issued by National Oceanic and Atmospheric Administration (NOAA) and local weather forecasts to evaluate tidal and weather conditions affecting work.

1.7 TECHNICAL SPECIFICATIONS/PUBLICATIONS

A. For all items within this Contract without specific technical specifications and/or publications denoted, and to supplement all conditions of this Contract above and beyond all references mentioned, refer to the Commonwealth of Massachusetts, Department of Transportation, Standard Specifications for Highways and Bridges, current edition, and all amendments; which is herein made part of this Contract in its entirety.

1.8 INSPECTIONS

A. The Owner will assign an inspector and/or resident engineer to this project on either a full-time or part-time basis, as required to observe the work under this Contract. The inspector or resident engineer shall be the Owner's Representative for this project, herein called the “Engineer”.

B. The Engineer must be notified at least 48 hours in advance of all material deliveries to arrange for the deliveries to be inspected as they arrive to the site.

C. All materials or equipment that are not suitable for use on this project and/or have been rejected by the Engineer shall be removed from the site immediately. The cost for removal of unsuitable and/or rejected materials shall be the responsibility of the Contractor.

D. The Engineer shall be allowed at all times to check the lines, grades, elevations, reference marks, batter boards, etc. set by the Contractor. Any errors or discrepancies in these items discovered by checks shall be corrected by the Contractor. Such checks shall not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibilities of the Contractor for the accurate and satisfactory completion of the entire work. The Contractor shall be available to assist the Engineer with these checks as needed.

1.9 PHOTOGRAPHS AND PRE-CONSTRUCTION SURVEY

A. The Contractor shall, at its own expense, furnish the Engineer with digital color photographs and/or videos of the project site, abutter properties at 30 Bay View Avenue and 44 Columbus Avenue, storage/staging areas, and surroundings. Photographs/videos shall be scheduled during such times and such periods of weather that reveal as many site features as possible. The photographs/videos shall be taken with a digital camera and electronic files of each shall be furnished to the Engineer.

B. The Contractor shall complete pre-construction photographs/videos and survey of the project site, abutter properties at 30 Bay View Avenue and 44 Columbus Avenue, storage/staging areas, and surroundings to document the pre-construction conditions. The photographs/videos and survey shall document the work areas and fully document existing conditions and areas which may be impacted by construction activity. The pre-construction survey shall include the 30 Bay View Avenue and 44 Columbus Avenue seawalls, exterior features, and exterior and interior of the buildings and structures, if requested and allowed by the property owners.

C. The Contractor shall complete photographs/videos as work progresses. Photographs/videos shall be taken before commencing work, during each stage of operations, and after the completion of work.

1.10 QUALITY CONTROL AND WORKMANSHIP

A. Maintain quality control, equipment, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.

C. Perform work by experienced persons qualified to produce workmanship of specified quality.

1.11 CONSTRUCTION FACILITIES

A. Provide and maintain temporary sanitary facilities as required.

B. Contractor shall provide on-site phone service, or other telephone facilities such that the Contractor can be reached at any time throughout the workday.

C. Contractor shall provide phone numbers for communication and emergency contact during off work hours.

1.12 PERMITS AND MITIGATION MEASURES

A. Environmental permits and/or licenses secured to date are included under the Attachments to these Contract Documents. It is the Contractor's responsibility to adhere to the conditions set forth in the permit documents.

B. It is the responsibility of the Contractor to obtain all other permits, inspections and all other requirements not issued within this Specification necessary to complete the work under this Contract, including building permits; the cost of all fees associated with these permits, inspections and other requirements shall be borne by the Contractor.

C. The Contractor shall comply with all applicable local, state and federal requirements, as well as standard industry standards and practices, regarding materials, methods of work and disposal of excess and waste materials.

D. The Contractor shall provide DEP Wetland project signs in conformance with the Order of Conditions and maintain a copy of the Order of Conditions on site at all times.

1.13 SURVEY CONTROL

A. The Contractor shall locate, protect, and maintain benchmarks, monuments, control points and project engineering reference points.

B. The Contractor shall provide, at its own expense, all materials and labor as may be required to establish and maintain all project control range lines, additional reference marks and line and grade stakes. The Contractor shall maintain the project control throughout the duration of the project, at the Contractor's own expense.

C. All work shall conform during its progress and on its completion to the lines and grades given by the Contract Documents and as specified herein. The work shall be done in a thoroughly substantial and workmanlike manner, in accordance with the Contract Drawings, these specifications, and as directed by the Engineer.

D. The Contractor shall make, check and be responsible for all measurements and dimensions necessary for proper construction.

E. The Contractor shall provide an as-built survey of the new work and associated work areas for approval of the Engineer prior to demobilization of work.

PART 2 - MATERIALS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

4.1 GENERAL

A. There shall be no separate measurement of quantities or payments for work covered by this Section. Services, materials, sanitary facilities, fencing, barriers, signage, survey control, and all other work associated with implementation of work, including removal and resetting site features, if necessary, specified in the General Conditions, Special Conditions, General Requirements, or not included under

Contract items shall be included for payment under Contract Item 02002-1, MOBILIZATION AND DEMOBILIZATION.

END OF SECTION

SECTION 02002

MOBILIZATION AND DEMOBILIZATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Work under this section shall consist of the Contractor's preparatory work and operations, including but not limited to; those necessary for the movement of personnel, equipment, supplies, and incidentals to and from the project site, including access, maintenance and restoration of the site and adjacent properties affected by the Contractor's operations, for the establishment of the Contractor's supervisory facilities necessary for work on the project, and all other work and operations which must be performed or for costs which must be incurred prior to beginning work. Access, temporary construction facilities, and submittal items shall be in accordance with the requirements of the applicable sections of the Contract and as shown on the Contract Drawings.

B. Work under this section shall be for the Bid per the following:

1. Mobilization of equipment and materials to the site.
2. Furnish and install DEP signage.
3. Develop and provide a storm contingency plan and traffic management plan.
4. Install and maintain temporary measures to protect existing site features to remain in place during the work.
5. Install and maintain temporary pedestrian and vehicular traffic barriers including, but not limited to; fencing, traffic cones, signage, and/or concrete barriers, as required; to delineate, and secure areas of construction activity.
6. Remove and store existing site features to be restored in-kind, that are not protected in place.
7. Demolish and remove the existing stone masonry seawall, existing stone landing and steps, existing concrete steps, and existing paved sidewalk. Salvage suitable granite block stones for use in the wall and landing reconstruction.
8. Remove and dispose of visible debris and raveled stones along the existing landing.
9. Remove and dispose of existing deleterious and unsuitable excavated material.
10. Perform rodent control and if necessary, extermination, as necessary, before, during, and throughout demolition activities for the proposed work, per Section 02100.
11. Reconstruction of approximately 484 linear feet of new mortared granite block seawall with reinforced cast-in-place concrete footing.
12. Reconstruction of granite block topped landing and steps with reinforced cast-in-place concrete core and footing.
13. Construction of stone masonry wall pillar/extensions.
14. Reconstruction of concrete access steps and furnish and installation of new hinged flood gate barrier.

15. Reconstruction of reinforced concrete sidewalk.
16. Reset and restore existing site features removed or impacted during construction, including, but not limited to; asphalt roads and driveways, granite curb, grassed buffer strips, benches, signage, utilities and outfall pipes pre-construction locations and conditions prior to the completion of work.
17. Removal and installation of new relocated timber post outhauls.
18. Removal and installation of new salt-tolerant shrubs and grasses.
19. Salt marsh protection/ enhancement including the installation of biodegradable high-density coir rolls, placement of clean sand nourishment fill wrapped in biodegradable erosion control blanket with void/eroded areas, and installation of new salt marsh plugs.
20. Management and disposal of all associated demolition and construction debris.
21. Complete incidental site work.
22. Complete site, laydown areas, and Contractor's access location restoration and demobilization.

C. The Contractor is advised to pay particular attention to weather forecasts for the area. The Contractor shall make provisions for contingencies to deal with inclement weather, the cost of which shall be incidental to other pay items. The Contractor may have to demobilize from the site on a temporary basis due to weather. Prior to leaving the site, the Contractor shall take such steps as are necessary to protect completed work and work in progress and to remove all equipment and materials from potentially affected areas. The Contractor shall be responsible for any loss or damage to work completed, work in progress, equipment, or material. The Contractor shall remobilize to the site at no additional cost to the Owner. Remobilization shall include all effort required to restart the work.

1.2 RELATED SECTIONS

01000 GENERAL REQUIREMENTS
02100 DEMOLITION, REMOVAL AND DISPOSAL
02200 EARTHWORK
02250 WALL AND LANDING RECONSTRUCTION
02495 MISCELLANEOUS SITE IMPROVEMENTS
02500 SALT MARSH
03300 MARINE CONCRETE

PART 2 - MATERIALS

2.1 Materials will be as required and as specified in other sections.

PART 3 - EXECUTION

3.1 SUBMITTALS

A. Submit a schedule of the equipment the Contractor will employ in the performance of the work under this Contract. Contractor shall submit documentation on all proposed equipment intended for use on the project.

B. The Contractor shall submit a storm contingency plan that includes emergency preparedness details for the following:

1. Securing site materials and/or demobilization and removal of equipment, materials, and personnel from the site and staging area landward of the seawall. Equipment, materials, and personnel should be moved to a location outside of FEMA-designated flood zones.
2. Placement of temporary flood control measures such as sandbags, precast concrete blocks, or similar, at wall openings.
3. Construction related debris removal after the storm and disposal as directed by the Owner's representative.
4. Remobilization of all equipment, materials, and personnel to the site, including restoration of site access and staging areas as necessary.

C. The Contractor shall submit a traffic management plan that includes details for the following: detailing temporary pedestrian and vehicular traffic barriers, travel routes in and around the site, signage (type, quantity, and locations), and police detail as required.

1. Plan of contact for the City Police to have its officers protect traffic and pedestrians at/adjacent to the site which will be interfered with by the Contractor's operation.
2. Temporary pedestrian and vehicular traffic barriers.
3. Alternate pedestrian and vehicular travel routes in and around the site.
4. Signage, including the type, quantity, and locations.
5. Plan for the Contractor to provide law enforcement officers as may be deemed necessary by the Owner for the direction, and control of traffic services of such law enforcement officers shall be paid by the Contractor to their employers.

D. Submittal for other work shall be in accordance with Section 01000- General Requirements or under appropriate sections.

3.2 EQUIPMENT

A. The Contractor shall keep on the job sufficient equipment to meet the requirements of the work. The equipment shall be in satisfactory operating condition and be capable of safely and efficiently performing the work. The equipment shall be subject to inspection by the Engineer or the Owner at all times.

B. Prior to commencement of work at the site, the Contractor shall make available to the Engineer for review, copies of all applicable inspections and certifications of equipment as required by Federal, State, and local laws and regulations. Such inspections and certifications shall be current and maintained in force for the duration of this contract.

C. Each item of equipment shall have on board a spill kit and waste oil management plan which details the intended disposal method for waste oil.

D. Contractor shall demonstrate in a work plan that the above equipment is capable of lifting existing and proposed materials and demolition debris and performing the work to the limits as indicated on the Contract Drawings.

E. Should equipment used not be capable of performing work as intended, Contractor will provide alternative equipment that is capable of performing the work as intended at no extra cost to the Owner.

3.3 SITE PREPARATION, COORDINATION AND RESTORATION

A. Contractor shall provide site access as required for the transport of materials, personnel, and equipment to the project site.

B. Site access shall be from along Columbus Avenue. Land-based equipment will be used to perform the work from the landside of the seawall. **Material storage and staging is anticipated to occur along the landside of the seawall and within a portion of Columbus Avenue**. The Contractor shall be responsible for coordination of material deliveries, staging/stockpiling of materials, and construction. The Contractor shall coordinate final site access and staging/stockpiling areas with the Engineer and the City.

C. Material storage and Contractor staging areas shall be kept to a minimum and coordinated with the City. Equipment location, access, staging areas, and limits to be coordinated with the Owner.

D. Contractor shall remove all materials used for access and restore to pre-construction condition all access areas, material and equipment storage areas, and areas disturbed in and around the project site during construction.

E. Excess materials shall be removed from the site and become the property of the Contractor, unless otherwise directed by the Owner. Excess imported material shall be measured and deducted from payment quantities under the appropriate items, as established by the Engineer.

F. Contractor shall provide measures to prevent materials from entering the Atlantic Ocean or any wetland resource areas.

G. Reset and restore existing site features removed or impacted during construction, including, but not limited to; asphalt roads and driveways, granite curb, grassed buffer strips, benches, signage, utilities and outfall pipes pre-construction locations and conditions prior to the completion of work.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. MOBILIZATION AND DEMOBILIZATION shall be measured as a lump sum with the percentage of mobilization and demobilization complete measured by the Engineer, as indicated on the bid form. Total payment under this item shall be less than ten percent (10%) of the total contract amount bid.

B. Following completion of mobilization, the Contractor may invoice sixty percent (60%) of the lump sum bid price. Following satisfactory completion of all work, the Contractor may invoice the remaining forty percent (40%) of the lump sum bid price.

C. IMPLEMENTATION OF STORM CONTINGENCY PLAN shall be measured as a lump sum up to the allowance amount of $25,000.

D. IMPLEMENTATION OF TRAFFIC MANAGEMENT PLAN shall be measured as a lump sum up to the allowance amount of $66,000.

4.2 PAYMENT

A. Payment for mobilization and demobilization, under Item 02002-1 shall be per the percentage of mobilization and demobilization complete, which shall include mobilization and demobilization of all material, equipment including the Contractor's temporary facilities, site access, labor, transportation, survey, supervision, submittals and other incidental or appurtenant work required to complete mobilization and demobilization as shown on the Contract Drawings, as specified herein, and as directed by the Engineer.

B. No payment shall be made for any necessary temporary demobilization and remobilization due to inclement weather, as stated above.

C. Payment for implementation of the storm contingency plan, under Item 02002-2, shall be made for associated costs up to the allowance amount of **$25,000**, if the City directs the Contractor to implement the storm contingency plan. The tasks shall include securing site materials and/or demobilization and removal of equipment, materials, and personnel as necessary from the site, placement of temporary flood control measures, debris removal from the project area after the storm and disposal as directed by the Owner's representative, and remobilization of all equipment, materials, and personnel to the site.

D. Payment for implementation of the traffic management plan, under Item 02002-3, shall be made for associated costs up to the allowance amount of **$66,000**, which shall include providing law enforcement officers as may be deemed necessary by the Owner for the direction and control of traffic services, providing temporary pedestrian and vehicular traffic barriers, providing temporary signage, and removal of temporary barriers and signage at the completion of work. Payments to be made under this item shall only be for amounts actually paid by the Contractor to provide satisfactory traffic management services as stipulated herein. No allowance for overhead shall be included, it having been considered to be included for payment in prices stipulated for all other numbered items. The Contractor shall submit with each request for payment under this item, a certified statement listing names, dates, rate of pays, hours of service, and total amount paid to each law enforcement officer.

4.3 PAYMENT ITEMS

ITEM	DESCRIPTION	UNIT PRICE
02002-1	MOBILIZATION AND DEMOBILIZATION	LUMP SUM
02002-2	IMPLEMENTATION OF STORM CONTIGNECY PLAN	ALLOWANCE
02002-3	IMPLEMENTATION OF TRAFFIC MANAGEMENT PLAN	ALLOWANCE

END OF SECTION

SECTION 02100

DEMOLITION, REMOVAL AND DISPOSAL

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Contractor shall furnish all labor, materials, equipment and services necessary for, and incidental to, the execution and completion of all demolition, removal and disposal consistent with this Section and as shown on the Contract Drawings. The work under this Section shall include, but is not limited to, the demolition, removal, and legal disposal of the following:

1. All demolition and construction related waste and debris, including excess materials that are otherwise unsuitable for reuse and not designated for salvage by the Owner.
2. Deleterious or unsuitable excavated material.
3. Existing stone masonry seawall, stone landing and steps, concrete steps, and paved sidewalk not intended for reuse, including demolition debris generated by the work.
4. Visible debris and raveled stones along the existing landing

B. All removal shall be accomplished in a neat, workmanlike manner, and at such time or times as is most suitable to the progress and proper coordination of the project.

C. The Contractor shall provide a neat interface between areas of removal and areas designated to remain. Any surface damaged during construction that is not within work areas shall be repaired by the Contractor at their own expense.

D. The Contractor shall perform rodent control and if necessary, extermination, as necessary, before, during, and throughout demolition activities for the proposed work

1.2 RELATED SECTIONS

01000 GENERAL REQUIREMENTS
02002 MOBILIZATION AND DEMOBILIZATION
02200 EARTHWORK
02250 WALL AND LANDING RECONSTRUCTION
02495 MISCELLANEOUS SITE IMPROVEMENTS
02500 SALT MARSH
03300 MARINE CONCRETE

1.3 SUBMITTALS

A. Submit a Demolition, Removal and Disposal Plan for Engineer’s review and approval detailing procedure, equipment, sequence of operations, and schedule to perform the demolition, removal and disposal activities required for the work.

1. The Demolition, Removal and Disposal Plan shall include a description of planned erosion and sediment controls, dewatering and marine resuspension controls, dust controls, debris handling, storage, segregation, and management.
2. The Demolition, Removal, and Disposal Plan shall include a separate section that identifies noise, dust, and vibration-generating activities and describes monitoring and mitigation measures that will be implemented

B. Submit to the Engineer certification documentation verifying that the receiving site(s) is legal and authorized to accept the subject material.

C. Submit notification of the start date of demolition of the existing seawall and landing to the Engineer and Owner. Submit notification of completion of demolition to the Engineer and Owner.

D. Submit a rodent control plan to be implemented, as necessary, throughout demolition work.

1.4 REGULATORY REQUIREMENTS

A. Conform to applicable federal, State, and local codes for demolition of structures, safety and protection of adjacent structures, dust control, noise control, vibration control, rodent control, soil erosion and sedimentation control, and waste disposal.

B. Conform to the conditions associated with Site-specific permits obtained by the Owner including, but not limited to; Conservation Commission Order of Conditions (OOC), Department of the Army Permit Authorization, Chapter 91 Waterways License, and 401 Water Quality Certification.

1.5 PROJECT CONDITIONS

A. Review historic plans and licenses, available logs, records of explorations, groundwater level data, and geotechnical and environmental testing results and other pertinent data, if available, for the site.

B. Contractor shall conform to applicable laws and regulations when hazardous or potentially hazardous materials or contaminated substances not previously identified are encountered. Contractor is directed not to disturb or attempt to remove any discovered hazardous or potentially hazardous materials or contaminated substances without first notifying the Owner or Engineer. Immediately notify the Owner or Engineer upon the discovery of such conditions.

C. Contractor shall be solely responsible for evaluating existing facilities and project area conditions and considering all factors that may affect the progress or performance of the work. Maintain existing site access as much as practical during demolition. Restore site access as necessary to provide adequate site ingress/egress during construction.

D. Contractor shall recycle or dispose of all the demolition debris and waste generated by the work in accordance with all applicable laws and regulations and the requirements of the Contract Documents.

E. By submitting a Bid, the Contractor affirms that the site and all conditions affecting the work under this Section have been carefully examined. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions as indicated in the Contract Documents, or obvious from observation at the site. The Contractor shall protect adjacent property, public utilities, structures, work

in-progress, and completed work, from damage associated with the waterfront removal and demolition. Damage due to demolition and removal shall be repaired by the Contractor at his own expense.

PART 2 - PRODUCTS

2.1 DEMOLITION EQUIPMENT

A. Hydraulically operated equipment with buckets, grapplers, masonry saws, hammers, drills, and/or shear equipment or Engineer-approved alternatives, including hand tools, shall be used to dismantle and remove the existing deteriorated structures and incidental items as indicated on the Contract Drawings to facilitate the repairs of the concrete access stairs and associated elements.

B. Use of explosives, wrecking balls, or other demolition methods likely to generate excessive dust, noise, vibration, and other debris is not permitted.

2.2 SHEETING AND COVERINGS

A. If stockpiled, demolition debris shall be placed on a strong, durable, impermeable, flexible 20 mil minimum thickness HDPE sheeting or other Engineer-approved material.

B. Stockpiled demolition debris capable of becoming airborne or generating dust shall be covered with a strong, durable, impermeable, tear-resistant 6 mil minimum thickness polyethylene.

2.3 EROSION CONTROL

A. The Contractor shall provide erosion control and sediment control measures during the work in accordance with regulatory approvals for the work. Requirements include, but are not limited to:

1. Upland erosion control shall be utilized at staging areas and at debris stockpile areas.
2. Discharge from de-watering activities shall be filtered through straw bale sediment traps, silt filter bags or other means approved by the Conservation Commission.

B. The Contractor shall provide erosion, sediment, debris, and dust control measures for excavated material that may be stockpiled for disposal or reuse.

C. The Contractor shall provide erosion and sediment controls for all applicable storm water drains and catch basins.

PART 3 - EXECUTION

3.1 NOTIFICATION

A. Notification of the start date of demolition of the existing seawall and landing shall be submitted to the Engineer and Owner.

B. Notification of completion of demolition shall be submitted to the Engineer and Owner.

3.2 GENERAL

A. The Contractor shall maintain all demolished and excavated materials in an approved manner, in accordance with all environmental requirements for the project and to protect existing structures, facilities, wetland resource areas and the work.

B. Existing utility systems within or adjacent to the site shall remain in continuous service and shall be protected from damage during construction. Where interruption of a service is required, it shall be scheduled in advance and coordinated with the Owner and the Engineer.

C. The Contractor shall make every effort to contain any debris that potentially could be deposited into the Atlantic Ocean or wetland resource areas. The Contractor shall immediately recover any debris that enters the ocean or wetland resource area, and immediately notify the Engineer and Conservation Commission.

D. If encountered, Contractor shall take all necessary precautions to preclude any release of hazardous materials or hazardous wastes during demolition. If areas, either on or off site, are contaminated during work, the Contractor shall clean up and restore contaminated areas to the satisfaction of the Owner at no additional cost to the Owner.

E. Dust shall be strictly controlled in all areas requiring demolition. Contractor shall provide and employ dust control measures to mitigate the release of visible airborne particulate matter and/or fugitive dust beyond the limits of work generated from demolition and removal activities.

F. The Owner or the Engineer reserves the right to suspend work at any time, if necessary, due to dust generation which causes a safety or an air quality problem or which may cause contamination of adjacent areas. Contractor shall not be entitled to any additional compensation for suspension of work under such conditions.

G. Noise shall be controlled in all areas requiring demolition. Noise shall comply will local ordinances.

H. The Contractor shall follow procedures outlined in the Conservation Commission’s Order of Conditions, and all other local, state and federal agency requirements. Permits are included in the Attachments.

I. Work or features scheduled to remain or stored that are damaged by the Contractor shall be restored at the Contractor’s expense to the satisfaction of the Engineer.

3.3 DISPOSAL AND REUSE OF MATERIAL

A. Material resulting from demolition, excavation and removal that is not identified for salvage or is not suitable for reuse shall become the property of the Contractor and shall be properly recycled or disposed of at the approved legal site at the Contractor's expense, unless otherwise indicated.

B. Hauling and disposal of materials shall be in accordance with all federal, state, and local requirements, as well as being acceptable to the Owner and Engineer.

C. Suitable stones salvaged for reuse shall be cleaned. Marine growth, vegetation and organic matter shall be removed from the stones using cleaning methods that minimize damage to the stone.

D. Removals may include existing items designated to remain (or to be removed and reset), pavements, curbs, plantings, etc., if the items are damaged or repair is otherwise impractical. Any existing feature scheduled to remain or to be temporarily removed and reset shall be restored or replaced to match pre-construction conditions at the Contractor's expense.

3.4 REMOVAL AND DISPOSAL OF UNSUITABLE MATERIALS

A. The Contractor shall remove all existing items designated for demolition or removal to lines and grades shown on the Drawings or as specified herein.

B. Excavations and removals occurring in intertidal areas shall be performed during periods of low tide. No in water work is allowed. No stockpiling of equipment or materials are allowed on the beach or salt marsh areas.

C. Existing suitable Beach Sand shall be used as backfill along the waterside of the wall and excess Beach Sand shall be used as nourishment along the wall face in accordance with Section 02200.

D. Unsuitable materials may consist of, but are not limited to fugitive concrete, buried remnants, wood, and other building material debris; or other unclassified materials encountered during the work that do not meet the project requirements for reuse in the proposed work.

E. The Contractor shall salvage all existing materials that are disturbed or displaced due to related construction activity and are suitable for reuse in the work. Items designated to be salvaged and reused or stored shall be removed and stored in a careful manner so as not to damage any items. Any such material mishandled or damaged in any way shall be replaced at the Contractor's expense.

F. The Contractor shall process, and separate materials proposed for off-site disposal by mechanical and manual means and to the extent practicable, as required, and as indicated by the Engineer. Existing beach sediment shall not be removed from the beach.

G. Any depressions caused by the removal stone, debris, or other buried unclassified material shall be filled with suitable beach sand to match surrounding existing grades.

H. Displaced soils shall be re-graded after removal of stone or debris to match surrounding existing grades as near to their location of origin as practicable. No existing, natural, beach sediment material shall be removed from the beach.

3.5 DEMOLITION AND REMOVAL OF EXISTING STRUCTURES

A. The Contractor shall remove all existing items designated for removal to lines and grades shown on the Drawings, as required to perform the proposed work, as specified herein, and as directed by the Engineer.

B. Items designated to be salvaged and re-used, such as granite blocks, shall be removed and stored in a careful manner so as not to damage any items. Any material mishandled or damaged in any way shall be replaced at the Contractor's expense.

C. Concrete shall be cut, chipped, or otherwise removed from the concrete structures to the lines and grades as shown on the Drawings, as required to perform the proposed work, as specified herein, and as directed by the Engineer.

D. Removals shall also include existing steel reinforcement, inserts, anchors, and other embedded materials that conflict with the proposed work or are otherwise unsuitable to remain in-place and other miscellaneous construction related waste and debris.

E. Seawall demolition shall be phased, kept to a minimum, and performed in sections, with the subsequent section commencing only after sufficient completion of wall reconstruction. In no case shall the Contractor demolish the entire length of existing wall, or an excessive length of wall, before commencing reconstruction of the new wall.

3.6 RODENT CONTROL

A. The control (extermination) of rodents shall be performed as necessary before, during, and throughout demolition activities for the proposed work.

B. All trash and garbage shall be contained in rodent-proof, watertight containers with tight-fitting lids.

C. All extermination operations shall be in accordance with the rules and regulation of the Municipality and State Health Departments.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. DEMOLITION, REMOVAL, AND DISPOSAL shall be measured as a lump sum with the percentage of demolition, removal, and disposal complete measured by the Engineer, as indicated on the bid form. Total payment under this item shall be less than ten percent (10%) of the total contract amount bid.

B. IMPLEMENTATION OF RODENT CONTROL shall be measured as a lump sum up to the allowance amount of $10,000.

4.2 PAYMENT

A. Payment for demolition, removal, and disposal, under Item 02100-1, shall be per the percentage of demolition, removal, and disposal complete, which shall include demolition, removal, disposal work, including all materials, equipment, labor, transportation, survey, supervision, submittals and other incidental or appurtenant work required to complete mobilization and demobilization as shown on the Contract Drawings, as specified herein, and as directed by the Engineer.

B. Payment for implementation of rodent control, under Item 02100-2, shall be made for associated costs up to the allowance amount of $10,000.

4.3 PAYMENT ITEMS

ITEM	DESCRIPTION	UNIT PRICE
02100-1	DEMOLITION, REMOVAL, AND DISPOSAL	LUMP SUM
02100-2	IMPLEMENTATION OF RODENT CONTROL	ALLOWANCE

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The Contractor shall provide all labor, equipment, materials, tools, and accessories to complete the work in this section. This work includes, but is not necessarily limited to, excavation, shoring, subgrade preparation, placement, backfilling, and compacting of soil and crushed stone for all associated work and any incidental items, as indicated on the Contract Drawings and specified herein.

B. The Contractor shall protect or restore existing site features that abut the work scheduled to remain.

1.2 REFERENCES

A. References herein to any technical society, organization, group, or body are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable:

1. American Society for Testing and Materials (ASTM), latest edition
2. Commonwealth of Massachusetts, Department of Transportation, Standard Specifications for Highways and Bridges, current edition, and all amendments
3. International Building Code (IBC), latest edition
4. Massachusetts State Building Code, latest edition

1.3 RELATED SECTIONS

01000 GENERAL REQUIREMENTS
02002 MOBILIZATION AND DEMOBILIZATION
02100 DEMOLITION, REMOVAL AND DISPOSAL
02250 WALL AND LANDING RECONSTRUCTION
02495 MISCELLANEOUS SITE IMPROVEMENTS
02500 SALT MARSH
03300 MARINE CONCRETE

1.4 SUBMITTALS AND SAMPLES

A. Contractor shall submit documentation for the source for furnishing all supplemental fill and crushed stone material. Approval of submitted samples, sources, or quarries shall not be construed as a waiver by the Engineer of the right to reject any material that does not comply with the requirements noted herein after.

B. Contractor shall submit documentation of sieve analysis for fill materials to the Engineer for conformance with requirements specified herein.

C. Contractor shall record each delivery of fill materials to the project. Quantity of fill materials shall be provided in units of cubic yard, unless otherwise directed.

D. Delivery slips for fill materials shall be submitted to the Engineer and Owner for each delivery of fill to the site. The Contractor shall maintain a running tally of daily tonnage/cubic yardage and tonnage/cubic yardage to date. Updated quantity tally shall be submitted to the Engineer and the Owner daily.

E. Contractor shall submit product data for filter fabric (nonwoven) material to be used.

F. Contractor shall not order materials until the Engineer's review of submittals has been obtained.

1.5 UTILITIES AND PROTECTION

A. The Contractor shall locate and mark active underground utility lines before commencing work. Utility services to remain shall be protected from damage and shall be plotted on the Record Plans by the Contractor. Utilities which are not active shall be protected or properly removed as directed by the Engineer and the Owner. Existing utilities shall not be interrupted except when authorized in writing both by the Engineer and by authorities having jurisdiction.

B. Excavated areas shall be kept free from water, snow, and ice during construction. Pumping operations shall be performed should surface rain or groundwater be encountered during construction. Sheeting, shoring and trench boxes shall be of proper strength and shall be placed where necessary to prevent caving, erosion or gullying of excavation sites.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. All off-site material brought to the site shall be free of contaminants.

B. Existing Granular Fill to be used as backfill shall be free from trash, ice, snow, tree stumps, roots, organic materials, and other deleterious materials. Existing granular fill shall contain no stone greater than two-thirds (2/3) the loose lift thickness with a maximum stone size of twelve (12) inches in diameter and contain no more than 25% fine content (percent passing the No. 200 sieve). It shall have physical properties such that it can be readily spread and compacted during filling. It is anticipated that existing material will be used as backfill. In the event it is determined the backfill material is unsuitable; the Contractor shall provide suitable backfill material in accordance with Gravel Borrow.

C. Loam (or Topsoil) shall consist of existing or imported friable soil obtained from naturally well-drained areas or shall be the product of a commercial sand and gravel processing facility. It shall be uncontaminated by salt water, foreign matter, or substances harmful to plant growth. Loam shall be free of debris, rocks, clods, stumps, roots, building materials, trash, and any other extraneous matter. Loam shall be free of quackgrass rhizones (*Agropyron repens*) and the nut-like tubers of nutsedge (*Cyperus escu/entus*). It is anticipated that loam stripped from the limits of work as indicated on the drawings and herein will be suitable and sufficient for the work. Loam shall otherwise conform to MassDOT Specification M1.05.0. Loam for Roadsides shall have no material greater than 1 inch in diameter. Loam for Lawns shall have no material greater than ½ inch in diameter.

D. Gravel Borrow shall consist of inert material that is hard, durable stone and coarse sand, free from trash, ice, snow, tree stumps, roots, organic materials, loam and clay, surface coatings, and other deleterious materials. Gradation requirements shall conform to the following:

(MassDOT Spec. M1.03.0, Type C)

U.S. Sieve No.	Percent Passing by Weight
1/2"	50-85
#4	40-75
#50	8-28
#200	0-10

Maximum size of stone shall be two inches (2") largest dimension.

E. Crushed Stone (and Filter Stone) shall consist of angular fragments of hard, durable crushed rock, free from a detrimental quantity of thin, flat, elongated pieces or shall be durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone. The crushed stone shall be free from trash, ice, snow, tree stumps, roots, organic materials, and other deleterious materials. Gradations shall conform to the following:

1-½" Crushed Stone (MassDOT Spec. M2.01.2)

U.S. Sieve No.	Percent Passing by Weight
2"	100
1 ½"	95-100
1"	35-70
¾"	0-25

Maximum size of stone shall be two inches (2") largest dimension.

¾" Crushed Stone (MassDOT Spec. M2.01.4)

U.S. Sieve No.	Percent Passing by Weight
1"	100
¾"	90-100
½"	10-50
3/8"	0-20
#4	0-5

Maximum size of stone shall be one inch (1") largest dimension.

F. Existing Beach Sand to be used as backfill along the waterside of the wall and excess Beach Sand to be used as nourishment along the wall face shall be free from trash, ice, snow, tree stumps, roots, organic materials, and other deleterious materials. Existing Beach Sand shall contain no more than 10% fine content (percent passing the No. 200 sieve). Gradation requirements shall conform to the following:

(Existing Beach Sand)

U.S. Sieve No.	Percent Passing by Weight
1”	100
1/2"	80-100
#4	70-100
#10	55-100
#20	35-95
#40	10-45
#60	5-25
#100	2-12
#200	0-4

G. Salt Marsh Sand shall be in accordance with Section 02500- Salt Marsh.

2.2 FILTER FABRIC

A. Filter fabric (non-woven) shall be non-biodegradable non-woven geotextile fabric resistant to naturally encountered chemicals, alkalines, and acids, as Mirafi 180N, or an approved equivalent.

2.3 USE OF MATERIALS

A. Use of materials shall be as described below and as shown on the plans. Further details can be found in the Contract Drawings. Combinations or layering of materials may be necessary in certain instances.

B. Existing Granular Fill: Use to backfill excavations up to subgrade elevations and below Gravel Borrow or Crushed Stone, except where different materials are specified, as indicated on the Contract Drawings, and as indicated by the Engineer.

C. Loam or Topsoil: Use to restore and finish grades within landscaped, vegetated, and lawn areas; as required herein; where indicated on the Contract Drawings; and as indicated by the Engineer.

D. Gravel Borrow: Use as subbase for concrete walkway and concrete steps, backfill for excavations, to replace unsuitable excavated material below subgrade elevations, where Existing Granular Fill is specified, as indicated on Contract Drawings, and as indicated by the Engineer.

E. Crushed Stone: Use as base course for wall and landing footings. Use in bottom of excavations to aid in construction dewatering and maintaining subgrade stability during wet conditions, backfill behind walls, in confined areas, and as indicated on the Contract Drawings. Crushed stone layers greater than 4 inches in thickness shall be wrapped in non-woven filter fabric (Mirafi 180N or equivalent).

F. Existing Beach Sand: Use to backfill along the waterside of the wall. Excess suitable Existing Beach Sand shall be used as nourishment along the wall face as shown on the Contract Drawings.

G. Salt Marsh Sand: Use in accordance with Section 02500- Salt Marsh and as indicated on the Contract Drawings.

H. Filter fabric (non-woven): Use between crushed stone fill and other fill materials or where indicated on Contract Drawings.

PART 3 - EXECUTION

3.1 GENERAL

A. Contractor shall maintain, and stockpile excavated and delivered fill material in a safe, approved manner in accordance with all environmental requirements for the project and to protect existing structures and work. See Section 01000- General Requirements for additional coordination requirements.

B. Contractor shall schedule work and deliveries to avoid impact to abutters and local traffic. The Contractor shall conform to all applicable federal, state, and local requirements regarding the handling, delivery and installation of fill material.

C. Contractor shall order new fill to supplement existing fill, based on conditions encountered. Prior to ordering new fill, the Contractor shall recover existing fill to enable the Engineer and Contractor to evaluate the type and quantity of new fill for the project.

D. Contractor shall coordinate excavation and backfilling work during favorable weather conditions and at times when tidal water will not affect the work. No work shall be performed during storm conditions. Contractor to make provisions as necessary to control water during construction.

3.2 EXCAVATION

A. Contractor shall excavate the existing soils or fill to the dimensions and elevations shown on the Contract Drawings, or as necessary to install the various components of the work.

B. Contractor shall separate excavated materials as suitable and unsuitable for backfill, as approved by the Engineer. Existing Loam or Topsoil shall be stripped and stockpiled for reuse in landscaped areas. Unsuitable material shall be immediately removed from the site. All material removed from the site shall be disposed of legally. Suitable material taken from excavations shall be stockpiled for future backfilling within the staging areas as indicated on the Contract Drawings or as directed by the Engineer.

C. Contractor shall maintain project benchmarks for horizontal and vertical control of excavations and backfilling.

D. Suitable material for backfilling shall meet the requirements of the fill materials specified in these Contract Documents. Soils with significant fines content, organic material, deleterious or other objectionable material will not be allowed as backfill.

E. Excavated material shall not be deposited or piled to cause excessive settlement or endanger portions of any new or existing structures, such as surcharge loading of bulkheads or walls.

F. Unsuitable soil or materials found during excavation shall be removed, as determined in the field by the Engineer. The Engineer shall be present during excavation of unsuitable soil or materials to verify the volume of material removed. Grades will be restored with approved fill as directed by the Engineer.

G. Contractor shall take appropriate measures to shore the walls of the excavation, when necessary, particularly when made within the intertidal zone or adjacent to structures, utilities, or features to remain. Excavations shall be in accordance with current OSHA standards.

H. Contractor shall protect any open excavation with poly tarp or approved geotextile fabric to avoid erosion of material.

I. Where soil has been softened or eroded by flooding, equipment, traffic, or placement during unfavorable weather, or such other conditions, it shall be removed and replaced by the Contractor with suitable material, and at no additional cost to the Owner.

J. Contractor shall follow a construction procedure that allows visual identification of the bearing soils. In the event that groundwater is encountered, the Contractor shall limit the excavation size such that the water can be handled by the Contractor's chosen method of dewatering, allowing visual observation of the excavation bottom by the Engineer, and allowing backfill to be placed in the dry.

K. Contractor to keep excavations to a minimum.

3.3 INSPECTION

A. Contractor shall verify that stockpiled fill to be reused has been approved by the Engineer.

B. Before backfilling, the Contractor shall verify that drainage and utility installation has been inspected.

C. Prior to backfilling, the Contractor shall verify that areas to be backfilled are free of debris, snow, ice, or water, and that ground surfaces are not frozen.

D. Prior to foundation construction, the subgrade of the footing excavation shall be inspected by the Engineer.

3.4 PREPARATION

A. Contractor shall take necessary steps to avoid the disturbance of subgrade during the final stages of excavation. Such steps shall include, but not be limited to the following:

1. Excavate the final two feet with a smoot-edged bucket.
2. Any disturbance to the subgrade prior to placement of fill, asphalt, or concrete shall be replaced/reworked/repaired to the satisfaction of the Engineer at no additional cost to the Owner.

B. When necessary, compact subgrade surfaces to density requirements for fill or backfill material.

1. Cut out soft areas not readily capable of in-situ compaction. Backfill with gravel borrow and compact to density equal to requirements for subsequent backfill material. Compaction in confined areas shall be performed with a minimum of six passes of a walk-behind vibratory plate compactor. The cost of all proof rolling shall be included in the items requiring compaction.
2. Any weak or soft spots identified during proof compaction shall be over-excavated and replaced with Gravel Borrow or Crushed Stone wrapped in non-woven filter fabric, placed and compacted in accordance with these specifications.

3. Proof compaction should not be conducted where the subgrade consists of cohesive soil (silty clay), however, a smooth edge bucket should be used for final excavation in such soil. At least 12 inches of Crushed Stone wrapped in non-woven filter fabric should be provided above cohesive subgrades.

4. When near or below the water table, proof compaction should be at the discretion of the Engineer and should be performed using static (non-vibratory) equipment.

5. Proof compact subgrades under the observation of the Engineer prior to placement of backfill.

3.5 FILLING AND BACKFILLING

A. Suitable excavated material may be used for backfilling. Suitability of materials shall be determined by the Engineer. Such use of excavated materials may include stockpiling until needed.

B. All unsuitable material shall be removed from the site. The Contractor shall be wholly responsible for the disposal of such excavated material at an approved disposal area. Such disposal shall be in strict compliance with all Local and State rules, regulations, ordinances and laws which regulate and control its disposal.

C. Fill or backfill areas to the contours and elevations as shown on the Contract Drawings. Use unfrozen materials.

D. Backfill systematically, as early as possible, to allow maximum time for natural settlement. Do not backfill over porous, wet, or spongy subgrade surfaces.

E. Compact all materials by mechanical means. Compaction equipment used in open space shall consist of vibratory drum vibratory rollers, pneumatic compactors or other similar equipment as approved by the Engineer. Employ a placement method that does not disturb or damage drainage pipes and utilities in trenches.

F. Maximum thickness of loose lift to be eight (8) inches unless approved by the Engineer.

G. Maintain optimum moisture content (+/- 2%) of backfill materials to attain required compaction density.

H. Backfill against foundation walls of other structures simultaneously on each side to limit lateral loading. Compaction equipment for fill against structures or other confined areas shall be accomplished by means of drum-type, power-driven, hand-guided vibratory compactors operating at 2,000 cycles per minute, or by hand-guided vibratory plate tampers, with a static weight of at least 300 pounds.

I. Make changes in grade gradual. Blend slopes into level areas.

J. Place crushed stone in a manner that will avoid segregation of particles and will provide a smooth surface and will not damage the underlying geotextile filter fabric. Crushed stone shall not be dumped. Lifts of crushed stone shall be gently tapped with excavator bucket or plate compactor.

K. Place surplus backfill materials as directed by the Engineer. Leave stockpile areas completely free of excess fill materials.

L. Do not place, spread, or roll any fill material during unfavorable weather conditions. Do not resume operations until moisture content and fill density are satisfactory to the Engineer.

M. Where soil has been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and recompact as specified for fill and compaction below, at no additional cost to the Owner.

3.6 FIELD QUALITY CONTROL

A. All field quality control of earthwork shall be provided by the Contractor's approved Independent Testing Laboratory at no additional expense to the Owner. All field and laboratory quality control work shall be considered incidental to the Work of this Section.

B. Gravel Borrow shall be compacted to 95% (minimum) of the **Modified** Proctor Test, ASTM D1557 (Method C).

C. Existing Granular Fill shall be compacted to 95% (minimum) of the **Standard** Proctor Test, ASTM D1557.

D. Crushed Stone shall be compacted to an unyielding surface.

E. The Engineer shall observe the placement of all fill material. They shall be provided with the results of tests by the Contractor's Independent Testing Lab or make such observations as are judged necessary to render an opinion as to whether the materials used and compaction effort provided are appropriate to meet the intent of the specifications.

F. The Engineer shall judge achievement of the compaction standards both by visual observation of compaction effort and success or through the Contractor's Independent Testing Lab's use of in-place density tests including, but not be limited to, in-place compaction (density and moisture) testing performed in accordance with ASTM D1556 (sand cone) or ASTM D6938 (nuclear density meter). The frequency of testing shall be at the Resident Engineer's sole discretion, with a minimum of one test for each lift of material placed in a discrete area, at a minimum frequency of one (1) test for every 500 square feet of fill and/or one (1) test for every area of less than 500 square feet placed in one (1) day.

G. If compaction is judged by the Engineer to be inadequate, the Contractor shall provide additional compaction or otherwise correct the problem at no additional cost to the Owner.

H. The Contractor shall be responsible for providing to the Engineer and Owner all results of independent analysis of proposed off-site fill materials performed in accordance with ASTM C422, ASTM D698. Test results to be provided are as follows:

1. Particle size (sieve) analysis for each off-site material.

2. Maximum dry densities and optimum moisture contents, as per the Standard Proctor Test Methodology, for each off-site material.

3. New Proctor curves shall be developed whenever the properties of a certain material are judged by the Engineer to have substantially changed.

I. A separate proctor test shall be performed for each kind of off-site material to be used at the site.

J. The Contractor shall be responsible for coordinating with the Engineer. No fill shall be placed if the Engineer is not available to observe the Work. Fill placed in the absence of the Engineer may be required to be excavated and replaced at the Contractor's expense.

K. The Contractor shall provide the Engineer and the Owner free and safe access to work at all times. Provide for observation of bottom of excavation and of bearing surfaces at no additional cost to the Owner.

3.7 FILTER FABRIC (NON-WOVEN)

A. Filter fabric shall be installed in strict accordance with the manufacturer's specifications and recommendations and be installed in a manner, location and configuration as indicated on the Contract Drawings.

B. The subgrade that receives the filter fabric shall be free of obstructions, depressions and debris and shall be adequately prepared as specified herein.

C. Filter fabric shall be laid loosely in a manner that will provide a smooth surface free of wrinkles or creases. Sufficient slack shall be provided around irregularities to allow for readjustments.

D. A minimum 18-inch overlap shall be provided at all unsewn lap joints, and 6-inch overlap shall be provided at sewn joints. Any incidental tears shall be patched with a minimum 3-foot overlay in all directions from the tear.

3.8 TOLERANCES

A. Top Surface of Backfilling: Plus or minus one (1) inch.

3.9 CLEANUP

A. At the end of all filling and grading operations and before acceptance of the work, the Contractor shall remove all debris, materials, rubbish, etc., from the site, disposing of them in a manner satisfactory to the Engineer. The premises shall be maintained clean, presentable and satisfactory.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Excavation, backfilling, and compaction of existing material shall be considered incidental to the various proposed items. No separate measurement or payment will be made for excavation, backfilling, and compaction of existing material. Include all costs for work under items for which excavation, backfilling, and compaction of existing materials are required.

B. Loam or Topsoil shall be considered incidental to the proposed work for which the material is required. No separate measurement and payment shall be made for Loam or Topsoil.

C. GRAVEL BORROW shall be measured for payment by the cubic yard of imported material installed complete to the lines and grades as indicated on the Contract Drawings, as measured by the Engineer. No separate measurement for payment shall be made for the placement of existing excavated material reused for backfilling.

D. CRUSHED STONE for the subbase and backfill of the proposed wall and landing reconstructions and concrete walkway shall be measured for payment by the cubic yard of imported material installed complete to the lines and grades as indicated on the Contract Drawings, as measured by the Engineer. Crushed stone used in bottom of excavations to aid in construction dewatering shall be considered incidental to the proposed work.

E. Existing Beach Sand excavation, stockpiling, and backfilling shall be considered incidental to the proposed work. No separate measurement or payment will be made for excavation, stockpiling, and backfilling of existing beach sand including the placement of excess suitable beach sand along the wall face.

F. FILTER FABRIC (NON-WOVEN) shall be measured for payment by the square yard installed complete, as measured by the Engineer. No payment shall be made for material overlap.

4.2 PAYMENT

A. GRAVEL BORROW associated with the Contract shall be paid for under Contract Item 02200-1. Payment shall include full compensation for furnishing and installing imported gravel borrow including all materials, equipment, labor, survey, transportation, supervision, submittals and other incidental or appurtenant work required to complete the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

1. The Contractor shall utilize approved Existing Granular Fill material for filling and backfill prior to ordering additional gravel borrow. The Contractor shall coordinate ordering and delivery of gravel borrow with the Engineer. Gravel borrow material delivery and measurement for payment shall not be made for material utilized for the Contractor's convenience or not approved by the Engineer.

2. The reuse of existing suitable material in backfilling shall not be included under Contract Item 02200-1 and shall be considered incidental to the proposed work.

B. CRUSHED STONE associated with the Contract shall be paid for under Contract Item 02200-2. Payment shall include full compensation for furnishing and installing crushed stone for the footing subbase and for the wall drainage layer including all materials, equipment, labor, survey, transportation, supervision, submittals and other incidental or appurtenant work required to complete the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

C. FILTER FABRIC (NON-WOVEN) associated with the Contract shall be paid for under Contract Item 02200-3. Payment shall include full compensation for furnishing and installing non-woven filter fabric for the wall drainage layer including all materials, equipment, labor, survey, transportation, supervision, submittals and other incidental or appurtenant work required to complete the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

D. There will be no separate measurement or payment for restoration of landscaped areas under this section. Restoration of landscaped areas, lawn, and plantings; including but not limited to all associated labor, materials, and supervision, stripping, stockpiling, replacing existing loam, and provision of imported loam (if required), soil amendments, lime, fertilizer, watering, protection, maintenance, and any other item required to complete restoration shall be considered incidental the GENERAL REQUIREMENTS and included under the Contract Items for SITE RESTORATION. Include all associated costs for restoration of landscaped areas under Contract Item 02495-1

4.3 PAYMENT ITEMS

ITEM	DESCRIPTION	UNIT PRICE
02200-1	GRAVEL BORROW	CUBIC YARD
02200-2	CRUSHED STONE	CUBIC YARD
02200-3	FILTER FABRIC (NON-WOVEN)	SQUARE YARD

END OF SECTION

SECTION 02250

WALL AND LANDING RECONSTRUCTION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work covered by this section consists of providing all survey, supervision, labor, material, tools and equipment and services necessary for, and incidental to, the seawall and landing reconstruction as shown on the Contract Drawings and as required to complete the work. This work includes but is not limited to, the following:

1. Reconstruction of approximately 484 linear feet of new mortared granite block seawall with reinforced cast-in-place concrete footing.
2. Reconstruction of granite block topped landing and steps with reinforced cast-in-place concrete core and footing.
3. Construction of stone masonry wall pillar/planters.
4. Reconstruction of concrete access steps and furnish and installation of new hinged flood gate barrier.

B. All work shall be performed in accordance with all regulatory requirements within the limits specified herein and indicated by the Drawings.

1.2 RELATED SECTIONS

01000 GENERAL REQUIREMENTS
02002 MOBILIZATION AND DEMOBILIZATION
02100 DEMOLITION, REMOVAL AND DISPOSAL
02200 EARTHWORK
03300 MARINE CONCRETE

1.3 REFERENCES

A. References herein to any technical society, organization, group, or body are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable:

1. American Concrete Institute (ACI), latest edition: SP-15; 211; 301; 304; 305; 306; 309; 311; 315; 318
2. American Association of State Highway and Transportation Officials (AASHTO) M85 Standard Specification for Portland Cement
3. American National Standards Institute (ANSI) Accredited Standards Committee (ASC) H35 Aluminum and Aluminum Alloys, latest edition
4. American Society for Testing and Materials (ASTM), latest edition
5. American Welding Society (AWS) D.1 Structural Welding Code-Steel, latest edition

6. Commonwealth of Massachusetts, Department of Transportation, Standard Specifications for Highways and Bridges, current edition, and all amendments
7. International Building Code (IBC), latest edition
8. Massachusetts State Building Code, latest edition

1.4 CONTRACTOR QUALIFICATIONS

A. Contractor shall provide a qualified stone mason with demonstrated proficiency in stone masonry construction/restoration practices. Documentation in the form of at least three (3) successfully completed stone masonry projects of similar type and scale shall be presented with the bid. The projects shall have been completed by the masons who will be performing the work on this project. Substitution of the project-assigned masons will not be allowed without pre-approvals by Owner's Representative.

1.5 SUBMITTALS AND SAMPLES

A. Submit wall design including material stone type and size, and wall pillar/ planter design with stone type and size.

B. Submit documentation for the source for furnishing all supplemental stone. Include source for wall stone, landing stone, capstones, and pillar stone.

1. It is the Contractor's responsibility to determine that the source selected can provide the quality, quantities and stone size needed at the rate needed to maintain the project schedule. If a source for supplemental stone is not accepted for use by the Engineer, the Contractor shall propose other sources.
2. Approval of submitted samples, sources, or quarries shall not be construed as a waiver by the Engineer of the right to reject any stone that does not comply with the requirements noted herein after.
3. Supplemental stone will be accepted only after its suitability has been established to the satisfaction of the Engineer. The Engineer may visit the source prior to approval of the stone.

C. Submit procedure for weighing and delivery of stone.

1. Contractor shall record each delivery of supplemental stone to the project. Quantity shall be provided in units of stone delivered and tonnage.
2. Submit delivery slips of supplemental stone to the Engineer and Owner. Maintain a running tally of daily tonnage and tonnage to date. Updated quantity tally shall be submitted to the Engineer and the Owner daily.

D. Submit methods, procedures, equipment, and schedule to perform wall reconstruction and landing reconstruction as shown on the Contract Drawings and as required to complete the work. Procedure shall include description and shop drawings of temporary support of excavations, falsework, and methods to protect adjacent structures, utilities, work areas, salt marsh, shoreline, and other areas to remain during the course of work.

E. Submit wall tie-in detail drawings and procedures showing proposed limits of excavations and removals, limits of work, equipment locations, proposed work and restoration details, and schedule to perform work at 30 Bay View Avenue and 44 Columbus Avenue.

F. Submit shop drawings, design calculations, installation procedures, and maintenance procedures for flood gate barrier.

1. Shop drawings shall include all details, size, connections/welds, thickness, gauge, finish and type and grade of material for all items, information for the fabrication, handling, foundations/supports, installation of the flood gate barrier, and tie-in connections with the adjacent wall. Drawings shall not be reproductions of Contract Drawings. Design drawings shall be prepared and stamped by a licensed Professional Engineer, registered in the Commonwealth of Massachusetts, and submitted for approval prior to fabrication.

2. Manufacturer's design calculations shall be stamped by a licensed Professional Engineer, registered in the Commonwealth of Massachusetts, verifying products' ability to withstand design loads specified herein.

G. Submit product data for mortar mix and weep holes.

H. Submit product data for stainless steel plates.

I. Submittals for concrete and cementitious materials as indicated in Section 03300- Marine Concrete.

J. Submittals for crushed stone and filter fabric shall be in accordance with Section 02200- Earthwork.

PART 2 - PRODUCTS

2.1 EXISTING AND SUPPLEMENTAL STONE

A. Stone shall conform to MassDOT Standard Specification Section 685 Stone Masonry Wall and Section 690 Walls Removed and Rebuilt and as noted herein.

B. Stone for wall and landing reconstructions shall consist of angular, sound, hard, dense, durable, blasted, cut, or field stone of good quality and resistant to weathering and disintegration from the marine environment and freeze/thaw cycles. Accordingly, mica schist, slate, micaceous or thinly-bedded sandstone, shale, coarse limestone, gypsiferous rock, poorly cemented sandstone and conglomerate or soft or closely jointed rock of any sort shall not be used.

C. The rock shall have the physical properties required by ASTM C33 for quarry rock suitable for producing coarse aggregate for concrete, in accordance with ASTM C88 and C131, respectively. The requirements of the abrasion test for all rock shall be a maximum loss of 40 percent.

D. Stone shall not weigh less than 160 pounds per cubic foot or more than 175 pounds per cubic foot, as determined by the standard test for apparent specific gravity (ASTM C127), using representative chips about one inch in size, taken from the stone as furnished.

E. Stone shall be free of seams, cracks, fractures, and other structural defects that will tend to increase its deterioration from natural causes. Inspection of seams, cracks, fractures, and other defects shall be by visual evaluation.

F. Stone shall be clean and adequately free from foreign matter. Any foreign matter adhering to the stone shall be removed prior to placement.

G. Existing granite stone blocks recovered for the wall and landing reconstructions shall be of approved quality regarding size, shape, color, strength, angularity, resistance to abrasion, and durability prior to placement.

H. The Contractor shall stockpile existing salvaged stone and coordinate with the Engineer prior to removing existing stone from the site that is not suitable for reuse.

I. The Contractor shall conform to all federal, state, and local requirements and regulations regarding handling and delivery of stone.

2.2 WALL STONE

A. Wall stone shall consist of dimensional or semi-dimensional cut or reclaimed granite stone blocks.

B. Stone shall have a weight of 500 to 3,500 pounds with approximately 50 percent having a minimum weight of 1,500 pounds. Stone shall have no face dimension less than twelve (12) inches.

C. Stone shall have flat, rectangular, or square face on any exposed, finished wall face.

D. Individual stone shall have, when set in the wall, no face dimension less than 12 inches. Stretchers shall have a depth in the wall at least 1.5 times the rise, and a length on the face at least twice the rise. Headers shall have a length on the face at least equal to the rise. Headers shall hold in the heart of the wall the same size as shown on the face and shall extend at least 12 inches more than the stretchers into the backing.

2.3 CAPSTONES

A. Capstones shall be dimensional cut or reclaimed granite stone, having sharp corners and measurements similar in appearance to wall stones.

B. Capstone shall have minimum dimensions as shown on the Drawings.

2.4 WALL PILLAR/PLANTER

A. Wall pillar/planter stone shall have no face dimension less than six (6) inches, and shall have flat, rectangular, or square face on any exposed, finished face. Stone shall be of similar color and appearance as wall stone.

B. Top layer stones shall have pointed top similar to the existing conditions.

C. Poly/ plastic lining shall be waterproof High-Density Polyethylene (HDPE) and resistant to UV damage.

D. Stainless steel plate, Type 316, dimensions as shown on the Drawings.

2.5 LANDING STONES

A. Landing topside stones shall consist of suitable existing and supplemental dimensional or semi-dimensional cut or reclaimed granite stone blocks. Stone shall have no face dimension less than twelve (12) inches, and shall have flat, rectangular, or square face on any exposed, finished face. Supplemental stone shall be of similar color and appearance as existing stone.

B. Landing topside shall be ashlar granite type stone.

C. Landing structure stones shall consist of dimensional or semi-dimensional cut or reclaimed granite stone with no face dimension less than 8 inches. Individual stones shall have a depth at least 1.5 times the rise, and a length on the face at least twice the rise.

D. Stone for stair treads shall be uniform in shape, approximately 10 inches high by 12 inches wide. Stones shall have flat faces at the front stair face and tread face. Stone shall match color and appearance as landing stones.

2.6 REJECTION

A. If, during the progress of the work, it is found that the stone being furnished by the Contractor does not fully meet all the requirements of these specifications, the Contractor shall be required to furnish other stone of acceptable quality. The Contractor shall remove and dispose of all rejected stone in a manner approved by the Engineer.

B. The right is reserved to reject materials from certain localized areas, zones, strata or channels in the quarry when such materials are determined to be unsuitable.

2.7 MORTAR MIX

A. Mortar shall conform to MassDOT M4.02.15

B. Mortar mix shall be comprised of one (1) part Type II Portland cement and two (2) parts sand by volume with sufficient water to form a workable mixture with parts conforming to the following, unless otherwise approved by the Engineer:

1. Cement: MassDOT M4.01.0 and AASHTO M85 Standard Specification for Portland Cement.
2. Sand: MassDOT M4.02.02, it shall be composed essentially of clean, hard, strong, durable and impermeable particles, resistant to wear and frost, inert to cement and water, free from structurally weak grains, organic matter, loam, clay, silt, salts, mica or other fine materials that my affect bonding the cement paste. Sand particles shall be relatively spherical in shape and shall have gritty surface.
3. Water: MassDOT M4.02.04, it shall be clean, clear, and free of deleterious material.

C. Mortar: field mixed mortar shall use Type II Portland cement. Premixed mortar/concrete bags that are comprised of Type II or Type IS cement are acceptable.

2.8 WEEP HOLES

A. Weep hole pipe shall be PVC type schedule 40 and meet the requirements of AWWA C900 “Polyvinylchloride (PVC) plastic pipe (SDR-PR).

2.9 CONCRETE MATERIALS

A. New concrete shall be in accordance with Section 03300- Marine Concrete.

B. Concrete fill shall be ready-mix concrete, 4,000 psi, in accordance with Section 03300- Marine Concrete.

2.10 CRUSHED STONE AND FILTER FABRIC

A. Crushed stone fill and filter fabric shall be in accordance with Section 02200- Earthwork.

2.11 EPOXY ADHESIVE

A. Epoxy adhesive shall be a two-component system, suitable for marine environment. Hilti HIT RE-500 or approved equivalent.

2.12 STEEL REINFORCEMENT

A. ASTM A615, Grade 60, epoxy coated steel, minimum size and dimensions as indicated in Contract Drawings.

2.13 FLOOD GATE BARRIER

A. Lift-hinge flood gate barrier with aluminum panels and stainless steel supports as manufactured by Flood Control International, or approved equivalent. Sized and dimensioned as shown on the Contract Drawings.

B. Performance requirements: Designed to resist minimum hydrodynamic force of 2,000 pounds per linear foot (plf) applied at elevation 9.4 feet-NAVD88.

C. Stainless steel 316 supports.

D. Aluminum elements shall be fabricated from 6061-T6 alloy conforming to ASTM B210, ASTM B211, ASTM B221, and ASTM B429.

E. Ethylene propylene diene monomer (EPDM) rubber gaskets.

2.14 OUTFALL PIPES

A. Outfall pipe replacements, if required, shall consist of high-density polyethylene (HDPE) drain pipe and shall conform to AASHTO M294, Type S and ASTM D3350.

B. Joints and fillings shall conform to ASTM F667 and M294.

PART 3 - EXECUTION

3.1 GENERAL

A. Contractor shall coordinate applicable work during favorable weather conditions and at times when tidal water will not affect the work. No work shall be performed during storm conditions. Contractor to make provisions to protect new mortar, concrete, epoxy adhesive, and other cementitious materials during installation and curing.

B. Contractor shall establish construction control markers clearly visible and understandable to the workers placing the materials. As a minimum, these control markers shall delineate the horizontal limits and finished elevations of individual courses.

C. Contractor shall maintain and stockpile materials in a safe, approved manner in accordance with all applicable environmental requirements and to protect existing structures and work.

D. Contractor shall utilize temporary fabric, sheeting, or similar containment material to collect any loose debris and materials. Contractor shall remove the containment material and debris daily.

3.2 INSPECTION

A. Work shall be reviewed and approved by the Engineer prior to backfilling, covering, and Contractor demobilization.

3.3 EXCAVATION

A. The Contractor shall excavate the existing seawall and soil to the dimensions and elevations as shown on the Contract Drawings or as directed by the Engineer. Excavation areas shall be kept within the Project Limits as shown on the Contract Drawings.

B. The Contractor shall excavate the minimum amount of soil or stone so as to perform the work as shown on the Contract Drawings.

C. The Contractor shall only remove section of the existing seawall that can be replaced in a timely manner as to minimize erosion and loss of backfill materials and maintain the alignment of the existing seawall.

D. Excavation, backfilling, and compaction shall be in accordance with Section 02200- Earthwork.

3.4 WALL AND LANDING RECONSTRUCTION

A. Wall and landing reconstruction shall be performed in accordance with MassDOT Standard Specification Section 685 Stone Masonry Wall and Section 690 Walls Removed and Rebuilt and as noted herein.

B. The Contractor shall reconstruct stone masonry seawall and landing structures, to the limits and dimensions shown on the Contract Drawings, and as described herein. Construction of the seawall shall maintain existing alignment and limits of the existing structure as indicated by the Contract Drawings.

C. Concrete placement shall be in accordance with Section 03300- Marine Concrete.

D. Work shall include the supply and stockpiling of stone to be used for wall and landing reconstructions.

E. Prepare existing wall stones for reuse.

1. Existing stone shall be approved for re-use by the Owner’s Representative before the Contractor commences with setting the wall stones.

2. Before commencing with placing wall stones, the Contractor shall clean the stones of all vegetation, marine growth, organic matter, oil, grease, paint, and any bonding inhibiting deposits using cleaning methods that minimize damage to the stone. Washing with water shall be completed in a controlled manner.

F. Wall stones may require modification by splitting, drilling, tooling, and parching. Shaping of wall stone shall be completed before the stone is laid in the construction. Minimize modifications to the extent possible. Proposed modifications shall be submitted to the Owner's Representative for acceptance before commencing.

G. Wall stones shall be selected and placed to show the straightest, flattest face(s), free of defects to the extent possible. Each stone shall be selected with care as to size and shape and placed to obtain firm contact and interlocking with the maximum number adjacent stone.

H. Stone and masonry shall be placed in a stable manner providing a uniform pattern, color, and appearance, as approved by the Engineer.

I. Wall stone shall be carefully set without jarring stones already laid and shall be handled with a lewis or other suitable device which will not mar the stone. Rolling or turning of granite stone will not be permitted.

J. Each stone to be set in mortar shall be cleaned and thoroughly wetted before being set. They shall be set on full beds of mortar, and mortar joints shall be full, and stone settled in place before the mortar has set.

K. Wall stones shall be set with neat tight stone placement in regular courses of uniform height throughout entire length of the course. The vertical joints between wall stones shall be staggered at least 6 inches between adjacent courses.

L. Wall stones shall be set to comply with the following tolerances, to the extent achievable, for an overall installation that is straight and true to line. All tolerances shall be measured between or along stone joint arris lines.

1. Variation in vertical plane shall not exceed 1 inch landward between a given course and the adjacent lower course. The finished face shall match the existing batter of the wharf walls.
2. Variation from alignment of stone edges shall not exceed 1 inch horizontally between adjacent stones.
3. Variation from vertical plane shall not exceed 1 inch between adjacent wall stones.

M. Provide epoxy coated steel reinforcing as shown in the Contract Drawings, as indicated herein, and in accordance with Section 03300- Marine Concrete.

N. Drill and set dowels in epoxy adhesive. Preparation and application methods shall be performed in accordance with manufacturer's instructions.

O. Temporary support of excavations or falsework shall be utilized to provide protection to adjacent structures, utilities, work areas, vegetation, salt marsh, shoreline, and other areas to remain during the course of work.

3.5 WALL PILLAR/PLANTER

A. The Contractor shall construct wall pillar/planters, to the limits and dimensions shown on the Contract Drawings, and as described herein.

B. Stone and masonry shall be placed in a stable manner providing a uniform pattern, color, and appearance, as approved by the Engineer.

C. Wall pillar/planter shall be integrated into the reconstructed wall.

D. Top layer stones shall have pointed top similar to the existing conditions.

E. Poly/ plastic lining and weepholes shall be installed to the limits and dimensions shown on the Contract Drawings, and as described herein.

3.6 WEEP HOLES

A. Weepholes shall be constructed to the lines, grades, elevations, and dimensions shown on the Contract Drawings and as directed by the Engineer.

B. Weephole installation shall include an adjacent drainage field built to the lines and grades as shown on the Contract Drawings. Drainage field shall be continuous over construction area. Filter fabric and crushed stone (filter stone) shall be installed as specified within this section.

3.7 FLOOD GATE BARRIER

A. Flood gate barrier with components, attachments, and appurtenances shall be constructed to the lines, grades, elevations, and dimensions shown on the Contract Drawings and the Contractor's submittal as approved by the Engineer.

B. Fabricate joints that will be exposed to weather in a manner to exclude water.

C. All welds and sharp edges shall be ground smooth after fabrication. Exposed edges to be eased to a small, uniform radius.

D. Contractor shall be required to install the flood gate barrier and adjust fittings to assure that it functions correctly under all design loadings and environmental conditions as specified herein.

E. Contractor shall coordinate wall reconstruction work and flood gate barrier dimensions and provide tie-in connections with the adjacent wall.

F. Contractor is responsible for field adjustments to provide flush fittings on all sides.

3.8 OUTFALL PIPES

A. The existing outfall pipes shall be protected or removed and replaced in-kind to penetrate through the reconstructed seawall at the lines, grades, elevations, and dimensions as the existing conditions.

B. If replacement is required, outfall pipes shall be HDPE pipe as specified herein and fitted to match the existing outfall pipe.

C. Voids between outfall pipes and wall stones shall be kept to a minimum. Voids shall be filled with mortar or ready-mix concrete.

D. Wall stone shall span over outfall pipes and be placed to obtain firm contact with stones on each side of the pipe so that stone is not bearing on the pipe.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. WALL RECONSTRUCTION including item 02250-1, shall be measured for payment by the linear foot or percentage complete for the wall reconstruction to the lines and grades as indicated on the Contract Drawings, and as measured by the Engineer.

1. Weep holes and drainage field installation shall be considered incidental to item 02250-1.
2. Existing outfall pipe protection and penetration through the new wall shall be considered incidental to 02250-1.

B. STONE BLOCK including item 02250-2, shall be measured for payment by the tonnage of imported wall stone blocks required for the wall reconstruction installed complete to the lines and grades as indicated on the Contract Drawings, and as measured by the Engineer.

C. CONCRETE FOOTING including item 02250-3, shall be measured for payment by the cubic yard of reinforced concrete footing for the reconstructed wall installed complete to the lines and grades as indicated on the Contract Drawings, and as measured by the Engineer.

D. LANDING RECONSTRUCTION including item 02250-4, shall be measured for payment by the lump sum or percentage complete for the landing reconstruction to the lines and grades as indicated on the Contract Drawings, and as measured by the Engineer.

E. FLOOD GATE BARRIER including item 02250-5, shall be measured for payment by the lump sum or percentage complete for the furnishing and installation of flood gate barrier installed complete to the lines and grades as indicated on the Contract Drawings, and as measured by the Engineer.

F. STONE PILLARS/ PLANTER including item 02250-6, shall be measured for payment by each or percentage installed complete for the stone pillar/planter to the lines and grades as indicated on the Contract Drawings, and as measured by the Engineer.

4.2 PAYMENT

A. WALL RECONSTRUCTION shall be paid for under Contract Item 02250-1 for the contract unit price per Linear Foot. Payment shall include full compensation for preparation, excavation, backfilling, compaction, stockpiling, handling, stone masonry construction, cement mortar mix, dowelling, and all materials, equipment, falsework, labor, survey, supervision, transportation, submittals and incidental or appurtenant work required to perform the wall reconstruction as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

1. Weep holes and drainage field installation shall be considered incidental to item 02250-1. Payment shall include full compensation for materials, equipment, installation, and submittals.

2. Existing outfall pipe protection and penetration through the new wall shall be considered incidental to 02250-1. Payment shall include full compensation for protection, in-kind pipe repair/replacements, pipe penetrations, and all materials, equipment, falsework, labor, supervision, transportation, submittals and incidental or appurtenant work required to perform the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

B. STONE BLOCKS shall be paid for under Contract Item 02250-2 for the contract unit price per Tonnage. Payment shall include full compensation for furnishing, stockpiling, preparing, handling, and installing imported supplemental stone blocks for the wall reconstruction including all materials, equipment, falsework, labor, supervision, transportation, submittals and incidental or appurtenant work required to complete the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

1. The reuse of existing suitable stone blocks shall not be included in Contract Item 02250-2.

C. CONCRETE FOOTING shall be paid for under Contract Item 02250-3 for the contract unit price per Cubic Yard. Payment shall include full compensation for all preparation, reinforcing, dowelling, placed reinforced concrete, sampling and testing, and all materials, equipment, falsework, labor, survey, supervision, transportation, submittals and incidental or appurtenant work required to perform the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

D. LANDING RECONSTRUCTION shall be paid for under Contract Item 02250-4 for the contract unit price per Lump Sum. Payment shall include full compensation for preparation, excavation, backfilling, compaction, stockpiling, handling, stone masonry construction, cement mortar mix, reinforcing, dowelling, placed reinforced concrete, reuse of existing stone, supplemental stone, sampling and testing, and all materials, equipment, falsework, labor, supervision, transportation, submittals and incidental or appurtenant work required to perform the landing reconstruction as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

1. The Contractor shall utilize approved existing stone for the landing reconstruction prior to ordering additional stone. The Contractor shall coordinate ordering and delivery of stone with the Engineer.

E. FLOOD GATE BARRIER shall be paid for under Contract Item 02250-5 for the contract unit price per Lump Sum. Payment shall include full compensation for furnishing, adjusting, installing flood gate barrier including all materials, equipment, falsework, labor, survey, supervision, transportation, submittals and incidental or appurtenant work required to complete the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

F. STONE PILLARS/ PLANTERS shall be paid for under Contract Item 02250-6 for the contract unit price per Each. Payment shall include full compensation for preparation, stockpiling, handling, stone masonry construction, cement mortar mix, dowelling, reuse of existing stone, supplemental stone, weepholes, poly lining, and all materials, equipment, falsework, labor, survey, supervision, transportation, submittals and incidental or appurtenant work required to perform the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

4.3 PAYMENT ITEMS

ITEM	DESCRIPTION	UNIT PRICE
02250-1	WALL RECONSTRUCTION	LINEAR FOOT
02250-2	STONE BLOCKS	TON
02250-3	CONCRETE FOOTING	CUBIC YARD
02250-4	LANDING RECONSTRUCTION	LUMP SUM
02250-5	FLOOD GATE BARRIER	LUMP SUM
02250-6	STONE PILLARS/ PLANTERS	EACH

END OF SECTION

SECTION 02495

MISCELLANEOUS SITE IMPROVEMENTS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work covered by this section consists of providing all survey, supervision, labor, material, tools and equipment and services necessary for, and incidental to, miscellaneous site improvements, as shown on the Contract Drawings and as required to complete the work. This work includes but is not limited to, the following:

1. Site restorations including, but not limited to, reconstruction of concrete sidewalk, pavement repair/replacement, pavement markings, resetting granite curbs, restoration of grass and landscaped areas, resetting benches, signage, and protection of existing water lines, hydrants, and other existing utilities.
2. Installation of new shrub plantings.
3. Timber post outhaul removal and reset.
4. Protection and maintenance of grass, landscaped areas, and plantings.
5. Existing tree at 44 Columbus Ave, protected or removed and replaced.

B. All work shall be performed in accordance with all regulatory requirements within the limits specified herein and indicated by the Contract Drawings.

1.2 RELATED SECTIONS

01000 GENERAL REQUIREMENTS
02002 MOBILIZATION AND DEMOBILIZATION
02100 DEMOLITION, REMOVAL AND DISPOSAL
02200 EARTHWORK
02500 SALT MARSH

1.3 REFERENCES

A. References herein to any technical society, organization, group, or body are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable:

1. American Concrete Institute (ACI), latest edition: SP-15; 211; 301; 304; 305; 306; 309; 311; 315; 318
2. American Association of State Highway and Transportation Officials (AASHTO) M85 Standard Specification for Portland Cement
3. American Society for Testing and Materials (ASTM), latest edition
4. American Standard for Nursery Stock (ANSI Z60.1), latest edition

5. Commonwealth of Massachusetts, Department of Transportation, Standard Specifications for Highways and Bridges, current edition, and all amendments
6. International Building Code (IBC), latest edition
7. Massachusetts State Building Code, latest edition

1.4 SUBMITTALS AND SAMPLES

A. Procedures and Equipment. The Contractor shall submit methods, procedures, and equipment for performing the site restoration.

B. Product data. The Contractor shall submit product data for hot-mix asphalt, loam, seed, and plantings.

C. Plants: Each delivery of plant material shall have a State Nursery inspection certificate verifying inspection and freedom from disease and insect pests. Failure to furnish this certificate to Engineer upon delivery shall be cause for rejection.

D. Seed: The Contractor shall submit seed vendor's certified statement for each grass seed mixture required, stating botanical and common name, percentage by weight, and percentages by purity, germination, and weed seed for each grass seed species.

E. Maintenance: The Contractor shall submit recommended procedures to be implemented by the Owner for the maintenance of the landscape work. At a minimum, the instructions shall address the following for all plants, plant beds, and lawns:

1. Fertilization types, application equipment, rates and frequency.
2. Pest and weed control types, application equipment, rates and frequency.
3. Watering application rates and frequency.
4. Mowing frequency and blade heights.
5. Pruning procedures, equipment and time.
6. Plant bed mulching and weeding procedures

1.5 SOURCE QUALITY CONTROL

A. Landscape materials shall be delivered with certificates of inspection required by governing authorities.

B. Provide perennials and grasses of quantity, size, genus, species and variety shown and scheduled for landscape work and complying with recommendation and requirements of ANZI Z60.1, the American Standard for Nursery Stock.

C. Provide healthy, vigorous stock, grown in a recognized nursery in accordance with good horticultural practice and free or disease, insects, eggs, larvae, and defects such as knots, cut-back leaders, broken branches, sun-scald, injuries, abrasions, or disfigurement.

D. Label at least one of each variety per delivery with a securely attached waterproof tag bearing legible designation of botanical and common name.

1.6 The Engineer reserves the right to inspect perennials and grasses either at place of growth and at the site before planting for compliance with requirements. Engineer reserves the right to further inspect trees for size and condition of root balls and systems, insects, injuries, and latent defects, and to reject unsatisfactory or defective material at any time during the course of work. All rejected materials are to be removed immediately from the project site by the Contractor.

1.7 WARRANTY

A. After the completion of planting and seeding, the completed landscaped and stabilized areas shall be inspected by the Engineer, Conservation Commission Agent, and/or the Owner to determine if the landscape and vegetative cover is acceptable. Contractor to provide a 1-year warranty.

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 the plants shall be extended until replacements are made.

PART 2 - PRODUCTS

2.1 CAST-IN-PLACE CONCRETE

A. In accordance with Section 03300- Marine Concrete.

2.2 HOT-MIX ASPHALT

A. Asphaltic materials including hot mix asphalt and related materials shall conform to MassDOT Specification Section M3, except as modified herein.

B. Hot-mix asphalt paving shall be a standard plant-mixed, hot-laid paving material for road work, consisting of clean, crushed rock aggregate, mineral filler, and asphalt conforming to MassDOT Specification Section M3.06.0.

C. Hot-mix asphalt patch shall consist of top course and binder course hot-mix asphalt in depths to match existing roadways.

D. Asphalt emulsion tack coat shall conform to MassDOT Specification Section M3.03.0, Type RS-1 or RS-2.

E. Hot applied pavement joint adhesive shall conform to MassDOT Specification Section M3.05.4.

2.3 PAVEMENT MARKING

A. Pavement markings shall conform to MassDOT Specification Section 860 Reflectorized Pavement Markings.

2.4 GRANITE CURB

A. Granite curb shall consist of existing salvaged granite curb and conform to MassDOT M.9.04.1 Granite Curb.

2.5 LOAM (OR TOPSOIL)

A. Loam (or Topsoil) shall be in accordance with Section 02200- Earthwork.

2.6 GRASS SEED

A. Grass seed shall be fresh, clean, dry, new crop seed meeting the standards of SRA-156, U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act.

B. Seed shall be of the following varieties, mixed in proportion by weight and testing the minimum percentages of purity and germination.

Name	Proportion	Minimum % Germination	Minimum % Purity	Maximum % Weed
Kentucky Bluegrass Top Quality Names Variety	40%	80	85	0.5
Fine Textured Endophytic Per-ennial Ryegrass	35%	90	85	0.5
Creeping Red Fescue	25%	90	85	0.5
(Application = 4 lb./1,00 Sq. Ft.)				

1. Perennial Ryegrass shall consist of one or more of the following varieties: Baron, Famous, NuBlue.
2. Turf Type Tall Fescue shall be Rebel Jr. or approved equal.
3. Weed seed shall not exceed 0.5% by weight.

2.7 SHRUB PLANTINGS

A. The Contractor shall furnish all plants shown on the Contract Drawings, as specified. Plants shall be nursery grown unless specifically authorized to be collected.

B. Plants shall conform to the American Standard for Nursery Stock (ANSI Z60.1).

C. 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.

D. Shrubs shall meet the following standards:

1. Shrubs shall be healthy and vigorous plants which are very well shaped, heavily branched, densely foliated, and true to form for the variety.
2. Canes or Trunk(s) and Branches:
   a. Well-formed and sturdy.
   b. Branching shall be uniformly distributed close to the ground.
   c. Scars shall be free of rot and not exceed ¼ the diameter of the wood beneath in greatest dimension unless completely healed.
   d. Pruning scars shall be clean cut and shall leave little or no protrusion from the trunk or branch.
   e. Graft unions shall be completely healed.
   f. No suckers or water sprouts.

g. Contain no dead wood.
h. Free of cracks, splits, or cambium peeling.

3. Shrubs with pest or mechanical damage will not be accepted.

4. Shrubs shall show no signs of frost or winter damage to the foliage. Foliage shall not be in a state of drought stress. Leaves or needles shall show no signs of wilt of desiccation due to weather stress.

E. Root system shall meet the following standards:

1. Each plant shall have an extensive, symmetrically balanced fibrous root system. Root balls that show signs of asymmetry, injury, or damage to the root system shall be rejected.

2. Curling or spiraling of the roots along the walls of rigid containers will not be accepted.

3. The fibrous root system of all plants shall be moist and fresh with a white color when washed of soil. When the plant is removed from the container the visible root mass shall be healthy with white root tips. The root systems shall be free of disease, insect pests, eggs, or larvae.

4. All trees and all shrubs which are not grown in containers must be moved with the root systems as solid units with balls of earth firmly wrapped with untreated 8-ounce natural, biodegradable fabric burlap, firmly laced with stout, natural biodegradable cord or twine. The base of the tree trunks shall be wrapped with a protective burlap layer, surrounded by a cardboard trunk protector, and loosely tied with twine.

5. The diameter and depth of the balls of earth must encompass the fibrous and root feeding system necessary for the healthy recovery of the plant. Minimum root ball diameters and depths shall be in accordance with the American Standard for Nursery Stock.

6. Plants shall not be loose in the container.

F. Container grown plants which have roots growing out of the container may be rejected.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall maintain and stockpile new and existing materials in a safe, approved manner in accordance with all environmental requirements for the project and to protect existing structures and work. See Specification Section 01000- General Requirements for additional coordination requirements.

B. The Contractor shall conform to all applicable local, state, and federal requirements regarding handling, delivery, installation and disposal of materials required to complete miscellaneous site improvements as described herein and shown on the Contract Drawings.

C. The Contractor shall protect, support, and brace all miscellaneous site improvements as necessary during construction until ready for use.

3.2 PAVEMENT PATCHING

A. Pavement patching shall be performed in accordance with MassDOT Section 450 Hot Mix Asphalt Pavement and as noted herein.

B. Sawcut or otherwise neatly cut by mechanical means to provide a clean and sound vertical face for all hot mix asphalt pavement patching.

C. The vertical face of each edge shall be thoroughly coated with a hot applied pavement joint adhesive.

D. The underlying pavement surface within the patch limits shall receive a thorough asphalt emulsion task coat.

E. Hot mix asphalt patching mixture shall be the same mixture type as the existing pavement course being patched or as specified on the Contract Drawings or as directed by the Engineer.

F. The patching mixture shall be placed by hand or by mechanical means and shall match the thickness, grade, and cross-slope of the surrounding pavement. Each course shall be applied individually, in single lifts of full thickness.

G. Hot mix asphalt patching shall be compacted using a steel wheel roller. For patch areas not large to use a roller, compaction shall be accomplished by mechanical tamper capable of achieving the required in-place density.

H. Hot mix asphalt shall only be placed on dry, unfrozen surfaces and only when the temperature requirements are in accordance with MassDOT Table 450.42-1.

I. Portions of pavement courses which become mixed with foreign material or are in any way defective shall be removed, replaced with new hot mix asphalt, and compacted to density of surrounding areas. Hot mix asphalt material spilled outside lines of finished pavement shall be immediately and completely removed. Such material shall not be used in the work.

J. Variations in pitch of finished surface shall be less than or equal to the following tolerances when tested with a 10-foot straightedge, applied both parallel to and at right angles to centerline of paved area.

1. For roadway and parking pavement surface course - 1/4 inch in 10 feet.
2. At joint with existing pavement, and at other locations where an essentially flush transition is required, pavement elevation tolerance shall not exceed 0.01 feet.
3. At other areas pavement elevation tolerance shall not exceed $\pm$ 0.05 feet

K. No vehicular traffic of any kind shall be allowed to pass over the newly finished surface until it has had time to set. Seventy-two hours will be considered sufficient time for the pavement to set in most cases, but this period may be extended by the Engineer as required by weather or other reasons. Under all circumstances, damage to the pavement caused by the Contractor's or public vehicles driving over the pavement before the pavement has fully cured shall be repaired as specified, performed, and paid for under this Section, at no additional cost to the Owner.

3.3 RESTORE PAVEMENT MARKINGS

A. Contractor shall replace existing pavement markings as necessary where impacted by construction work.

B. Replace existing pavement markings in accordance with MassDOT Section 860 Reflectorized Pavement Markings and as specified on the Contract Drawings and noted herein.

3.4 RESET GRANITE CURB

A. Existing granite curb shall be salvaged and stockpiled for reuse.

B. The Contractor shall protect all curb and keep it in satisfactory condition. The Contractor shall replace any existing curb to be reset which is lost or damaged as a result of their operations.

C. Reset curb in accordance with MassDOT Section 580 Curb or Edging Removed and Reset and as specified on the Contract Drawings and noted herein.

D. Granite curb shall be set in a bed of ready-mix concrete with dimensions as shown on the Contract Drawings.

E. The joints between granite curb shall be filled with cement mortar.

3.5 RESET SITE FEATURES

A. The Contractor shall remove and store existing site features to be restored in-kind, that are not protected in place. Any existing feature scheduled to remain or to be temporarily removed and reset shall be restored or replaced to match pre-construction conditions at the Contractor’s expense.

B. Any material mishandled or damaged in any way shall be replaced at the Contractor's expense.

3.6 PROTECT AND REPLACE EXISTING UTILITIES

A. Existing utility systems within or adjacent to the site shall remain in continuous service and shall be protected from damage during construction. Where interruption of a service is required, it shall be scheduled in advance and coordinated with the Owner and the Engineer.

B. Existing utilities scheduled to remain or to be temporarily removed and reset shall be restored or replaced to match pre-construction conditions at the Contractor’s expense.

3.7 RESTORATION OF GRASS AND LANDSCAPED AREAS

A. Backfill excavations in landscaped areas with soil meeting the requirements of Existing Granular Fill to 4 inches below finished grade, or to match the depth of existing loam or topsoil if deeper.

B. Disturbed landscaped areas shall be permanently stabilized and restored to grade with a 4-inch-thick layer (minimum) of loam.

C. Loam shall be spread in even lifts and compacted sufficiently to reduce settling but not enough to prevent the movement of water and feeder roots through the soil.

D. If depressions develop within the surface of the loam the depressions shall be filled with additional loam material and the surface be regraded until presenting a smooth even finish corresponding to the required grades.

E. Existing plants shall be protected from damage and restored in-kind. In the event plantings require replacement due to damage or any other reason, the Contractor shall submit proposed product information, a planting plan, and procedures for approval by the Owner.

F. Grass and Lawn Areas:

1. The Contractor must establish a satisfactory stand of grass to complete restoration of an existing area of grass. To be acceptable all areas of restored grass shall be well-rooted, thick in growth, uniformly healthy in color, texture, and growth pattern, and shall meet the following criteria:
   a. A minimum germination rate of 90% for all seeded lawns. Areas and spots not showing a prompt "catch" shall be scarified, re-fertilized, and re-seeded at two-week intervals until 90% germination is attained,
   b. No bare spots larger than one foot (1') square with less than 75% germination shall be evident,
   c. No annual, perennial, or noxious weeds shall be evident.
2. Where new grass areas abut other newly planted or existing planted areas establish limits of new grass with lime. Secure approval by Owner's Representative of limed edge prior to beginning seeding operations.
3. Apply fertilizer, lime, and other initial soil amendments evenly at rates determined by topsoil test results and/or seed suppliers' recommendations.
4. Maintain a moist seed bed at all times. Water the seed bed so that the topsoil is wet to a depth of two inches.
5. Protect the seed bed with barricades, if necessary, to keep all traffic off the areas.
6. After grass has appeared, re-seed all areas which have failed to show a uniform stand of grass. For isolated points of erosion that are not able to be stabilized by re-seeding, use sod.

3.8 SHRUB PLANTING

A. Excavate pits, beds and trenches with sloping sides and with bottom of excavation slightly raised at center to provide proper drainage. Loosen hard subsoil in bottom of excavation.

1. For balled and burlapped plants, make excavations at least twice as wide as the ball diameter and equal to the ball depth.
2. For container grown stock, excavate as specified for balled and burlapped stock, adjusted to size of container width and depth.

B. Set balled and burlapped and container stock on layer of compacted planting soil mixture, plumb and in center of pit or trench with top of ball at same elevation as adjacent finished landscape grades. Remove burlap from sides of balls; retain on bottoms. Plastic containers or other synthetic root ball wrapping material must be removed entirely from root ball. When set, place additional backfill around base and sides of ball, and work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately 2/3 full, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill.

C. Any excess soil, debris, or trimmings shall be removed from the Project site immediately upon completion of each planting operation.

3.9 MAINTENANCE

A. Maintain all plant material until acceptance by the Engineer and the Owner. Begin maintenance immediately after planting.

B. Maintenance shall consist of keeping the plants in a healthy growing condition and shall include but is not limited to watering, weeding, cultivating, re-mulching, removal of dead material, resetting plants to proper grades or upright position, maintaining the planting saucer and replacement of plants that are in decline or die.

1. Plants shall be inspected for watering needs at least twice each week and watered to promote plant growth and vitality. Do not compact planting soil in the process of water plant material. Place wood board ballast to walk between plants.

2. Planting beds and individual plant pits shall be kept free of weeds, and mulch shall be replaced as required to maintain the specified layer of mulch. Beds and individual pits shall be neat in appearance and maintained to the designed layout.

3. Plants that are in decline or die during the maintenance period shall be removed and replaced by the Contractor within one week of notification and replaced during that growing season.

C. During the maintenance period, any decline in the condition of plantings shall require the Contractor to take immediate action to identify potential problems and undertake corrective measures. If required, the Contractor shall engage professional arborists and/or horticulturalists to inspect plant materials and to identify problems and recommend corrective procedures. The Engineer shall be immediately advised of such actions. Inspection and recommendation reports shall be submitted to the Engineer

D. The Contractor shall be responsible for the watering of all seeded and grassed areas, which shall be kept moist. The Engineer's decision will prevail in the event that a dispute develops with the Contractor as to whether or not the grassed areas are moist. Watering shall be done in a manner that will provide uniform coverage, prevent erosion due to application of excessive quantities over small areas, and prevent damage to the finished surface by the watering equipment.

E. Areas which fail to achieve established vegetation, as described herein, shall be replaced and maintained the Contractor, at no addition expense to the Owner. Contractor to provide a 1-year warranty

3.10 INSPECTION AND ACCEPTANCE

A. When landscape work is completed, including maintenance, Engineer will, upon request, inspect to determine acceptability.

B. If inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by Engineer and found to be acceptable. Remove rejected plants and materials promptly from project site.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. MISCELLANEOUS SITE IMPROVEMENTS including item 02495-1, shall be measured for payment by the lump sum or percentage complete for completing site restorations and plantings as indicated on the Contract Drawings, and as measured by the Engineer.

4.2 PAYMENT

A. MISCELLANEOUS SITE IMPROVEMENTS shall be paid for under Contract Item 02495-1 for the contract unit price per Lump Sum. Payment shall include full compensation for furnishing, stockpiling, protecting, and installing site restorations including all materials, equipment, falsework, labor, survey, supervision, transportation, submittals and incidental or appurtenant work required to complete the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

4.3 PAYMENT ITEMS

ITEM	DESCRIPTION	UNIT PRICE
02495-1	MISCELLANEOUS SITE IMPROVEMENTS	Lump Sum

END OF SECTION

SECTION 02500

SALT MARSH

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work covered by this section consists of providing all survey, supervision, labor, material, tools and equipment and services necessary for, and incidental to, salt marsh enhancement work, as shown on the Contract Drawings and as required to complete the work. This work includes but is not limited to, the following:

1. The protection of the existing salt marsh adjacent to the work area at the site.
2. Installation of temporary toe protection using biodegradable high-density coir rolls and biodegradable erosion control blanket.
3. Procurement, testing, delivery, and placement of clean sand nourishment fill.
4. Installation and maintenance of new salt marsh plugs.

1.2 RELATED SECTIONS

01000 GENERAL REQUIREMENTS

02002 MOBILIZATION AND DEMOBILIZATION

02200 EARTHWORK

02496 MISCELLANEOUS SITE IMPROVEMENTS

1.3 REFERENCES

A. References herein to any technical society, organization, group, or body are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable:

1. American Concrete Institute (ACI), latest edition: SP-15; 211; 301; 304; 305; 306; 309; 311; 315; 318
2. American Association of State Highway and Transportation Officials (AASHTO) M85 Standard Specification for Portland Cement
3. American Society for Testing and Materials (ASTM), latest edition
4. American Standard for Nursery Stock (ANSI Z60.1), latest edition
5. Commonwealth of Massachusetts, Department of Transportation, Standard Specifications for Highways and Bridges, current edition, and all amendments
6. International Building Code (IBC), latest edition
7. Massachusetts State Building Code, latest edition

1.4 SUBMITTALS

A. The Contractor shall submit the following to the Engineer and qualified wetland scientist for review at least 14 days prior to planned start date for performing the work and prior to ordering materials.

1. Product data and literature for proposed materials including, but not limited to, coir rolls, erosion control blanket, and timber wedge stakes.

2. Plant material source, information, climate acclimation, and nursery certification. Species substitutions must be approved in writing by the Engineer or qualified wetland scientist prior to ordering. The Engineer or qualified wetland scientist shall inspect the salt marsh plants prior to planting.

3. Sand fill source, gradation and testing results including grain size, organic content, soil chemistry, and pH. Documentation and certification that the material is clean and free of contamination.

4. Procedure for performing the work including coir roll installation, filling, planting, and protection measures.

5. Recommended procedures for maintenance to be implemented by the City to maintain the salt marsh work. Including, but not limited to, procedures for replacing dead or missing plants material, removal of debris, replacement of loose or missing coir rolls or stake anchors, correcting unintended ponding, erosion or gullies, and procedures to address invasive species.

1.5 REGULATORY REQUIREMENTS

A. Conform to applicable Federal, State, and Local codes for demolition of structures, safety and protection of adjacent structures, dust control, noise control, vibration control, rodent control, soil erosion and sedimentation control, and waste disposal.

PART 2 - MATERIALS

2.1 SALT MARSH PLANTS

A. All plant material shall conform to the current issue of American Standard for Nursery Stock (ASNS), ANSI Z-60.1, latest edition published by American Association of Nurserymen (AAN), with: American Standard for Nursery Stock (ASNS), ANSI Z60.1-2004, or latest edition, published by American Nursery and Landscape Association (ANLA), (formerly American Association of Nurserymen). Other subsequent references to AAN should likewise be revised to ANLA.

B. All plants shall be living and healthy with vigorous root systems suitable to ensure establishment of the plant. Salt Marsh plants shall be nursery grown under climatic conditions similar to those in the locality of the project. Plants shall be from New England see stock and shall be acclimated to the saltwater conditions of the project site. Plants may be 2-inch, or larger plugs, bare root or 2-inch pots. Bare-root plants shall have stem and root development similar to 2-inch plugs. All plants shall be free from material detrimental to a healthy stand of plants. Any plants exposed to excessive heat or drying shall be rejected.

C. All plant material used shall be nursery grown and healthy, sound and free of disease, insect pests, eggs or larvae, discolorations, leaf wilting or curling and weeds. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil after removal from the container. Roots shall visibly extend to the inside face of the growing container but shall not be root-bound or girdling. Plants grown in peat pots shall be well-rooted through the pot with 4-6 stems per pot and plugs at least 6 inches in height.

D. Plant materials shall be selected from certified nurseries approved by the Engineer and qualified wetland scientist.

E. All plant material shall be species native to the region. As per current recommendations by the NOAA Restoration Center and the EPA Ecoregion Assessment, in order to maintain genetic diversity, only native species of seed and plants from the EPA Level III Ecoregion of the project area shall be used for ecosystem restoration. The EPA Level III Ecoregions of the project site is Ecoregion 59 Northeastern Coastal Zone. The current EPA map, Ecoregions of the Continental United States, is available through the following link: https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states

F. Plant material shall be acclimated to the salinity of the adjacent water body. Many nurseries require the customer to inform them of the target salinity. Salinity acclimation shall be done incrementally at the nursery to bring the plants up to a tolerance of the site salinity. Plants shall be thriving in the nursery at the target salinity level for a minimum of two weeks prior to delivery.

G. Low marsh plants shall consist of *Spartina alterniflora*.

H. High marsh plants shall consist of *Spartina patens and Distichlis spicata.*

2.2 COIR ROLLS AND EROSION CONTROL BLANKET

A. Coir rolls shall be biodegradable high density coir roll, minimum 12-inches diameter and minimum density 7 pounds per cubic foot. Coir rolls shall be tagged with the location and name of the project.

B. Erosion control blanket shall be biodegradable coconut or coir fiber blanket.

2.3 SALT MARSH SAND

A. Sand fill shall consist of natural, clean sand nourishment, greater than 95 percent fine to coarse Sand, 80 to 90 percent passing the No. 10 sieve, and less than 5 percent Silt.

B. The pH content shall be 6.8 – 7.3 or within 0.2 units of ambient sea water.

C. Organic Content: 4.0 - 6.0 percent as determined by the loss on ignition of oven-dried samples passing #10 sieve (Muffle furnace temperature: 450 +/- 10 degrees C for 8 hours).

2.4 FERTILIZER

A. Slow-release fertilizer shall consist of Osmocote 18-6-12 or approved equivalent.

2.5 TIMBER STAKES

A. Timber wedge stakes shall be sized as shown on the Contract Drawings and shall consist of untreated, new, sound, unused timber hardwood material.

PART 3 - EXECUTION

3.1 SALT MARSH PLANTING

A. The salt marsh protection/ enhancement work shall be performed by hand during times of low tide.

B. The Contractor shall work with the Engineer and qualified wetland scientist to identify, mark, and protect the areas of existing salt marsh during the course of work.

C. Equipment and material shall be stored and stockpiled landward of the existing seawall.

D. Install coir rolls at the seaward edge of the salt marsh area, anchor using timber wedge stakes placed on both sides of the coir rolls. Coir roll installation adjacent to existing stones shall be located in the field. Coir rolls shall be tagged with the location and name of the project. Stakes shall have a maximum 12-inches exposed height above grade.

E. Install erosion control blankets and wrap top/bottom of sand nourishment in fill areas.

F. Identify pockmark voids to be filled in consultation with the Engineer and qualified wetland scientist. Voids to be filled with erosion control blanket and clean sand fill.

G. Fill areas shall match adjacent marsh elevations. Filling over existing vegetation shall be kept to a minimum (less than 4 inches of depth) only at edge limit locations where salt marsh substrate has sloughed off.

H. Final grades in the fill areas shall conform to target elevations as shown on the Contract Drawings and as approved by the Engineer or qualified wetland scientist.

I. Planting shall be performed by a qualified contractor, observed by a qualified wetland scientist.

J. New salt marsh plugs shall be spaced as indicated in the Contract Drawings. The holes for planting shall be approximately 3-inch diameter and at a depth where roots are covered (typically 6-8 inches deep). Each salt marsh plug hole shall receive slow-release fertilizer (Osmocote 18-6-12 or approved equal) in accordance with manufacturer's recommendations.

K. Existing marsh bare spots shall be identified and planted as described above.

L. Plants shall consist of the number and type as shown on the Contract Drawings.

M. Plants shall be installed within 24 hours of delivery unless otherwise approved by the Project Engineer and qualified wetland scientist. Plants shall be stored in designated areas and covered with moist burlap, straw, or other covering. Covering shall allow air to circulate preventing internal heat from building up. Plants shall be protected from exposure to wind and direct sunlight until installed. Plants showing signs of stress or compromised health may be rejected with replacement at the contractor’s expense.

N. Firmly backfill the hole by hand with the planting substrate to prevent dislodging from tidal action. There is potential for air pockets; care shall be taken not to leave air pockets in the planting hole. Stepping on the planting hole to backfill may cause stems to break and is not an acceptable practice.

3.2 MAINTENANCE AND PROVISIONAL ACCEPTANCE

A. The Contractor will be responsible for initial maintenance of the coir roll and anchoring until acceptance by the Engineer, qualified wetland scientist, and the Owner. Initial maintenance may include, but is not limited to, resetting coir rolls/anchors, repairing coir rolls/anchors, adjustments/additions of anchors, or replacement of damaged/displaced coir rolls/anchors.

B. The Contractor will be responsible for the initial maintenance of the salt marsh plantings for a 1-year warranty period. The salt marsh planting area will be monitored once per year during the peak biomass period (i.e. July or August) by a qualified wetland scientist to determine if the vegetative cover is acceptable.

C. A minimum 75% vegetative cover shall be achieved for the salt marsh protection/ enhancement area. The Contractor will be responsible for the initial maintenance and replacement of sickly, dead, or missing salt marsh vegetation for 1-year after installation.

D. 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 the plants shall be extended until replacements are made.

E. Based on monitoring results and as directed by the Engineer or qualified wetland scientist, the Contractor shall make corrective measures to achieve compliance with the Performance Standards. All plants not showing satisfactory evidence of establishment during the Planting Guarantee Period, including damage caused by waterfowl and other wildlife, shall be replaced within the appropriate planting window. Unsatisfactory plants shall be removed and replaced along with dead and missing plants.

F. All costs associated with achieving the Performance Standards through the Planting Warranty Period shall be incidental to this item.

G. The Contractor, in coordination with the Engineer and qualified wetland scientist, shall furnish full and complete written instructions for maintenance of the salt marsh are to the Owner at the time of provisional acceptance.

H. The Contractor is responsible for site restoration prior to demobilizing and completion of the project work.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. SALT MARSH including item 02500-1, shall be measured for payment by the lump sum or percentage complete for completing salt marsh work as indicated on the Contract Drawings, and as measured by the Engineer.

4.2 PAYMENT

A. SALT MARSH shall be paid for under Contract Item 02500-1 for the contract unit price per Lump Sum. Payment shall include full compensation for preparatory work, procurement and installation coir rolls, erosion control blankets, salt marsh sand fill, and salt marsh plantings including all materials, equipment, falsework, labor, survey, supervision, transportation, submittals and incidental or appurtenant work required to complete the work under this item as indicated on the Contract Drawings, as specified herein, and as directed by the Engineer.

4.3 PAYMENT ITEMS

ITEM	DESCRIPTION	UNIT PRICE
02500-1	SALT MARSH	Lump Sum

END OF SECTION

SECTION 03300

MARINE CONCRETE

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work covered by this section consists of providing all survey, supervision, labor, material, tools and equipment, and services necessary for, and incidental to, the construction of concrete and cementitious elements associated with Columbus Avenue Seawall Reconstruction Project, as indicated below, as shown on the Contract Drawings and as required to complete the work. This work includes but is not limited to, the following:

1. Preparation, forming, pouring, finishing, and curing cast-in-place reinforced concrete for the wall and landing reconstructions, concrete sidewalk, concrete access steps, concrete to reset curbs, or other cast-in-place or precast concrete elements of the Project.
2. Concrete reinforcement and accessories.
3. Restoration of the Site to pre-construction conditions.

B. All work shall be performed in accordance with all regulatory requirements within the limits specified herein and indicated by the Contract Drawings.

1.2 RELATED SECTIONS

01000 GENERAL REQUIREMENTS
02002 MOBILIZATION AND DEMOBILIZATION
02250 WALL AND LANDING RECONSTRUCTION
02495 MISCELLANEOUS SITE IMPROVEMENTS

1.3 REFERENCES

A. References herein to any technical society, organization, group, or body are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable:

1. American Concrete Institute (ACI), latest edition: SP-15; 211; 224; 301; 304; 305; 306; 309; 311;315; 318; 347; 357
2. American Association of State Highway and Transportation Officials (AASHTO) M85 Standard Specification for Portland Cement
3. American Society for Testing and Materials (ASTM), latest edition: A185; A615; A706; A767; C31; C33; C39; C94; C143; C150; C231; C260; C494; C989; D8139
4. American Welding Society (AWS), latest edition: D1.4
5. Commonwealth of Massachusetts, Department of Transportation, Standard Specifications for Highways and Bridges, current edition, and all amendments
6. International Building Code (IBC), latest edition
7. Massachusetts State Building Code, latest edition

1.4 SUBMITTALS AND SAMPLES

A. Procedures and Equipment. The Contractor shall submit methods, procedures, and equipment for placing concrete at locations indicated on the Contract Drawings.

B. Concrete Mixture Design: At least 30 days prior to concrete placement, submit proportions for the concrete mixture(s) that meets the properties specified and is suitable for the job conditions. Submit a complete list of materials including type; brand; source and amount of cement, fly ash, pozzolans, silica fume, ground slag, aggregate and admixtures; and applicable reference specifications. Submit additional data regarding concrete aggregate if the source of aggregate changes. Include copies of test reports showing that the mix has been successfully tested to produce concrete with the properties specified. The mixture shall be prepared by an accredited laboratory experienced in this field and under the direction of a licensed/registered civil engineer, who shall sign all reports and designs. The submittal shall clearly indicate where each mixture will be used.

C. Material Test Reports: For the following, submit from a qualified testing agency, indicating compliance with requirements:

1. Aggregates. Submit test results for aggregate quality in accordance with ASTM C33, gradation curves, and combined gradation curve for grading proposed for use in the work and used in the mixture qualification. Submit test results confirming the potential for alkali-silica reaction are within allowable limits in accordance with ASTM C1260.

2. Cement: Submit mill test report with the concrete mixture design submittal. Mill test reports shall be no more than 6 months old.

3. Material Test Certification: For each of the following, signed by manufacturers:

a. Cementitious materials: fly ash, ground granulated blast-furnace slag, silica fume. Test results shall be no more than 6 months old.

b. Admixtures.

c. Steel reinforcement and accessories.

d. Bonding agents.

e. Repair materials.

D. Concrete Shop Drawings

1. Steel Reinforcement Shop Drawing: Provide drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, supports for concrete reinforcement, and concrete cover. Indicate proposed methods for splicing reinforcing.

E. Concrete Placement: Submit description of proposed placement procedures and technical literature for equipment and methods proposed for use in placing concrete. Include pumping or conveying equipment including type, size and materials for pipe, valve characteristics, and the maximum length and height concrete will be pumped. No adjustments shall be made to the mix design to facilitate pumping or placement without the acceptance of Engineer. Submit technical literature for equipment and methods proposed for vibrating and compacting concrete.

F. Concrete Finish - At location acceptable to the Engineer and Owner, demonstrate methods used for construction, including forming and finishing conditions required for the project using materials, workmanship, joint treatment, form ties, patching techniques, and curing methods to be used throughout the project.

G. Submit batch tickets for each load of concrete delivered to the project site.

H. Submit qualification data for Concrete Supplier and Contractor's Independent Testing Agency.

I. Test Reports. Submit results for field test completed on fresh concrete and compressive strength tests completed on hardened concrete. Test reports shall be submitted to the Engineer no later than 1 day of Contractor receipt of reports.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Field Testing Technician and Testing Agency Qualifications: An independent testing agency shall be provided by the Contractor and approved by the Owner.

1. Work on concrete shall be performed by an ACI Concrete Field Testing Technician Grade 1 or Grade 2 qualified in accordance with ACI SP-299 or equivalent. Equivalent certification programs shall include requirements for written and performance examination as stipulated in ACI SP-299.

2. Testing agencies that perform testing services on reinforcing steel shall meet the requirement of ASTM E 329.

3. Testing agencies that perform testing serviced on concrete materials shall meet the requirements of ASTM C 1077.

C. Contractor shall notify Engineer minimum of 24 hours prior to commencement of concreting operations. Concrete placement shall be performed in the presence of the Engineer.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

E. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code Reinforcing Steel".

F. All products shall be installed in accordance with the manufacturer's recommendations.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Cast-in-Place Concrete

1. Follow ACI 301, ACE 304R, and ASTM A 934 requirements and recommendations. Do not deliver concrete until forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. Store reinforcement of different sizes and shapes in separate piles or racks raised above the ground. Protect materials from contaminants such as grease, oil and dirt. Ensure materials can be accurately identified after bundles are broken and tags removed.

1.7 TESTS

A. All testing shall be conducted by the Contractor at the Contractor's expense.

B. Testing results shall immediately be sent to the Engineer upon receipt by the Contractor from the testing firm.

C. Testing Agency Qualifications. An independent sampling and testing agency shall be provided by the Contractor. Submit qualifications of proposed concrete testing agency and technicians.

1. Field Testing Technicians: ACI Concrete Field Testing Technician Grade I qualified in accordance with ACI SP-2.

2. Laboratory Testing Technicians: ACI Concrete Strength Testing Technician and Laboratory Testing Technician, Grade I or II qualified in accordance with ACI SP-2.

D. Tests of cement and aggregates will be performed to ensure conformance with the requirements stated herein, and under provisions of the General Conditions.

E. Submit proposed mix designs using ¾-inch, and ⅜-inch aggregate mix to the Engineer for review prior to commencement of concreting operations.

F. Testing firm will perform slump tests in accordance with ASTM C143.

G. Testing firm shall make and cure concrete test cylinders in accordance with ASTM C31 and perform laboratory compressive strength tests in accordance with ASTM C39.

H. One set of four concrete test cylinders will be taken for every 25 cubic yards, or as otherwise directed by the Engineer.

I. One slump test will be taken for every concrete truck, or as otherwise directed by the Engineer.

J. Air entrainment tests shall be performed in accordance with ASTM C231 or ASTM C173.

PART 2 - MATERIALS

2.1 CONCRETE MATERIALS

A. Cementitious Material:

1. Portland Cement. ASTM C150 Type II.

2. Ground Granulated Blast-Furnace Slag, ASTM C989, Grade 120.

B. Aggregate:

1. Provide from one source of supply to ensure uniformity in color, size, and shape unless otherwise accepted by the Engineer.

2. Do not use aggregates containing soluble salts or other substances such as iron sulfides, pyrite, marcasite or ochre, which can cause stains on exposed concrete surfaces.

C. Fine Aggregate:

1. Optional grading in ASTM C33 shall apply.

2. Restriction on reactive material in ASTM C33 shall apply.

3. Use clean, sharp, natural sand. Do not use dune sand, or manufactured sand from a crushing operation.

D. Coarse Aggregate:

1. Use Size Number 67 for mixes having a maximum coarse aggregate size of ¾ inch.

2. Class designation is 3S per ASTM C33.

3. Use crushed stone processed from natural rock or stone, or washed gravel – either natural or crushed. Do not use pit of bank run gravel.

4. Maximum aggregate shall be within a 1/4-inch oversize tolerance of the stone retained on the largest sieve.

E. Water: MassDOT M4.02.04, it shall be clean, clear, and free of deleterious material.

2.2 ADMIXTURES

A. Source: Provide all admixtures used in the concrete mix from the same manufacturer.

B. Admixtures performance: Provides dense, durable concrete resistant to chemical attack, wear, rebar corrosion, freeze/thaw attack, cracking, and segregation. All admixtures used shall be compatible. All admixtures shall be free of chlorides and other corrosive chemicals.

C. Air Entraining Admixtures: ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete.

D. Water Reducing Admixtures: ASTM C494 Type A Standard Specification for Chemical Admixtures for Concrete.

E. Retarding Admixtures: ASTM C494 Type B Standard Specification for Chemical Admixtures for Concrete.

F. Accelerating Admixtures: ASTM C494 Type C and E Standard Specification for Chemical Admixtures for Concrete.

G. Corrosion Inhibiting Admixture: ASTM C494 and ASTM C1582 Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete.

2.3 BONDING AGENT

A. Bonding agent shall be Sika Armatec 110 EPOCEM or approved equal.

2.4 CONCRETE MIX

A. Mix concrete in accordance with ASTM C94.

B. Provide concrete of the following characteristics:

1.	Compressive Strength (7 days): (unless otherwise specified)	3,000 psi
2.	Compressive Strength (28 days): (unless otherwise specified)	4,000 psi
3.	Aggregate Size (maximum) for 3/4” mix:	1” largest dimension
4.	Aggregate Size (maximum) for 3/8” mix:	1/2" largest dimension
5.	Aggregate Size (minimum):	25% passing #50 sieve
6.	Air entrainment:	5% to 8%
7.	Maximum Total Water to Cementitious Material Ratio (W/C):	0.45 (max)
8.	Slump:	3 to 5 inches
9.	Minimum Cementitious Material Content:	585 lbs. per cubic yard

C. Use accelerating admixtures in cold weather only when approved by Engineer. Use of admixtures will not relax cold weather placement requirements.

D. Add air entraining agent to concrete mix.

E. Use water-reducing admixtures in strict compliance with the manufacturer’s directions. Admixtures to increase cement dispersion, or to provide increased workability for low-slump concrete, may be used at the Contractor’s option subject to the Engineer’s approval.

F. If pumping process is utilized to convey concrete, established concrete mixtures may require increased proportion of cement and fine aggregate and a decreased proportion of coarse aggregate, but these mixtures may not be altered more than:

Cement	plus 20 lbs. per cubic yard
Fine Aggregate	plus 50 lbs. per cubic yard
Coarse Aggregate	minus 50 lbs. per cubic yard

2.5 CONCRETE REINFORCEMENT

A. Reinforcing steel shall conform to ASTM Specification A 615, Grade 60; Epoxy coated, ASTM A775. Do not use uncoated reinforcing steel. Reinforcing steel shall be supplied in the shape and length required for the project without modification in the field.

B. If the number of bars is shown on the drawings, the number given shall govern over the spacing.

C. Splicing of bars and details not covered herein shall be in accordance with the recommendations of "Manual of Standard Practice for Detailing Reinforced Concrete Structures ACI 315."

D. Obtain Engineer's approval of all splices not shown on the Drawings.

E. Tie wire shall be 16-1/2 gauge or heavier zinc or plastic-coated wire.

2.6 FORMWORK

A. Bar supports shall be Class 1 plastic coated wire bar supports or plastic bar supports.

B. Formwork shall be sufficiently strong and stiff to prevent deflection during concrete placement.

C. Structurally design forms to meet applicable safety regulations, OSHA regulations and other codes.

D. Finished concrete tolerances shall be minus ¼ inch and plus ½ inch from the dimensions shown.

E. All concrete edges shall have a formed ¾-inch chamfer, unless otherwise indicated.

F. Forms shall be left in place a minimum of 3 days after concrete placement.

G. Form ties shall have conical or spherical type inserts such that no metal is left within 1 inch of the concrete surface when tie ends are removed. Patch form holes with no-shrink grout.

H. Form ties shall not be in contact with reinforcing steel. Maintain a minimum ½-inch clearance between reinforcing steel and form ties.

I. Construction joints shall be formed with a keyway sufficient to transfer concrete shear capacity. Forming detail shall be subject to approval by the Engineer prior to placing any concrete.

2.7 MATERIALS FOR CURING CONCRETE

1. Impervious Sheeting. ASTM C171; waterproof paper, clear or white polyethylene sheeting, or white burlap-polyethylene sheeting.
2. Pervious Sheeting. AASHTO M 182 Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
3. Liquid curing compound. ASTM C309, white-pigmented, Type 2, Class B

2.8 DOWELS

A. ASTM A615, Grade 60, epoxy coated steel.

2.9 MORTAR, CEMENTITIOUS GROUT, EPOXY GROUT, EPOXY ADHESIVE

A. Mortar (field-mixed) shall be composed of 1 Part Type II Portland Cement and 2 parts Sand (ASTM C33) by volume (MassDOT M4.02.15). Premixed mortar/concrete bags that are comprised of Type II or Type IS cement are acceptable.

B. Repair Mortar (pre-blended) shall be SikaTop®-123 Plus system or approved equivalent.

C. Cementitious grout shall be high-strength, non-shrink, non-metallic, cement-based grout conforming to ASTM C1107 and suitable for the saltwater/marine environment.

D. Epoxy grout shall be Five Star DP Epoxy Grout or approved equivalent.

E. Epoxy adhesive shall be a two-component system, suitable for the marine environment. Hilti HIT RE-500 or approved equivalent.

2.10 EXPANSION JOINTS

A. Expansion joint filler material shall be a non-extruding, preformed, 1/2” thick unless indicated otherwise, and conform to ASTM D8139.

B. Backer-rod shall be closed cell foam sized and installed per the manufacturer’s recommendation based on gap width.

C. Apply elastomeric joint sealant per the manufacturer’s recommendations.

2.11 ELASTOMERIC JOINT SEALANT

A. Elastomeric joint sealant shall be SikaFlex®-1A or approved equivalent. Color shall be white or gray, as approved by the Owner.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare and clean previously placed concrete by cleaning with potable water and steel brush in preparation for new concrete.

3.2 PLACING CONCRETE

A. Notify Engineer minimum of 24 hours prior to commencement of concreting operations.

B. Do not place concrete until soil bottoms, inserts, embedded parts and other work to be built into the concrete have been inspected and approved by the Engineer and by all trades concerned.

C. Before concrete placement, all reinforcement, anchors, and dowels shall be cleaned with pressurized potable water, to the satisfaction of Engineer. Water, dirt and debris shall be removed from within the area in which concrete is to be placed.

D. Convey concrete from the mixer to the place of final deposit as rapidly as practicable by methods, which will prevent separation or loss of ingredients, and in a manner, which will assure that the required quality of the concrete is retained.

E. Deposit, deliver, and place concrete so that the time lapse between batching and placement shall not exceed 90 minutes. Concrete shall not be allowed a free fall of over 4 feet. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing.

F. Mass Concrete: Concrete shall have an initial placement temperature less than 65 degrees Fahrenheit. Temperature may be achieved by cooling the aggregate, by chilling or fogging, or other suitable and acceptable means that will not significantly alter the moisture content of the aggregate within the stockpile. Mass Concrete should be placed in lifts as necessary to avoid excessive heat of hydration.

G. Concrete Temperature: ASTM C 1064/C 1065M; one test hourly when air temperature is 40 degrees F (4.4 degrees C) and below and when 80 degrees F (27 degrees C) and above.

H. Place Concrete in accordance with ACI 301.

I. Hot Weather Placement: ACI 305.

J. Cold Weather Placement: ACI 306.

K. Ensure reinforcement, inserts, embedded parts, formed joints and expansion joints are not disturbed during concrete placement.

3.3 FINISHES AND EXPOSED SURFACES

A. All concrete shall be screeded to the established elevations, then steel troweled to the finish lines on the drawings with allowable tolerance not exceeding 1/8 inch in any direction where treaded with a 10-foot long straightedge. Finishes shall be trowel, float, or broom as indicated on the Contract Drawings.

B. Honeycombing on any exposed surface shall be patched with non-shrink grout to the approval of the Engineer.

C. If the above requirements are not met, the Contractor shall, at its own expense, correct the conditions, as directed by the Engineer, using materials and methods approved by the Engineer.

D. Concrete sidewalk and steps surface shall be broom finished in one direction for a skid resistant finish.

3.4 PATCHING

A. Patch imperfections as directed by the Engineer.

3.5 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required levels and lines, details and elevations.

B. Repair or replace concrete not properly placed or of the specified type.

3.6 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed in accordance with this specification.

3.7 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Forms shall remain in place for a minimum of 3 days or as approved by the Engineer.

C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

D. In lieu of moist curing for 5 days, Contractor shall provide curing agent (penetrating sealer) to concrete immediately following removal of forms.

3.8 CLEANUP

A. Contractor shall utilize concrete washout containers in a protected upland area for concrete containment and washout.

B. At no time shall concrete equipment be washed out into wetland resource areas.

C. Any and all concrete spills shall be promptly cleaned up and concrete removed immediately from the site.

PART 4 - MEASUREMENT AND PAYMENT

4.1 GENERAL

A. No separate measurement or payment will be made for work associated with this section. Include all costs for work within this section under items for which marine concrete work is required.

END OF SECTION

ATTACHMENT A – PROJECT DRAWINGS

COLUMBUS AVENUE SEAWALL RECONSTRUCTION PROJECT

COLUMBUS AVENUE

SALEM, MASSACHUSETTS

PREPARED FOR

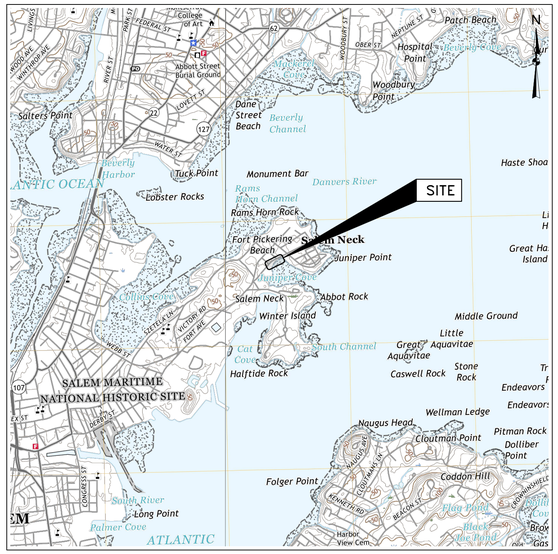
CITY OF SALEM
98 WASHINGTON STREET, 2ND FLOOR
SALEM, MA 01970

PREPARED BY

GZA GEOENVIRONMENTAL, INC.
144 ELM STREET
AMESBURY, MA 01913

INDEX OF DRAWINGS:

SHEET 1	COVER SHEET AND NOTES
SHEET 2	EXISTING CONDITIONS PLAN AND PROFILE
SHEET 3	EXISTING SECTIONS
SHEET 4	PROPOSED SITE PLAN AND PROFILE
SHEET 5	PROPOSED SECTIONS
SHEET 6	PROPOSED DETAILS 1
SHEET 7	PROPOSED DETAILS 2
SHEET 8	PROPOSED PILLAR DETAILS
SHEET 9	PROPOSED LANDSCAPE/ PLANTING PLAN AND DETAILS



PROJECT LOCUS MAP

SOURCE: USGS TOPOGRAPHIC QUADRANGLES SCANNED BY MASSGIS AND DISTRIBUTED IN 2018
CONTOUR ELEVATIONS REFERENCE NAVD 88, CONTOURS AND ELEVATIONS ARE SHOWN IN FEET

0 1000' 2000' 4000' 6000'

SCALE: 1" = 2000 FEET



AERIAL ORTHO IMAGERY MAP

SOURCE: BING AERIAL MAP DOWNLOADED FROM
AUTOCAD GEOLOCATION MAP SERVICES

0 1000' 2000' 4000' 6000'

SCALE: 1" = 2000 FEET

GENERAL NOTES:

1. VERTICAL DATUM: CONTOURS AND ELEVATIONS ARE IN FEET AND REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88): MLW=-5.0, NAVD88=0.0, MHW=4.0, HTL=6.4, FEMA 100-YEAR FLOOD ZONE AE=11.0. TIDAL DATUM RELATIONSHIP AND CONVERSION REFERENCED TO NOAA TIDAL STATION ID 8442417, BEVERLY HARBOR, BEVERLY, MA.
2. HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, NAD83, US SURVEY FEET.
3. LIMITED TOPOGRAPHIC SURVEY PERFORMED BY GZA GEOENVIRONMENTAL, INC., ON MARCH 31, 2020 AND REPRESENTS CONDITIONS AT THE TIME OF THE SURVEY.
4. APPROXIMATE SALT MARSH LIMITS SHOWN BASED ON SURVEY OBSERVATIONS BY GZA GEOENVIRONMENTAL, INC., ON MARCH 31, 2020
5. EXISTING UTILITIES SHOWN BASED ON ELECTRONIC FILES PROVIDED BY THE CITY OF SALEM. LOCATION OR PRESENCE OF UTILITIES ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS, DEPTHS, AND OVERHEAD CLEARANCE OF ALL EXISTING UTILITIES AND NOTIFY THE APPROPRIATE UTILITY COMPANY AND AUTHORITY TO ALLOW MARKING OF THEIR LINES.
6. PROPERTY LINES ARE APPROXIMATE AND WERE SCALED FROM AN ELECTRONIC FILE BY MERIDIAN ASSOCIATES ENTITLED "MDOT PLAN OF TOPOGRAPHIC SURVEY OF COLUMBUS AVENUE, SALEM, MASSACHUSETTS", DATED MAY 24, 2021.
7. THE OWNER AND ENGINEER MAKE NO WARRANTY REGARDING THE ACCURACY OF INFORMATION PRESENTED IN THESE DRAWINGS REGARDING EXISTING CONDITIONS.
8. THE CONTRACTOR SHALL PROVIDE ALL SUPERVISION, FACILITIES, LABOR, MATERIALS, TOOLS, EQUIPMENT, APPLIANCES, TRANSPORTATION, SURVEY, AND RELATED WORK NECESSARY TO COMPLETE THE WORK SPECIFIED ON THESE CONTRACT DRAWINGS.
9. ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PART OF THE WORK.
10. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SURVEY CONTROL, AT ALL TIMES, TO ESTABLISH AND MAINTAIN ALL LINES AND ELEVATIONS.
11. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF NECESSARY SHORING OR TEMPORARY BRACING, SUCH MATERIAL SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AFTER COMPLETION OF THE PROJECT.THE CONTRACTOR IS RESPONSIBLE TO ERECT, MAINTAIN AND REMOVE TEMPORARY MATERIALS AND EQUIPMENT. PROPOSED STAGING AREAS SHALL BE COORDINATED WITH THE OWNER PRIOR TO COMMENCING WORK.
12. THE CONTRACTOR IS ADVISED THAT THE SPECIFICATIONS FORM A PART OF THE CONTRACT DOCUMENTS AND ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR SHALL KEEP A COPY OF THE DRAWINGS AND SPECIFICATIONS, INCLUDING ENVIRONMENTAL PERMITS, ON-SITE AT ALL TIMES DURING THE DURATION OF THE WORK.
13. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO AVOID DAMAGE TO THE EXISTING BUILDINGS, WALLS, UTILITIES, ADJACENT STRUCTURES, ROADWAY, PARKING AREAS, AND OTHER MISCELLANEOUS SITE FEATURES TO REMAIN IN PLACE DURING CONSTRUCTION AND/OR AFTER CONSTRUCTION IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO SAID FEATURES.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO STRUCTURES, UTILITIES, AND THE SITE OR INJURIES TO THE PUBLIC RESULTING FROM THE CONTRACTOR'S WORK OR WORK OF THE CONTRACTOR'S SUBCONTRACTORS.
15. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN TEMPORARY CONSTRUCTION FENCES AND BARRIERS AROUND THE CONTRACTOR WORK AREA.
16. ALL MATERIAL REMOVED AND NOT SPECIFIED TO BE SALVAGED OR REUSED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE LEGALLY DISPOSED OF.
17. APPROPRIATE EROSION CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE BEGINNING OF ANY PHASE OF CONSTRUCTION. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED AFTER EACH STORM EVENT AND REPAIRED OR REPLACED AS NECESSARY. ANY ACCUMULATED SILT ADJACENT TO THE BARRIERS SHALL BE REMOVED.
18. THE CONTRACTOR SHALL PERFORM WORK AS PER THE ORDER OF CONDITIONS ISSUED BY THE CONSERVATION COMMISSION. A COPY OF THE ORDER OF CONDITIONS SHALL BE ON-SITE AT ALL TIMES DURING THE WORK. ANY CHANGES FROM THE ORDER OF CONDITIONS AND/OR CONSTRUCTION PLANS SHALL BE APPROVED BY THE OWNER AND ENGINEER.
19. THE CONTRACTOR SHALL PROVIDE AND POST DEP WETLAND PROJECT SIGNS IN CONFORMANCE WITH THE ORDER OF CONDITIONS FOR THE PROJECT.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENVIRONMENTAL PROTECTION AND TEMPORARY CONSTRUCTION DEBRIS CONTAINMENT EQUIPMENT AND KEEPING THE SURROUNDING WATERS CLEAN AND FREE OF ALL WASTE MATERIAL.
21. THE CONTRACTOR SHALL UTILIZE TEMPORARY SHORING OR CONTAINMENT MEASURES AROUND CONCRETING OPERATIONS TO COLLECT MATERIALS. CONTRACTOR SHALL REMOVE THE CONTAINMENT MEASURES AND MATERIALS UPON COMPLETION.
22. THE CONTRACTOR SHALL UTILIZE CONCRETE WASHOUT CONTAINER IN A PROTECTED UPLAND AREA FOR CONCRETE CONTAINMENT AND WASHOUT.
23. THE CONTRACTOR SHALL MONITOR THE PREDICTED TIDES FOR THE DURATION OF THE PROJECT. THE CONTRACTOR SHALL BE AWARE OF THE ANTICIPATED WORK SCHEDULE AS IT RELATES TO TIDAL SCHEDULE.
24. THE CONTRACTOR SHALL MONITOR THE WEATHER AND SHALL PROPERLY SECURE OR REMOVE EQUIPMENT FROM AREAS THAT MAY BECOME INUNDATED DURING STORM CONDITIONS AND PERIODS OF ASTRONOMICAL HIGH TIDES.
25. CONSTRUCTION AREAS TO BE GENERALLY ACCESSED FROM THE LANDSIDE OF THE SEAWALL AND ALONG THE LANDING. NO EQUIPMENT OR MATERIALS ALLOWED ALONG THE BEACH OR SALT MARSH AREAS. RESTORE DISTURBED AREAS TO EXISTING PRE-CONSTRUCTION CONDITIONS.
26. CONSTRUCTION ACCESS TO BE ALONG COLUMBUS AVENUE. NO TRACKED EQUIPMENT ALLOWED ON PAVED ROADWAYS, UNLESS PROTECTED. RESTORE DISTURBED AREAS TO EXISTING PRE-CONSTRUCTION CONDITIONS. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACCESS, STAGING, LAY DOWN, AND STORAGE AREAS WITH THE CITY.
27. STORAGE, FUELING AND LUBRICATION OF EQUIPMENT AND MOTOR VEHICLES SHALL BE CONDUCTED IN A MANNER THAT AFFORDS THE MAXIMUM PROTECTION AGAINST SPILL AND EVAPORATION. FUEL, LUBRICANTS AND OIL SHALL BE MANAGED AND STORED IN ACCORDANCE WITH FEDERAL, STATE, REGIONAL AND LOCAL LAWS AND REGULATIONS. THERE SHALL BE NO STORAGE OF FUEL ON THE PROJECT SITE. FUEL MUST BE BROUGHT TO THE PROJECT SITE AS NEEDED. EQUIPMENT OPERATION, ACTIVITIES, OR PROCESSES PERFORMED BY THE CONTRACTOR SHALL BE IN ACCORDANCE WITH FEDERAL AND STATE AIR EMISSION AND PERFORMANCE LAWS AND STANDARDS.
28. FUEL SPILL CONTAINMENT SYSTEMS SHALL BE ON-SITE PRIOR TO CONSTRUCTION.
29. ALL WORK SHALL BE PERFORMED IN A SAFE MANNER, IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS, AND SO AS TO PROTECT THE PUBLIC.

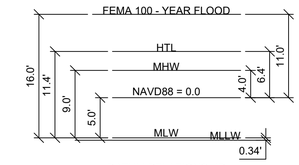
PREPARATION OF WORK

1. PRIOR TO THE COMMENCEMENT OF WORK THERE MUST BE A PRE-CONSTRUCTION MEETING ON SITE BETWEEN THE ENGINEER, THE CONTRACTOR, AND THE CONSERVATION AGENT OR A MEMBER OF THE CONSERVATION COMMISSION.
2. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A CONSTRUCTION PROJECT SCHEDULE WITHIN TEN (10) DAYS BEFORE THE START OF CONSTRUCTION.
3. THE CONTRACTOR SHALL BE REQUIRED TO COORDINATE DELIVERY OF MATERIALS UNDER THIS CONTRACT WITH THE OWNER AND ENGINEER.
4. THE CONTRACTOR SHALL STAGE THE WORK SUCH THAT AREAS OF CONSTRUCTION SHALL REMAIN STABLE AT THE CLOSE OF EACH CONSTRUCTION DAY. CONTRACTOR STAGING AREA SHALL BE LIMITED TO THE LOCATIONS AS INDICATED ON THE CONTRACT DRAWINGS AND AS APPROVED BY THE OWNER.
5. SITE USAGE BY THE CONTRACTOR SHALL BE LIMITED TO THAT AREA AS NECESSARY TO PERFORM CONSTRUCTION WORK. THE CONTRACTOR SHALL COORDINATE WORK TO MINIMIZE INTERFERENCE WITH THE GENERAL PUBLIC AND SITE ACTIVITIES TO THE APPROVAL OF THE OWNER.
6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD BEFORE ORDERING MATERIALS OR STARTING WORK.
7. THE CONTRACTOR SHALL RESTORE THE SITE AND ACCESS/STAGING LOCATIONS TO THEIR ORIGINAL PRE-CONSTRUCTION CONDITION TO THE SATISFACTION OF THE ENGINEER AND THE OWNER.
8. THE CONTRACTOR SHALL REPAIR, AT ITS OWN EXPENSE, AND DAMAGE CAUSED TO PUBLIC OR PRIVATE PROPERTY; REMOVE FROM THE SITE ALL DEBRIS, EXCESS MATERIALS, TOOLS, AND EQUIPMENT; AND SHALL LEAVE THE SITE IN A NEAT AND ORDERLY CONDITION, TO THE SATISFACTION OF THE ENGINEER AND OWNER.

MATERIAL NOTES:

MATERIAL AND PRODUCT REQUIREMENTS, WHERE REFERENCED AS MASSDOT, THE REQUIREMENT REFERS TO THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 2025, OR LATEST EDITION.

MARINE CONCRETE:	4,000 PSI 28-DAY COMPRESSIVE STRENGTH ¾ INCH AGGREGATE MIX ENTRAINED AIR CONTENT 5.0 TO 8.0% MASSDOT SECTIONS 901 AND M4 COLD WEATHER OR HOT WEATHER REQUIREMENTS AS APPLICABLE AND AS DETERMINED BY ENGINEER.
PORTLAND CEMENT:	ASTM C150, TYPE II
MORTAR MIX:	MASSDOT SPEC. M4.02.15, COMPRISED OF (1) PART TYPE II PORTLAND CEMENT AND (2) PARTS SAND BY VOLUME WITH SUFFICIENT WATER TO FORM A WORKABLE MIXTURE, UNLESS OTHERWISE APPROVED BY THE ENGINEER. CEMENT MASSDOT M4.01.0 AND AASHTO M85 SAND MASSDOT M4.02.02 WATER MASSDOT M4.02.04
CEMENTITIOUS EPOXY GROUT	FIVE STAR DP EPOXY GROUT, OR APPROVED EQUAL
EPOXY ADHESIVE:	HILTI HIT-RE 500 V3, OR APPROVED EQUAL
ELASTOMERIC SEALANT	NON-SAG, ELASTOMERIC, SILICONE SEALANT, SUITABLE FOR MARINE ENVIRONMENT, COLOR TO BE CLEAR OR TRANSPARENT (SIKASIL-N PLUS, OR APPROVED EQUIVALENT), ASTM C920
STEEL REINFORCING:	ASTM A615, GRADE 60 EPOXY COATED, ASTM A775
FLOOD GATE BARRIER	ALUMINUM ELEMENTS FABRICATED FROM 6061-T6 ALLOY STAINLESS STEEL 316 SUPPORTS
WALL STONES	STONES SHALL WEIGH BETWEEN 500 TO 3,500 LBS WITH 50% HAVING A MINIMUM WEIGHT OF 1,500 LBS NO FACE DIMENSION LESS THAN 12 INCHES
FILTER FABRIC	NON-BIODEGRADABLE NON-WOVEN GEOTEXTILE FABRIC RESISTANT TO NATURALLY ENCOUNTERED CHEMICALS, ALKALIS, AND ACIDS (MIRAFI 180N, OR APPROVED EQUIVALENT)
CRUSHED STONE	MHD SPEC. M2.01.1



DATUM RELATIONSHIP
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 59766
REGISTERED
PROFESSIONAL ENGINEER

4/21/26

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
COLUMBUS AVENUE
SALEM, MASSACHUSETTS

COVER SHEET AND NOTES

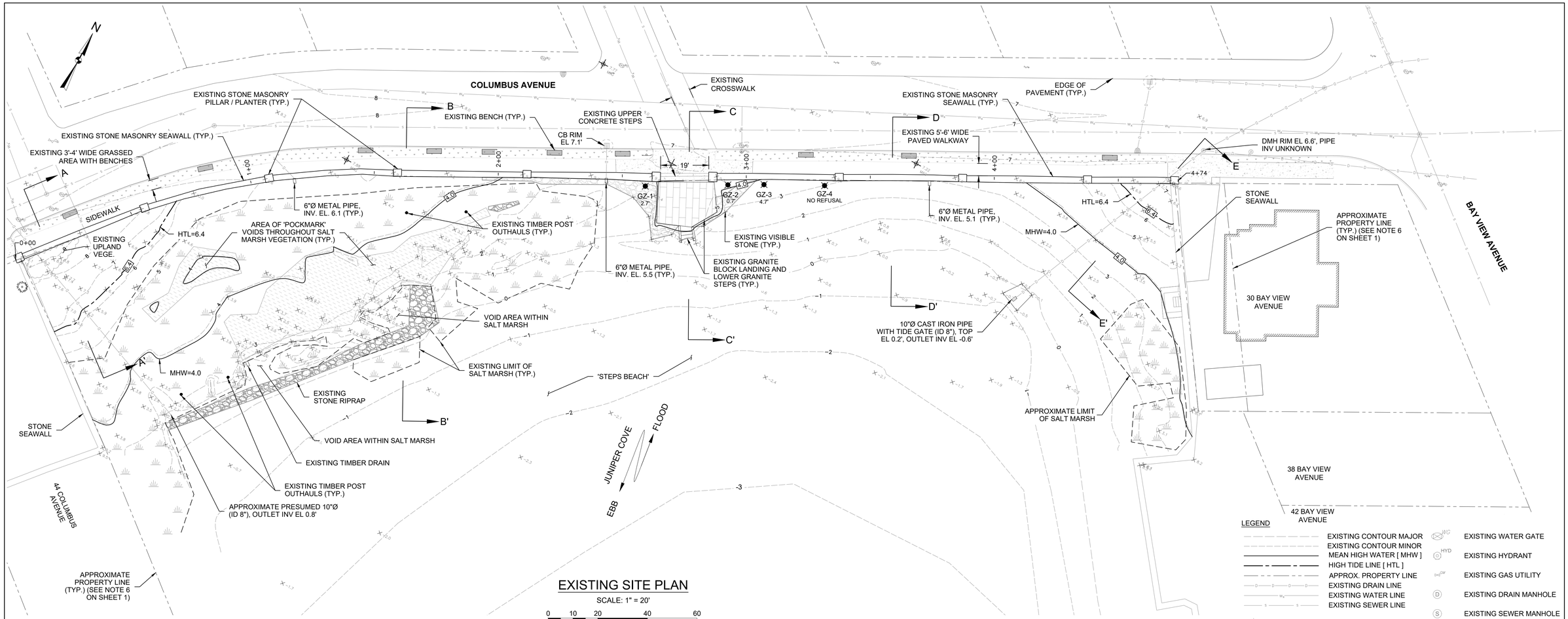
PREPARED BY:
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Engineers and Scientists
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PREPARED FOR:
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SALEM, MASSACHUSETTS

PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 1
DESIGNED BY: DAS	DRAWN BY: AJP/LFT	SCALE: AS SHOWN	
DATE: APRIL 2026	PROJECT NO. 18.0171674.08	REVISION NO. 1	SHEET NO. 1 OF 9

© 2026 GZA GeoEnvironmental, Inc. G:\ALL\1\18000s\18171674.08 Salem Columbus Ave Wall\Figures\CADD\Wall\18171674.08 Columbus Ave Seawall Reconstruction Cover Sheet.dwg (CS-SITE AND NOTES) Sep 21, 2026 - 2:29pm kevin.leyden

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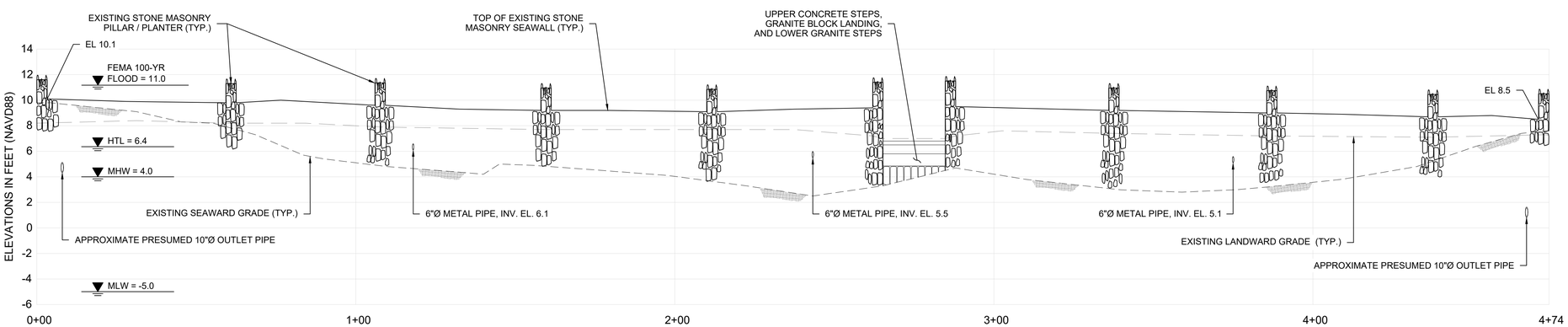


EXISTING SITE PLAN

SCALE: 1" = 20'

0 10 20 40 60

SCALE IN FEET



EXISTING SEAWALL PROFILE

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'

VERTICAL SCALE IN FEET
0 2.5 5 10 15

0 10 20 40 60
HORIZONTAL SCALE IN FEET

ANDERS B. BJARNGARD CIVIL No. 39766 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
4/21/26

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
COLUMBUS AVENUE
SALEM, MASSACHUSETTS

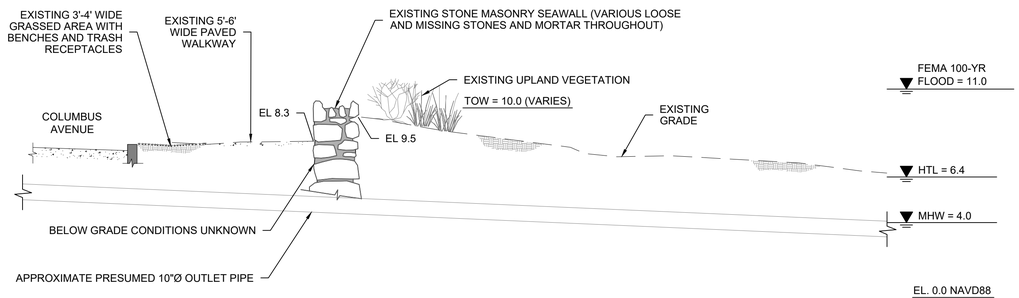
EXISTING CONDITIONS PLAN AND PROFILE

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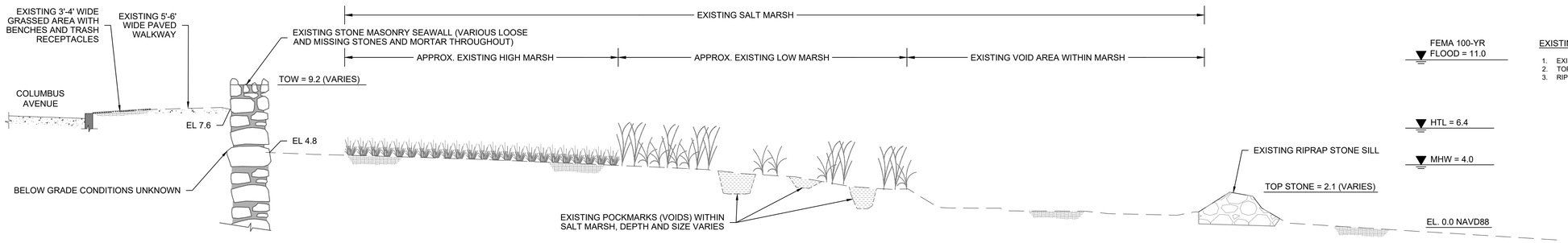
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DATE:	APRIL 2026	PROJECT NO.	18.0171674.08	REVISION NO.	1

DRAWING 2
SHEET NO. 2 OF 9



EXISTING SECTION A - A': STA 0+14

SCALE: 1" = 4'

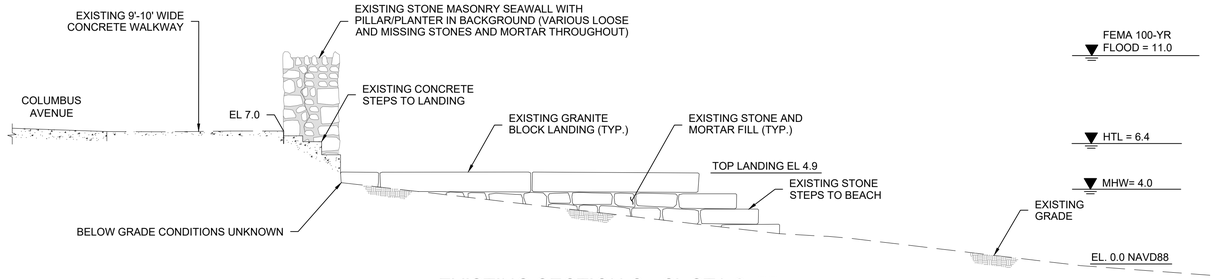


EXISTING SECTION B - B': STA 1+63

SCALE: 1" = 4'

EXISTING STONE RIPRAP NOTES

1. EXISTING RIPRAP GENERALLY CONSISTS OF STONE SIZED ±2' TO 2.5'Ø (±0.5 TO 1 TON IN WEIGHT).
2. TOP OF STONE ELEVATION VARIES FROM APPROXIMATELY 2.1 TO 2.7 FEET NAVD88.
3. RIPRAP SILL IS GENERALLY 5' WIDE BUT VARIES ALONG ITS LENGTH.

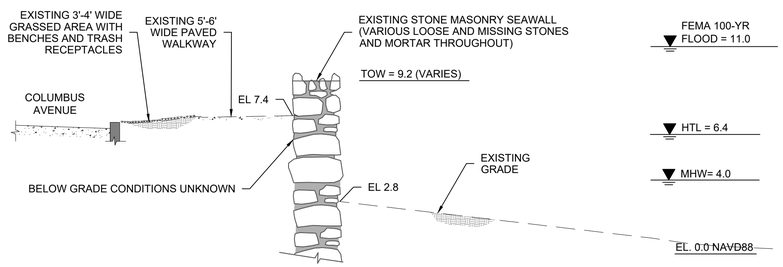


EXISTING SECTION C - C': STA 2+77

SCALE: 1" = 4'

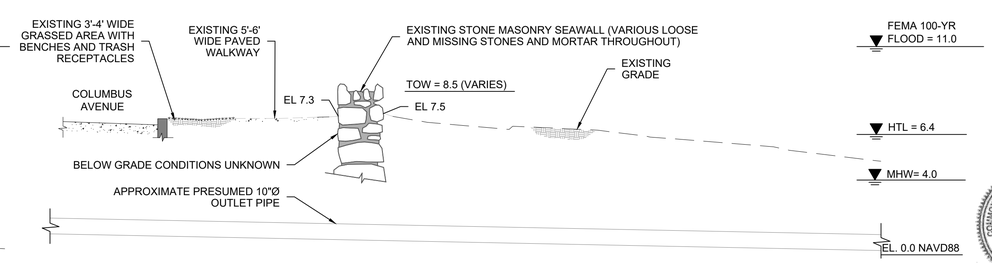
0 2 4 8 12

SCALE IN FEET



EXISTING SECTION D - D': STA 3+59

SCALE: 1" = 4'



EXISTING SECTION E - E': STA 4+70

SCALE: 1" = 4'

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
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EXISTING SECTIONS

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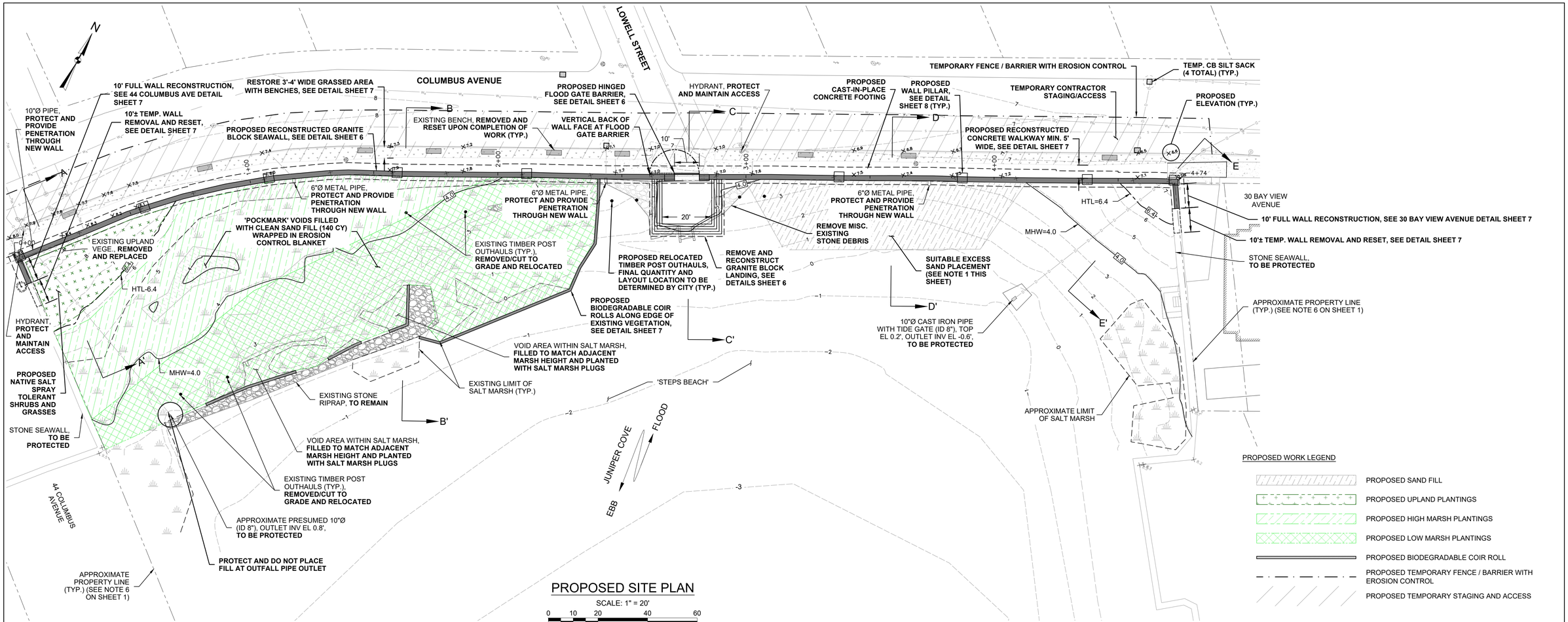
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COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER
4/21/26

PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 3
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: APRIL 2026	PROJECT NO. 18.0171674.08	REVISION NO. 1	SHEET NO. 3 OF 9

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PROPOSED SITE PLAN

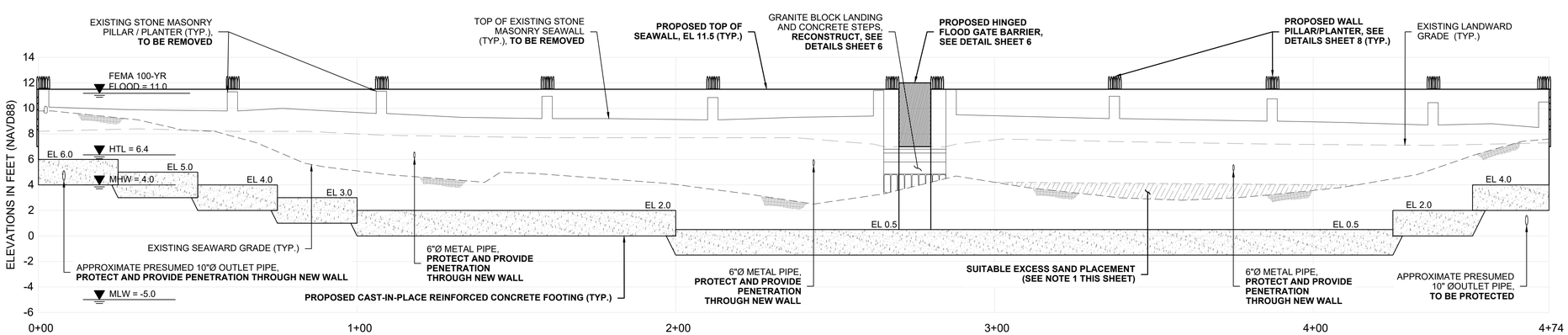
SCALE: 1" = 20'

0 10 20 40 60

SCALE IN FEET

PROPOSED WORK LEGEND

- PROPOSED SAND FILL
- PROPOSED UPLAND PLANTINGS
- PROPOSED HIGH MARSH PLANTINGS
- PROPOSED LOW MARSH PLANTINGS
- PROPOSED BIODEGRADABLE COIR ROLL
- PROPOSED TEMPORARY FENCE / BARRIER WITH EROSION CONTROL
- PROPOSED TEMPORARY STAGING AND ACCESS



PROPOSED SEAWALL PROFILE

VERTICAL SCALE: 1" = 5'

HORIZONTAL SCALE: 1" = 20'

VERTICAL SCALE IN FEET

0 2.5 5 10 15

0 10 20 40 60

HORIZONTAL SCALE IN FEET

PROPOSED EXCAVATION NOTES:

1. BACKFILL EXCAVATIONS ALONG THE SEAWARD FACE OF WALL WITH SUITABLE EXISTING BEACH SAND. EXCESS EXCAVATED SAND, IF SUITABLE, SHALL BE SPREAD UPON THE BEACH ON THE EAST SIDE OF THE LANDING STRUCTURE FRONTING THE SEAWALL BETWEEN APPROXIMATE STATIONS 3+00 TO 4+00 TO APPROXIMATELY NATURAL GRADE. UNSUITABLE MATERIAL WILL BE REMOVED AND DISPOSED OF.

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
COLUMBUS AVENUE
SALEM, MASSACHUSETTS

PROPOSED SITE PLAN AND PROFILE

COMMONWEALTH OF MASSACHUSETTS — ANDERS B. BJARNGARD — CIVIL — No. 39756 — REGISTERED PROFESSIONAL ENGINEER

4/21/26

PREPARED BY: **GZA** GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: CITY OF SALEM, 98 WASHINGTON STREET, 2ND FLOOR, SALEM, MASSACHUSETTS

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DRAWING 4

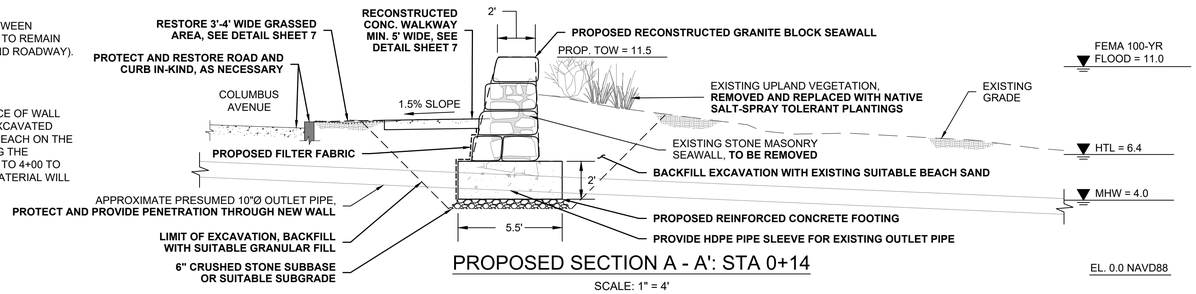
SHEET NO. 4 OF 9

PROTECTION OF EXISTING FEATURES NOTE:

1. PROVIDE SHORING/SUPPORT OF EXCAVATION BETWEEN PROPOSED WORK AREA AND EXISTING FEATURES TO REMAIN (E.G. UTILITIES, ADJACENT STRUCTURES, CURB AND ROADWAY).

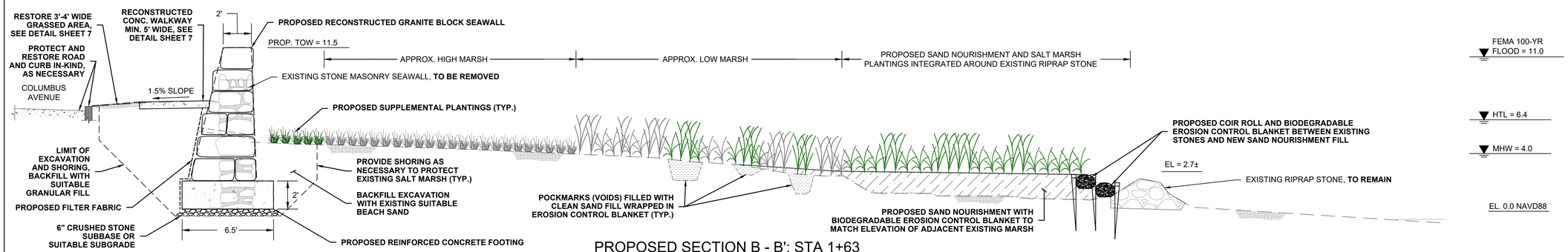
PROPOSED EXCAVATION NOTES:

1. BACKFILL EXCAVATIONS ALONG THE SEAWARD FACE OF WALL WITH SUITABLE EXISTING BEACH SAND. EXCESS EXCAVATED SAND, IF SUITABLE, SHALL BE SPREAD UPON THE BEACH ON THE EAST SIDE OF THE LANDING STRUCTURE FRONTING THE SEAWALL BETWEEN APPROXIMATE STATIONS 3+00 TO 4+00 TO APPROXIMATELY NATURAL GRADE. UNSUITABLE MATERIAL WILL BE REMOVED AND DISPOSED OF.



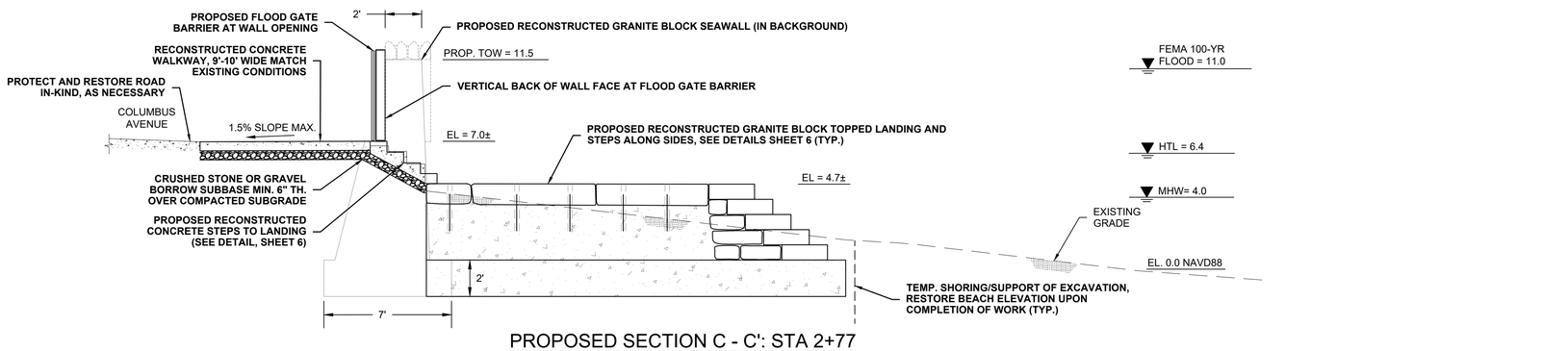
PROPOSED SECTION A - A': STA 0+14

SCALE: 1" = 4'



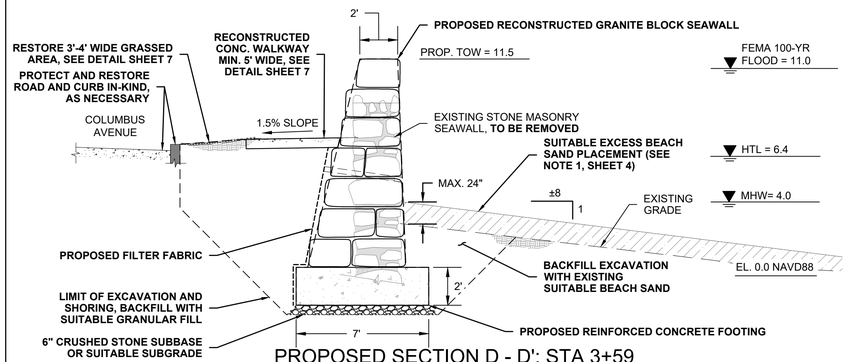
PROPOSED SECTION B - B': STA 1+63

SCALE: 1" = 4'



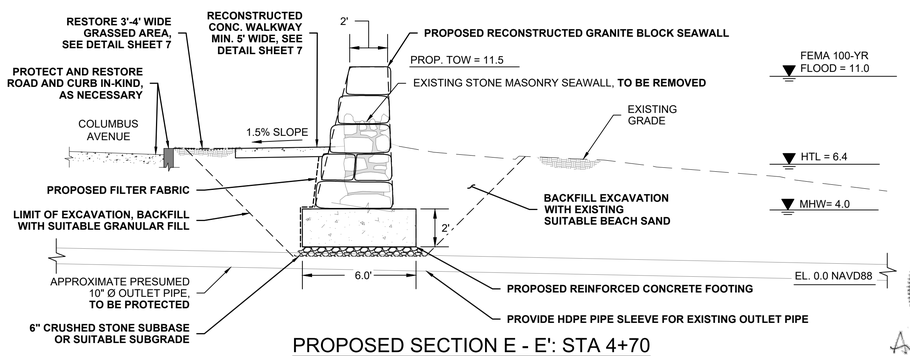
PROPOSED SECTION C - C': STA 2+77

SCALE: 1" = 4'



PROPOSED SECTION D - D': STA 3+59

SCALE: 1" = 4'



PROPOSED SECTION E - E': STA 4+70

SCALE: 1" = 4'

0 2 4 8 12

SCALE IN FEET

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
COLUMBUS AVENUE
SALEM, MASSACHUSETTS

PROPOSED SECTIONS

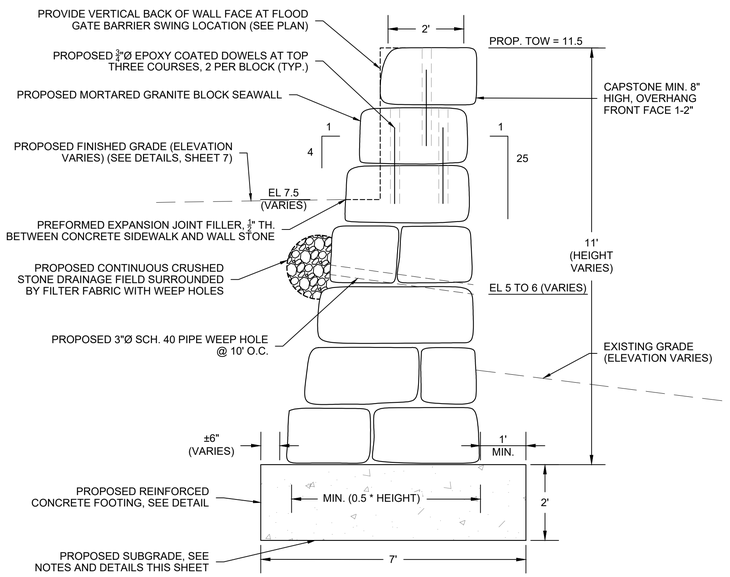
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SALEM, MASSACHUSETTS

PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 5
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: APRIL 2026	PROJECT NO. 18.0171674.08	REVISION NO. 1	SHEET NO. 5 OF 9

COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER
4/21/26

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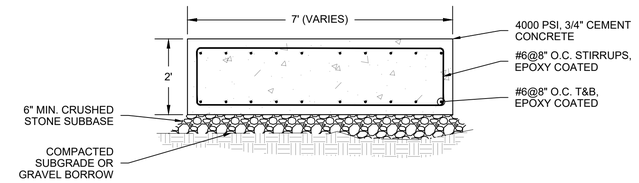


TYPICAL PROPOSED MORTARED GRANITE BLOCK SEAWALL DETAIL

SCALE: 1" = 2'

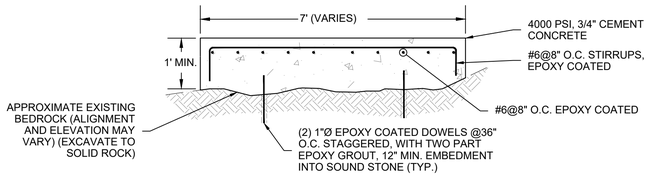
SEAWALL NOTES:

1. PROVIDE VERTICAL BACK OF WALL AT FLOOD GATE SWING LOCATION (SEE PLAN).
2. AT THE WALL OPENING, ADJACENT TO THE FLOOD GATE, PROVIDE ¾" DIA. EPOXY COATED DOWELS AT EACH COURSE (2 PER STONE VERTICALLY AND MIN. 1 PER STONE HORIZONTALLY) FOR A MINIMUM OF 8 LINEAR FEET OF WALL FOR EACH WALL END.



TYPICAL PROPOSED FOOTING DETAIL ON GRADE

SCALE: 1" = 2'



TYPICAL PROPOSED FOOTING DETAIL ON BEDROCK

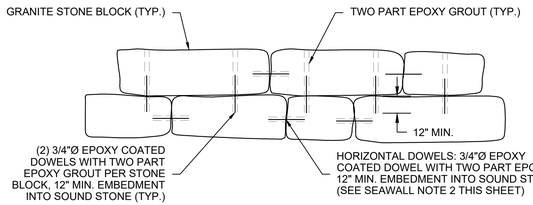
SCALE: 1" = 2'

PROPOSED FOOTING NOTES:

1. CEMENT CONCRETE SHALL BE 4000 PSI, 3/4" AGGREGATE.
2. REINFORCING STEEL SHALL BE EPOXY COATED.
3. ALL REINFORCING BARS ARE TO BE A MINIMUM 3" CLEAR FROM FACE OF CONCRETE.
4. PROVIDE TOOLED CONSTRUCTION JOINTS NO MORE THAN 25' APART.
5. PROVIDE EXPANSION JOINTS NO MORE THAN 50' APART.
6. SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION DETERMINE FOOTING DETAIL USED. SHOULD SOLID ROCK BE ENCOUNTERED ABOVE THE PROPOSED BOTTOM OF FOOTING ELEVATION, THE PROPOSED FOOTING SHALL BE DOWELED INTO ROCK (FOLLOW DETAIL, THIS SHEET).

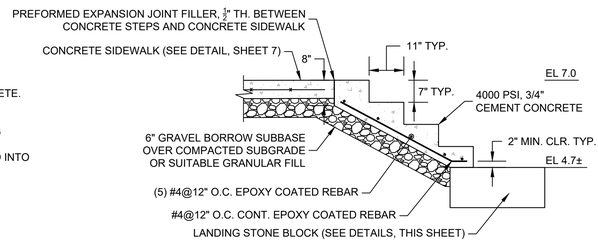
PROPOSED WALL AND FOOTING SCHEDULE TABLE

STATION	TOP OF WALL EL. (NAVD88)	BOTTOM OF WALL EL. (NAVD88)	BOTTOM OF FOOTING EL. (NAVD88)	TOTAL STRUCTURE HEIGHT (FT)	FOOTING WIDTH (FT)
44 COLUMBUS WALL RETURN	11.5	6.0	4.0	7.5	5.5
0+00 TO 0+25	11.5	6.0	4.0	7.5	5.5
0+25 TO 0+50	11.5	5.0	3.0	8.5	6.0
0+50 TO 0+75	11.5	4.0	2.0	9.5	6.0
0+75 TO 1+00	11.5	3.0	1.0	10.5	6.5
1+00 TO 2+00	11.5	2.0	0.0	11.5	6.5
2+00 TO 4+25	11.5	0.5	-1.5	13.0	7.0
4+25 TO 4+50	11.5	2.0	0.0	11.5	6.5
4+50 TO 4+74	11.5	4.0	2.0	9.5	6.0
30 BAY VIEW WALL RETURN	11.5	4.0	2.0	9.5	6.0



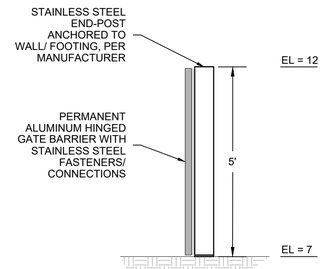
STONE MASONRY ANCHORING DETAIL

SCALE: N.T.S.



CONCRETE STEPS DETAIL

SCALE: 1" = 2'

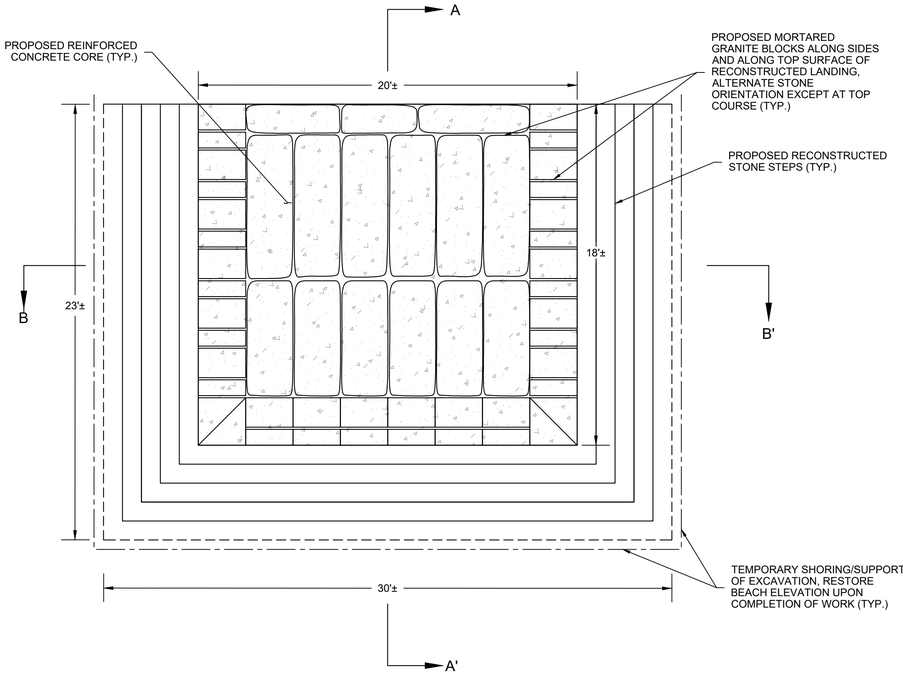


PROPOSED FLOOD BARRIER DETAIL

SCALE: 1" = 2'

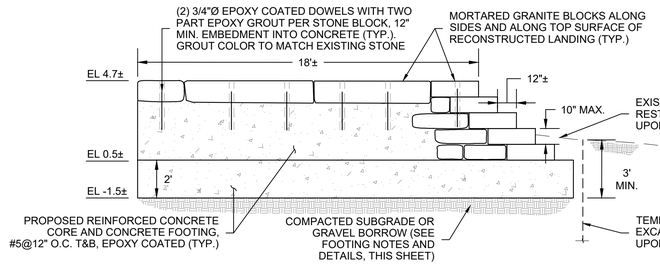
PROPOSED FLOOD BARRIER NOTES:

1. FLOOD GATE BARRIER TO BE MANUFACTURED BY FLOOD CONTROL INTERNATIONAL, OR APPROVED EQUIVALENT. FINAL FLOOD BARRIER DESIGN BY OTHERS.
2. PERMANENT HINGED GATE BARRIER WITH 180 DEGREE SWING RADIUS.
3. PROVIDE WALL STAYS TO HOLD BARRIER IN OPEN POSITION ALONG BACKSIDE OF RECONSTRUCTED SEAWALL.
4. ANTI-THEFT LOCKING.



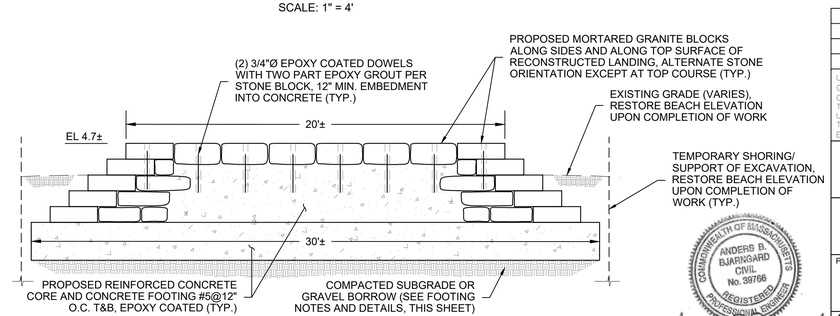
PROPOSED LANDING DETAIL PLAN

SCALE: 1" = 4'



SECTION A - A': PROPOSED LANDING DETAIL SECTION

SCALE: 1" = 4'



SECTION B - B': PROPOSED LANDING DETAIL SECTION

SCALE: 1" = 4'

0 1 2 4 6
SCALE IN FEET

0 2 4 8 12
SCALE IN FEET

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
COLUMBUS AVENUE
SALEM, MASSACHUSETTS

PROPOSED DETAILS 1

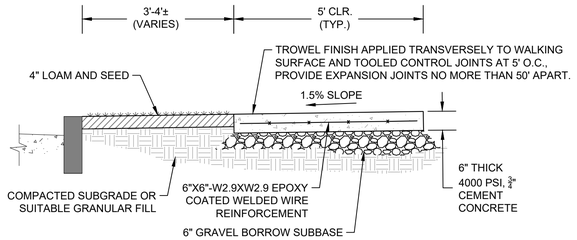
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ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER
4/21/26

PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 6
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: APRIL 2026	PROJECT NO. 18.0171674.08	REVISION NO. 1	SHEET NO. 6 OF 9

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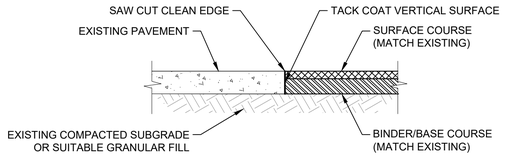


TYPICAL WALKWAY AND GRASS AREA DETAIL

SCALE: 1" = 2'

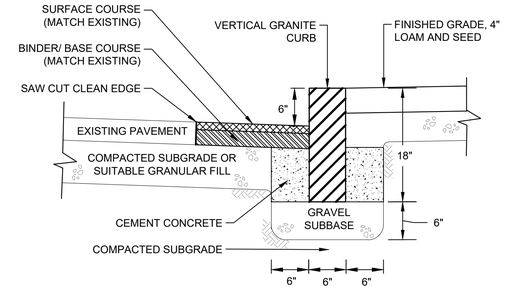
0 1 2 4 6

SCALE IN FEET



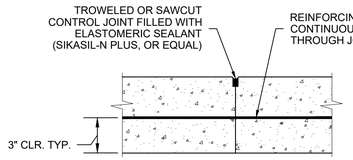
PAVEMENT PATCHING DETAIL

SCALE: N.T.S.



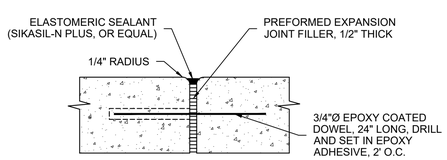
GRANITE CURB DETAIL

SCALE: N.T.S.



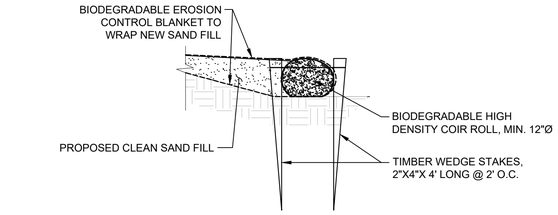
CONSTRUCTION JOINT DETAIL

SCALE N.T.S.



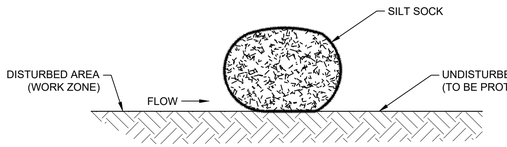
EXPANSION JOINT DETAIL

SCALE N.T.S.



COIR ROLL ANCHORING DETAIL

SCALE: N.T.S.

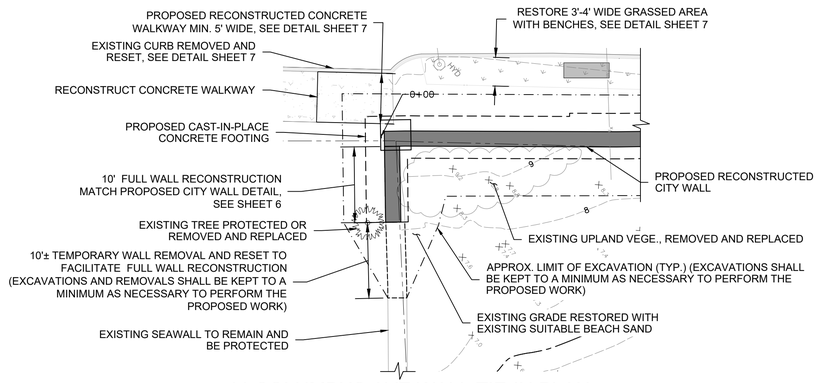


TEMPORARY EROSION CONTROL - SILT SOCK DETAIL

SCALE: N.T.S.

EROSION CONTROL NOTES:

1. EROSION CONTROLS SHALL BE INSPECTED DURING WORK AND MAINTAINED IN GOOD REPAIR.
2. EROSION CONTROLS SHALL REMAIN IN PROPER FUNCTIONING CONDITION UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED WITH VEGETATION OR OTHER MEANS.
3. SILT SOCKS OR COMPOST FILTER TUBES MAY BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.

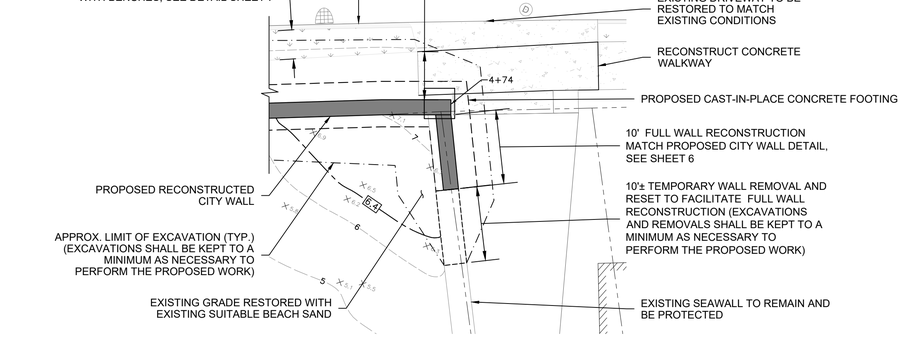


44 COLUMBUS AVE WALL TIE-IN PLAN

SCALE: 1" = 10'

0 5 10 20 30

SCALE IN FEET

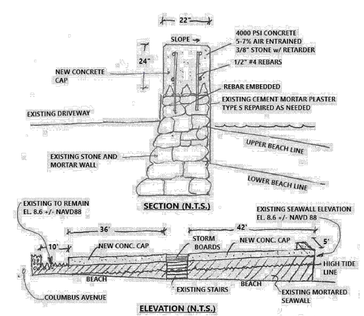


30 BAY VIEW AVE WALL TIE-IN PLAN

SCALE: 1" = 10'

0 5 10 20 30

SCALE IN FEET

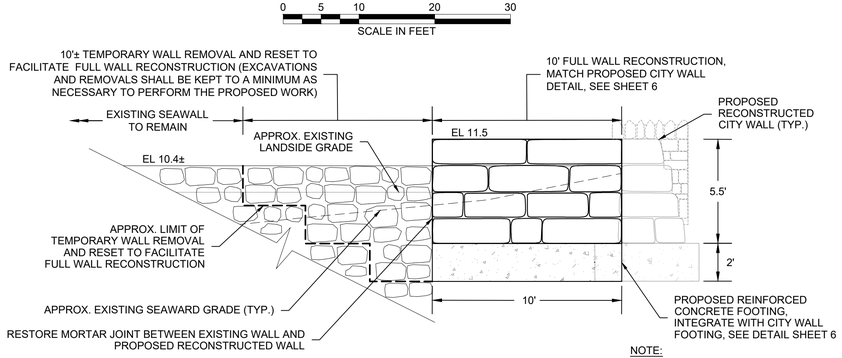


30 BAY VIEW AVE WALL EXISTING SECTION AND ELEVATION

SCALE: N.T.S.

NOTE:

1. 30 BAY VIEW AVE WALL EXISTING SECTION AND ELEVATION TAKEN FROM DEP CH.91 LICENSE NO. WW06-0000143, DATED APRIL 2, 2025.



44 COLUMBUS AVE WALL TIE-IN DETAIL

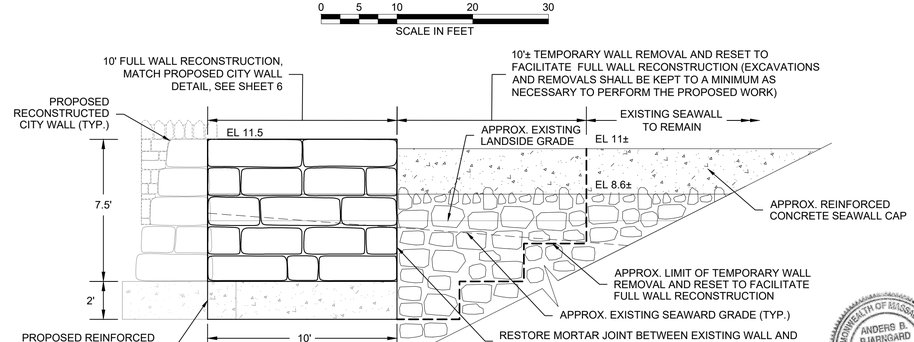
SCALE: 1" = 4'

0 2 4 8 12

SCALE IN FEET

NOTE:

1. DEPTH OF EXISTING WALL UNKNOWN, PROVIDE SHORING/SUPPORT OF EXCAVATION AS NEEDED.



30 BAY VIEW AVE WALL TIE-IN DETAIL

SCALE: 1" = 4'

0 2 4 8 12

SCALE IN FEET

ANDERS B. BJARNGARD CIVIL No. 39766 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
4/21/26

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
COLUMBUS AVENUE
SALEM, MASSACHUSETTS

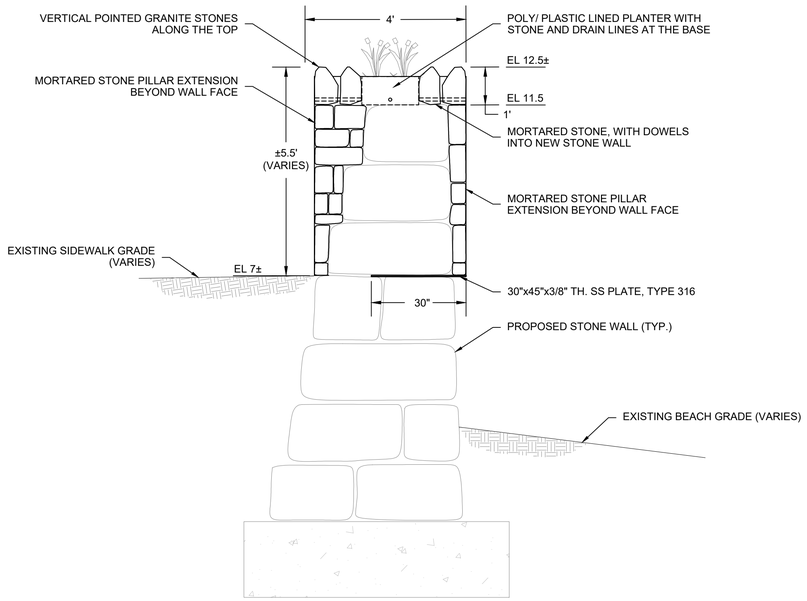
PROPOSED DETAILS 2

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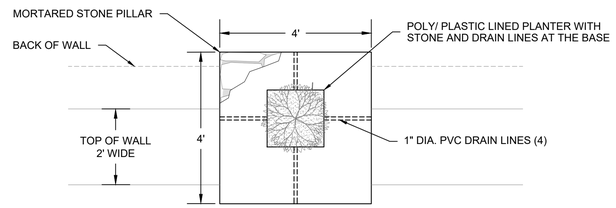
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98 WASHINGTON STREET, 2ND FLOOR
SALEM, MASSACHUSETTS

PROJ MGR:	DAS	REVIEWED BY:	DAS	CHECKED BY: ABB	DRAWING 7
DESIGNED BY:	DAS	DRAWN BY:	LFT	SCALE: AS SHOWN	
DATE: APRIL 2026		PROJECT NO. 18.0171674.08		REVISION NO. -	SHEET NO. 7 OF 9

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WALL PILLAR/ PLANTER SECTION
SCALE: 1"=2'

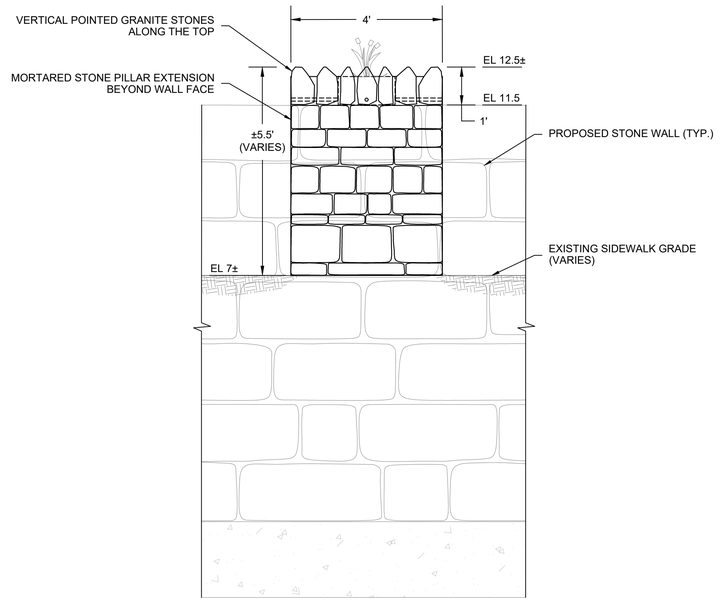


WALL PILLAR/ PLANTER PLAN VIEW
SCALE: 1"=2'

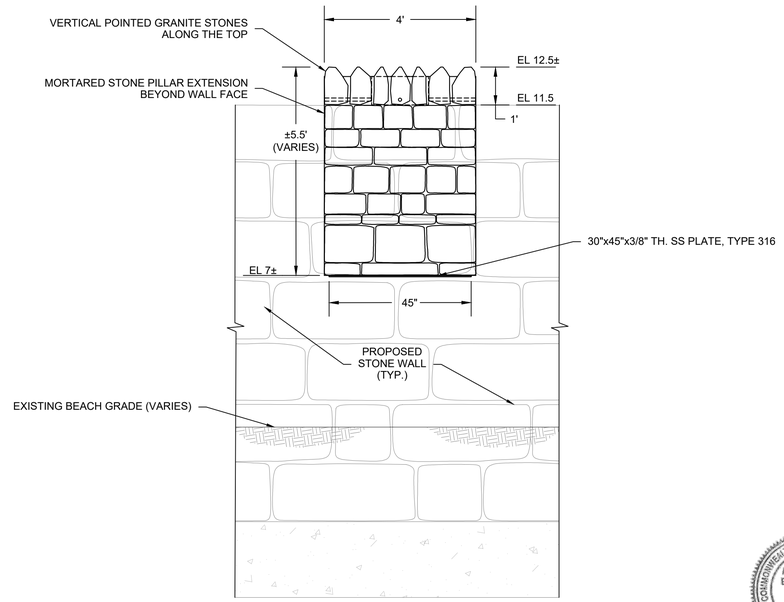
PROPOSED PILLAR TABLE	
PILLAR #	PILLAR STATION
1	0+00
2	0+56
3	1+08
4	1+59
5	2+12
6	2+69
7	2+83
8	3+38
9	3+87
10	4+38
11	4+74

PILLAR/PLANTER NOTES:

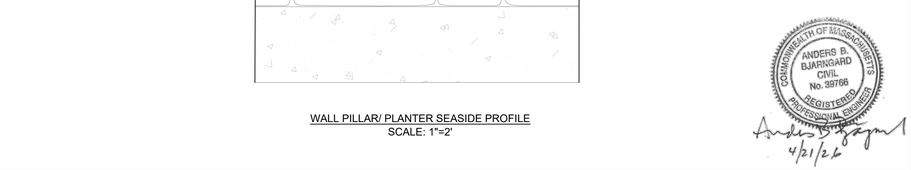
1. SUBMIT WALL PILLAR/PLANTER DESIGN WITH STONE SOURCE, TYPE, AND SIZE ALONG WITH WALL PILLAR/PLANTER MATERIALS TO THE ENGINEER.
2. PILLAR/PLANTER SHALL BE INTEGRATED INTO THE RECONSTRUCTED SEAWALL. STONE SHALL BE OF SIMILAR COLOR AND APPEARANCE AS THE WALL STONE.
3. TOP LAYER STONES SHALL HAVE A POINTED TOP SIMILAR TO THE EXISTING CONDITIONS.
4. GEOMETRY AT WALL PILLAR #6 AND #7 (AT THE SEAWALL OPENING) SHALL BE MODIFIED FOR THE VERTICAL BACK OF SEAWALL AND COORDINATED WITH THE FLOOD GATE BARRIER SWING RADIUS AND SUPPORTS.



WALL PILLAR/ PLANTER LANDSIDE PROFILE
SCALE: 1"=2'



WALL PILLAR/ PLANTER SEASIDE PROFILE
SCALE: 1"=2'



0 1 2 4 6
SCALE IN FEET

NO.	ISSUE/DESCRIPTION	BY	DATE
1	ISSUED FOR BIDDING	DAS	4/21/2026

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
COLUMBUS AVENUE
SALEM, MASSACHUSETTS

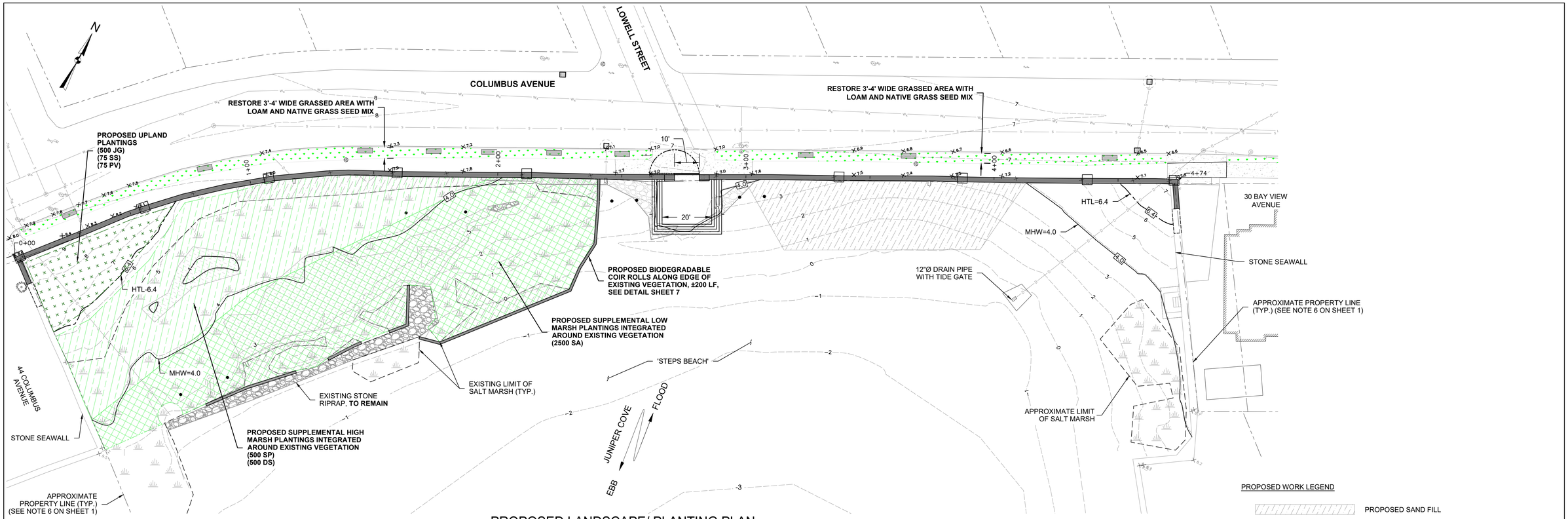
PROPOSED PILLAR DETAILS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
CITY OF SALEM
98 WASHINGTON STREET, 2ND FLOOR
SALEM, MASSACHUSETTS

PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 8
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: APRIL 2026	PROJECT NO. 18.0171674.08	REVISION NO. 1	SHEET NO. 8 OF 9

© 2026 — GZA GeoEnvironmental, Inc. G:\ZA-J\171600'S\18.0171674.04 SALEM COLUMBUS AVE WALL\FIGURES\CAD\DWGS\18.0171674.08 COLUMBUS AVE SEAWALL RECONSTRUCTION-BID.DWG PROPOSED PILLAR-BID APRIL 21, 2026 2:31PM LUKE TAYLOR



PROPOSED LANDSCAPE/ PLANTING PLAN

SCALE: 1" = 20'

0 10 20 40 60

SCALE IN FEET

PROPOSED WORK LEGEND

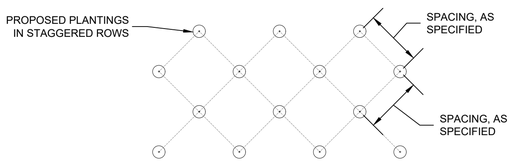
- PROPOSED SAND FILL
- PROPOSED UPLAND PLANTINGS
- PROPOSED HIGH MARSH PLANTINGS
- PROPOSED LOW MARSH PLANTINGS
- PROPOSED BIODEGRADABLE COIR ROLL

PROPOSED PLANTING NOTES:

1. EXISTING VEGETATION AT THE SOUTHWEST CORNER REMOVED AND REPLACED WITH NEW NATIVE, SALT-SPRAY TOLERANT SHRUB/GRASS SPECIES LISTED WITHIN CZM'S COASTAL LANDSCAPING PLANT LIST.
2. ANTICIPATED SPECIES MAY INCLUDE, BUT ARE NOT LIMITED TO, SWITCHGRASS (*PANICUM VIRGATUM*), SEASIDE GOLDENROD (*SOLIDAGO SEMPERVIRENS*), AND BLACK GRASS (*JUNCUS GERARDII*).
3. FINAL PLANTING SPECIES AND LOCATIONS SHALL BE DETERMINED IN THE FIELD BASED ON SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

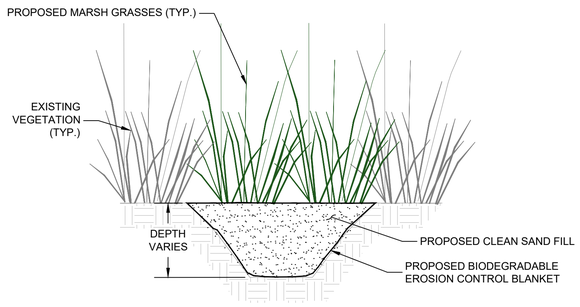
PROPOSED LANDSCAPE PLANTINGS

SYMBOL	QTY	COMMON NAME	SCIENTIFIC NAME	SIZE / SPACING	LOCATION
PV	75	SWITCHGRASS	Panicum virgatum	1 GAL., 24" O.C.	UPLAND: ABOVE HTL (EL. 6.4)
SS	75	SEASIDE GOLDENROD	Solidago sempervirens	1 GAL., 24" O.C.	UPLAND: ABOVE HTL (EL. 6.4)
JG	500	BLACK GRASS	Juncus gerardii	6" PLUG, 18" O.C.	UPLAND: ABOVE HTL (EL. 6.4)
DS	500	SALTGRASS	Distichlis spicata	6" PLUG, 12" O.C.	HIGH MARSH: ABOVE MHW (EL. 4.0)
SP	500	SALT MEADOW HAY	Spartina patens	6" PLUG, 12" O.C.	HIGH MARSH: ABOVE MHW (EL. 4.0)
SA	2500	SMOOTH CORDGRASS	Spartina alterniflora	6" PLUG, 12" O.C.	LOW MARSH: BELOW MHW (EL. 4.0)



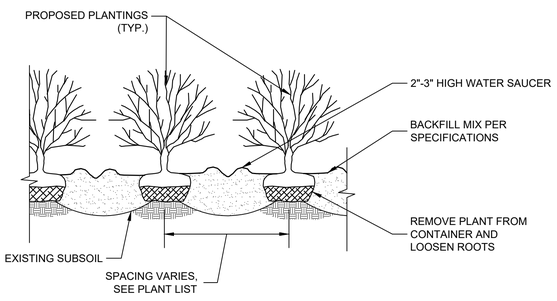
TYPICAL PLANT SPACING PLAN

SCALE: N.T.S.



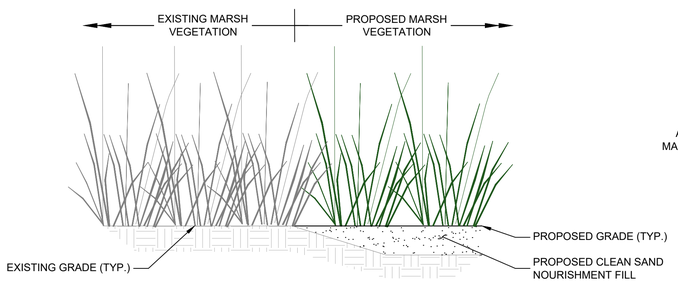
SALT MARSH VOID DETAIL

SCALE: N.T.S.



TYPICAL UPLAND PLANT DETAIL

SCALE: N.T.S.

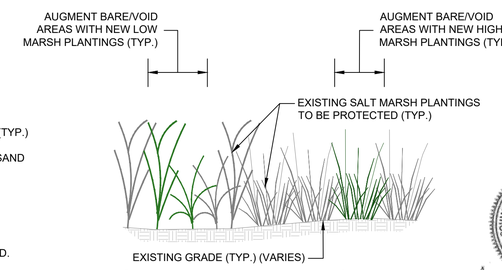


NOTES:

1. EXISTING SALT MARSH AREAS TO BE DELINEATED AND PROTECTED DURING CONSTRUCTION.
2. USE EXTREME CARE WHEN PLACING SALT MARSH ADJACENT TO EXISTING SALT MARSH AREAS.
3. MAXIMUM THICKNESS OF 4" OF CLEAN SAND NOURISHMENT FILL ALLOWED OVER EXISTING VEGETATION.
4. EXISTING VEGETATION SHALL EXTEND ABOVE PROPOSED SAND FILL AND SHALL NOT BE LAID FLAT AND BURIED.

TIE-IN WITH EXISTING MARSH DETAIL

SCALE: N.T.S.



SALT MARSH PLANTING DETAIL

SCALE: N.T.S.

COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED
PROFESSIONAL ENGINEER
4/21/26

NO.	ISSUE/DESCRIPTION	BY	DATE
1	ISSUED FOR BIDDING	DAS	4/21/2026

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
COLUMBUS AVENUE
SALEM, MASSACHUSETTS

PROPOSED LANDSCAPE/ PLANTING PLAN AND DETAILS

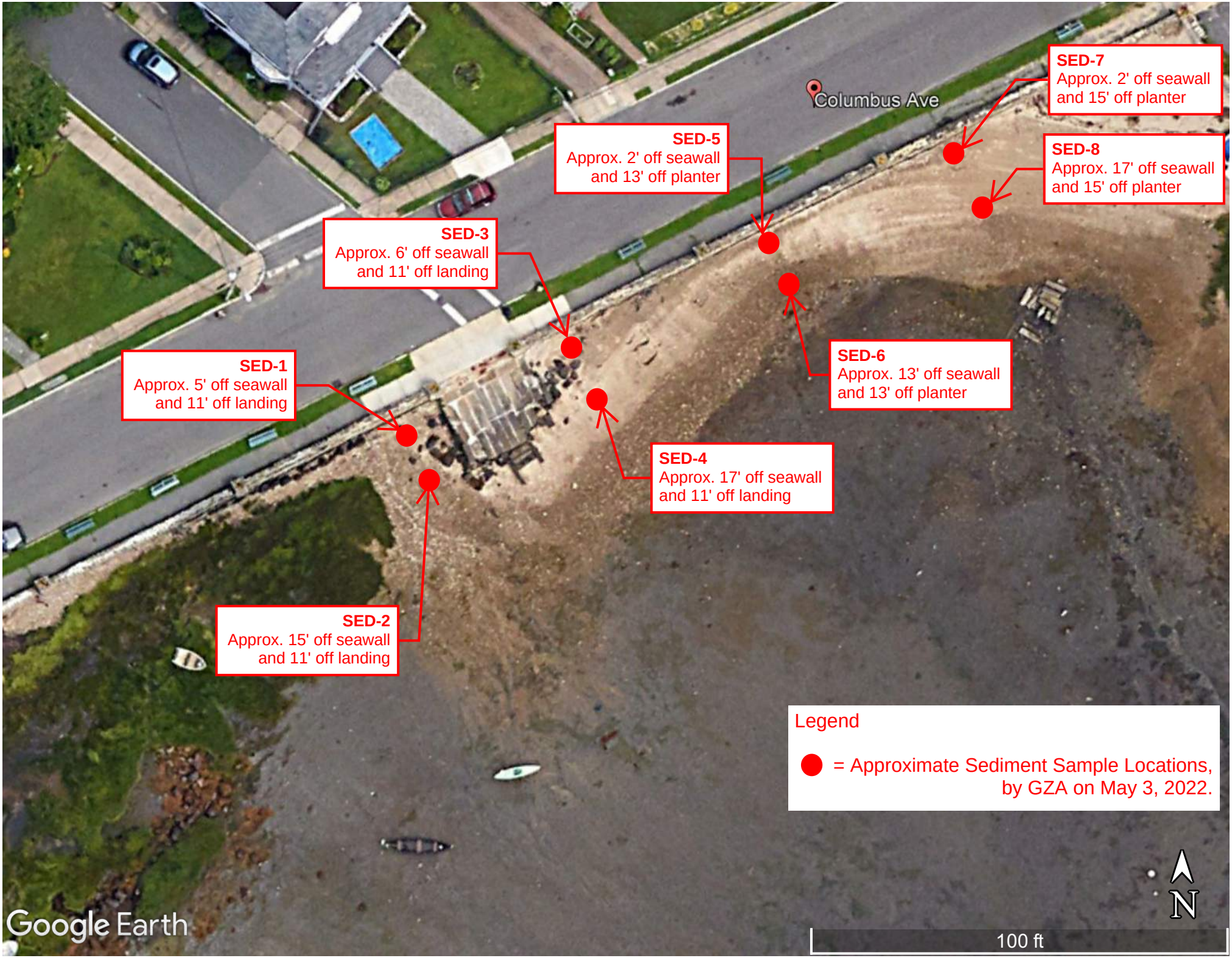
PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
CITY OF SALEM
98 WASHINGTON STREET, 2ND FLOOR
SALEM, MASSACHUSETTS

PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 9
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: APRIL 2026	PROJECT NO. 18.0171674.08	REVISION NO. 1	SHEET NO. 9 OF 9

© 2026 – GZA GeoEnvironmental, Inc. GZA–J:\171600'S\18.0171674.04 SALEM COLUMBUS AVE WALL\FIGURES\CAD\DWGS\18.0171674.08 COLUMBUS AVE SEAWALL RECONSTRUCTION–BID.DWG PROPOSED LANDSCAPE–BID APRIL 21, 2026 2:33PM LUKE TAYLOR

ATTACHMENT B – SEDIMENT SAMPLES


Columbus Ave
SED-7
Approx. 2' off seawall
and 15' off planter
SED-8
Approx. 17' off seawall
and 15' off planter
SED-5
Approx. 2' off seawall
and 13' off planter
SED-3
Approx. 6' off seawall
and 11' off landing
SED-6
Approx. 13' off seawall
and 13' off planter
SED-1
Approx. 5' off seawall
and 11' off landing
SED-4
Approx. 17' off seawall
and 11' off landing
SED-2
Approx. 15' off seawall
and 11' off landing
Legend
= Approximate Sediment Sample Locations,
by GZA on May 3, 2022.
N
100 ft
Google Earth

THIELSCH ENGINEERING
195 Frances Avenue
Cranston RI, 02910
Phone: (401)-467-6454
Fax: (401)-467-2398
thielsch.com
Let's Build a Solid Foundation

Client Information:
GZA GeoEnvironmental, Inc.
Amesbury, MA
PM: Lucas Taylor
Assigned By: Lucas Taylor
Collected By: Lucas Taylor

Project Information:
Columbus Avenue Seawall Reconstruction
Salem, MA
GZA Project Number: 18.0171674.04, Task 13
Summary Page: 1 of 1
Report Date: 05.19.22

LABORATORY TESTING DATA SHEET, Report No.: 7422-E-143

Source	Sample No.	Depth (ft)	Laboratory No.	Identification Tests								Proctor / CBR / Permeability Tests								Laboratory Log and Soil Description
				As Received Moisture Content %	LL %	PL %	Gravel %	Sand %	Fines %	Org. %	pH	Dry unit wt. (pcf)	Test Moisture Content %	γ_d MAX (pcf) W_{opt} (%)	γ_d MAX (pcf) W_{opt} (%) (Corr.)	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"	Permeability cm/sec	
				D2216	D4318		D6913			D2974	D4792			D1557						
Sediment	SED-1	-	22-S-1569				32.6	66.8	0.6											Brown f-m SAND, some f-c Gravel, trace Silt
Sediment	SED-2	-	22-S-1570				22.2	76.5	1.3											Brown f-c SAND, some fine Gravel, trace Silt
Sediment	SED-3	-	22-S-1571				0.0	99.9	0.1											Brown f-m SAND, trace Silt
Sediment	SED-4	-	22-S-1572				21.3	78.4	0.3											Brown f-m SAND, some fine Gravel, trace Silt
Sediment	SED-5	-	22-S-1573				3.0	96.2	0.8											Brown f-m SAND, trace fine Gravel, trace Silt
Sediment	SED-6	-	22-S-1574				12.3	80.8	6.9											Brown f-c SAND, little fine Gravel, trace Silt
Sediment	SED-7	-	22-S-1575				0.0	99.0	1.0											Brown f-m SAND, trace Silt
Sediment	SED-8	-	22-S-1576				29.4	70.1	0.5											Brown f-m SAND, some fine Gravel, trace Silt

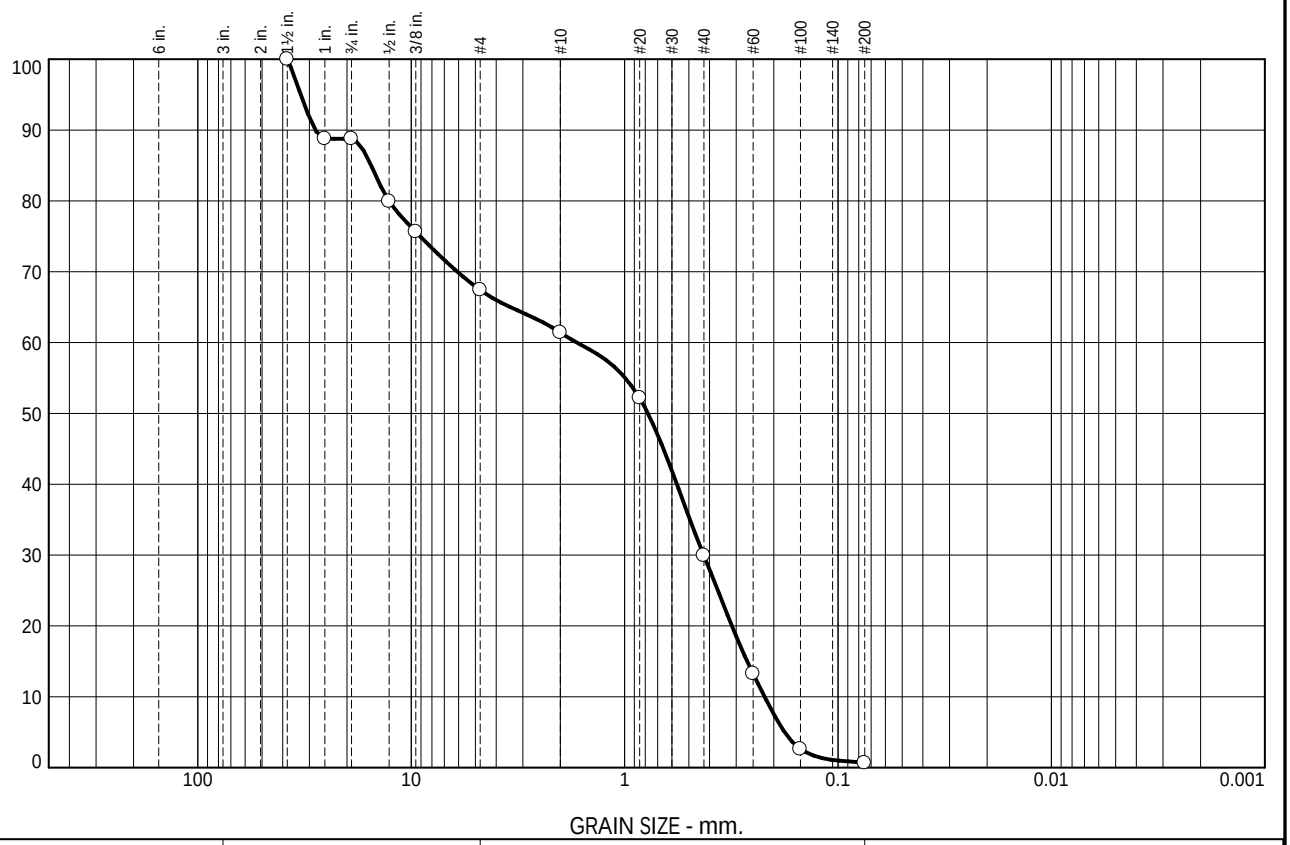
Date Received: *05.10.22*

Reviewed By:

Date Reviewed: *05.19.22*

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Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	11.2	21.4	6.0	31.5	29.3	0.6	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100.0		
1"	88.8		
3/4"	88.8		
1/2"	79.9		
3/8"	75.6		
#4	67.4		
#10	61.4		
#20	52.2		
#40	29.9		
#60	13.2		
#100	2.6		
#200	0.6		

* (no specification provided)

Soil Description

Brown f-m SAND, some f-c Gravel, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 28.1225 D_{85}= 15.4014 D_{60}= 1.6728
D_{50}= 0.7769 D_{30}= 0.4261 D_{15}= 0.2667
D_{10}= 0.2209 C_u= 7.57 C_c= 0.49

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Sediment
Sample Number: SED-1

Date: 05.12.22

Thielsch Engineering Inc.

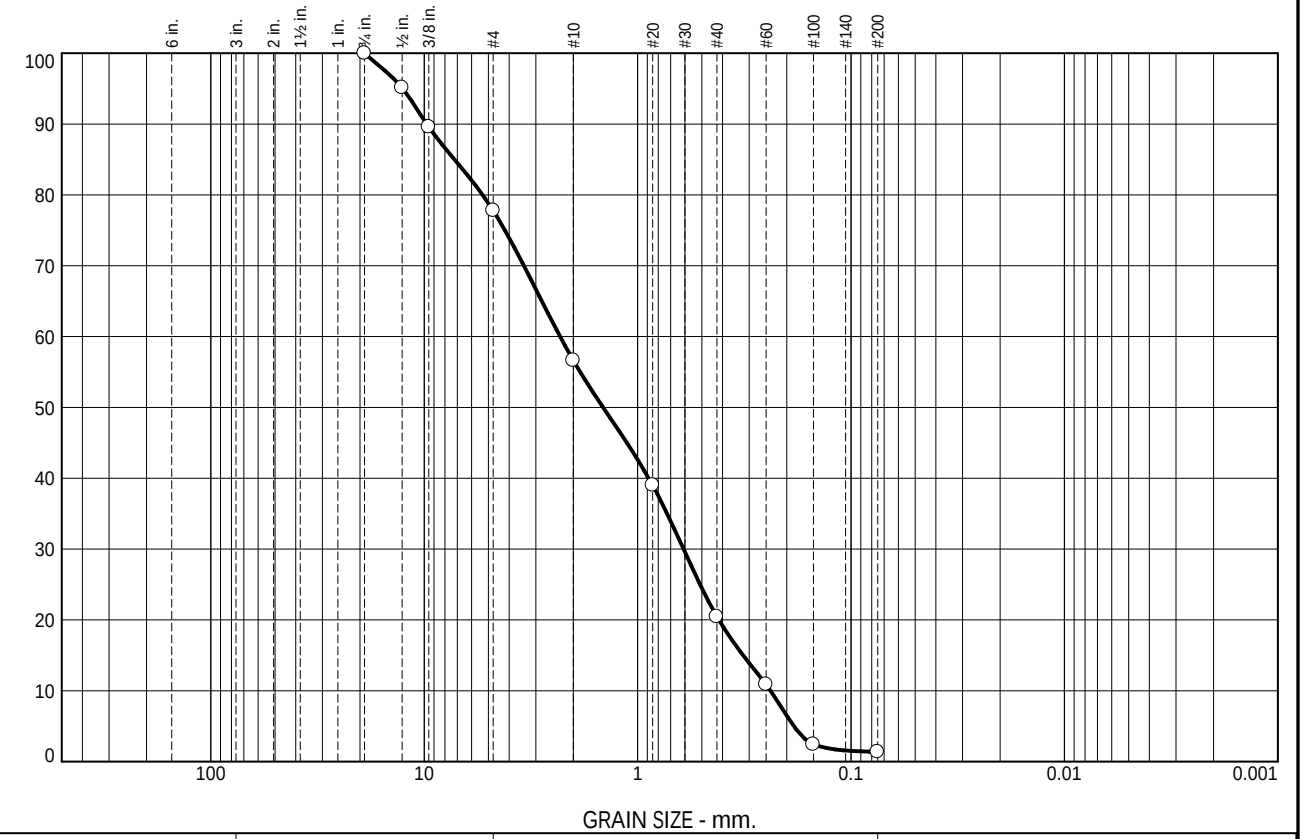
Cranston, RI

Client: GZA GeoEnvironmental, Inc.
Project: Columbus Avenue Seawall Reconstruction
Salem, MA
Project No: 18.0171674.04 Figure 22-S-1569

Tested By: SL / FR Checked By: Rebecca Roth

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	22.2	21.2	36.1	19.2	1.3	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	95.1		
3/8"	89.6		
#4	77.8		
#10	56.6		
#20	39.0		
#40	20.5		
#60	10.9		
#100	2.4		
#200	1.3		

* (no specification provided)

Soil Description

Brown f-c SAND, some fine Gravel, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 9.7444 D_{85}= 7.2147 D_{60}= 2.3079
D_{50}= 1.4511 D_{30}= 0.6091 D_{15}= 0.3200
D_{10}= 0.2384 C_u= 9.68 C_c= 0.67

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Sediment
Sample Number: SED-2

Date: 05.12.22

Thielsch Engineering Inc.

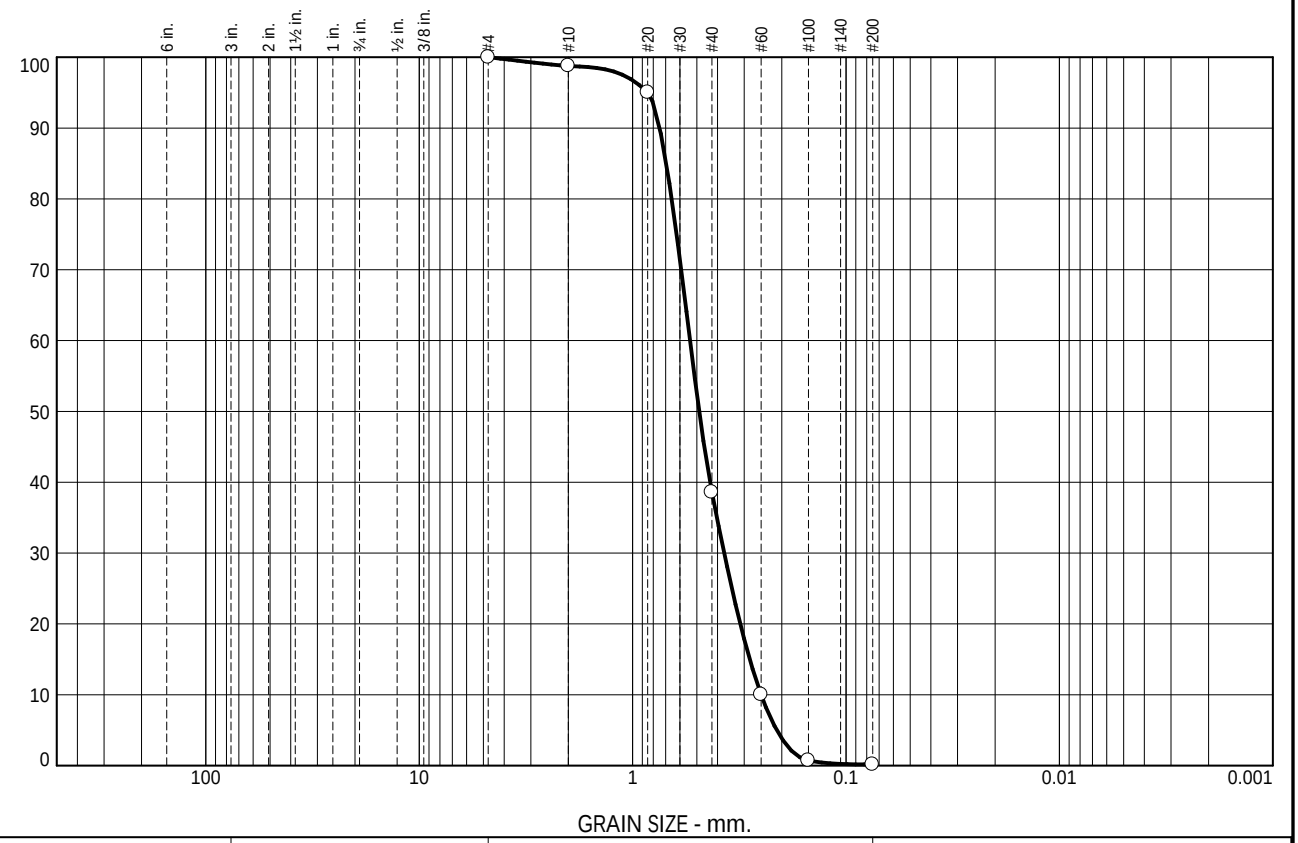
Cranston, RI

Client: GZA GeoEnvironmental, Inc.
Project: Columbus Avenue Seawall Reconstruction
Salem, MA
Project No: 18.0171674.04 Figure 22-S-1570

Tested By: FR Checked By: Rebecca Roth

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.2	60.2	38.5	0.1	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	98.8		
#20	95.0		
#40	38.6		
#60	10.0		
#100	0.7		
#200	0.1		

* (no specification provided)

Soil Description

Brown f-m SAND, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.7462 D_{85}= 0.6953 D_{60}= 0.5381
D_{50}= 0.4873 D_{30}= 0.3723 D_{15}= 0.2825
D_{10}= 0.2500 C_u= 2.15 C_c= 1.03

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Sediment
Sample Number: SED-3

Date: 05.12.22

Thielsch Engineering Inc.

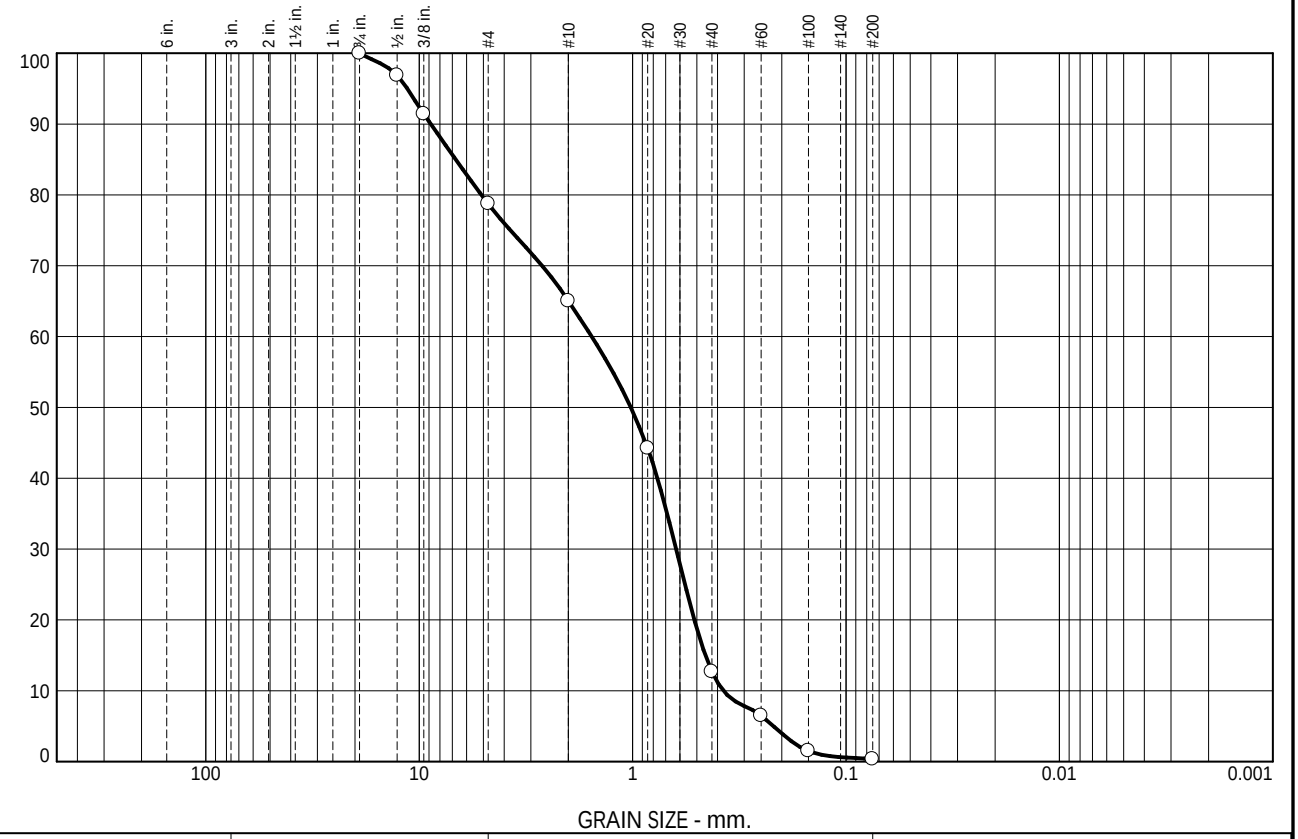
Cranston, RI

Client: GZA GeoEnvironmental, Inc.
Project: Columbus Avenue Seawall Reconstruction
Salem, MA
Project No: 18.0171674.04 Figure 22-S-1571

Tested By: FR Checked By: Rebecca Roth

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	21.3	13.7	52.3	12.4	0.3	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	96.9		
3/8"	91.4		
#4	78.7		
#10	65.0		
#20	44.2		
#40	12.7		
#60	6.5		
#100	1.5		
#200	0.3		

* (no specification provided)

Soil Description

Brown f-m SAND, some fine Gravel, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 8.8254 D_{85}= 6.7456 D_{60}= 1.5554
D_{50}= 1.0203 D_{30}= 0.6254 D_{15}= 0.4560
D_{10}= 0.3758 C_u= 4.14 C_c= 0.67

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Sediment
Sample Number: SED-4

Date: 05.12.22

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental, Inc.
Project: Columbus Avenue Seawall Reconstruction
Salem, MA
Project No: 18.0171674.04 Figure 22-S-1572

Tested By: FR Checked By: Rebecca Roth

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.0	7.1	57.8	31.3	0.8	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	99.5		
3/8"	99.5		
#4	97.0		
#10	89.9		
#20	75.6		
#40	32.1		
#60	23.6		
#100	11.0		
#200	0.8		

* (no specification provided)

Soil Description

Brown f-m SAND, trace fine Gravel, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 2.0179 D_{85}= 1.2363 D_{60}= 0.6532
D_{50}= 0.5704 D_{30}= 0.3988 D_{15}= 0.1779
D_{10}= 0.1422 C_u= 4.59 C_c= 1.71

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Sediment
Sample Number: SED-5

Date: 05.12.22

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental, Inc.
Project: Columbus Avenue Seawall Reconstruction
Salem, MA
Project No: 18.0171674.04 Figure 22-S-1573

Tested By: FR Checked By: Rebecca Roth

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Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.3	21.0	45.7	14.1	6.9	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	96.4		
3/8"	96.0		
#4	87.7		
#10	66.7		
#20	36.3		
#40	21.0		
#60	18.2		
#100	11.0		
#200	6.9		

* (no specification provided)

Soil Description

Brown f-c SAND, little fine Gravel, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 5.4124 D_{85}= 4.1166 D_{60}= 1.6348
D_{50}= 1.2563 D_{30}= 0.6733 D_{15}= 0.1975
D_{10}= 0.1346 C_u= 12.15 C_c= 2.06

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

Source of Sample: Sediment
Sample Number: SED-6

Date: 05.12.22

Thielsch Engineering Inc.

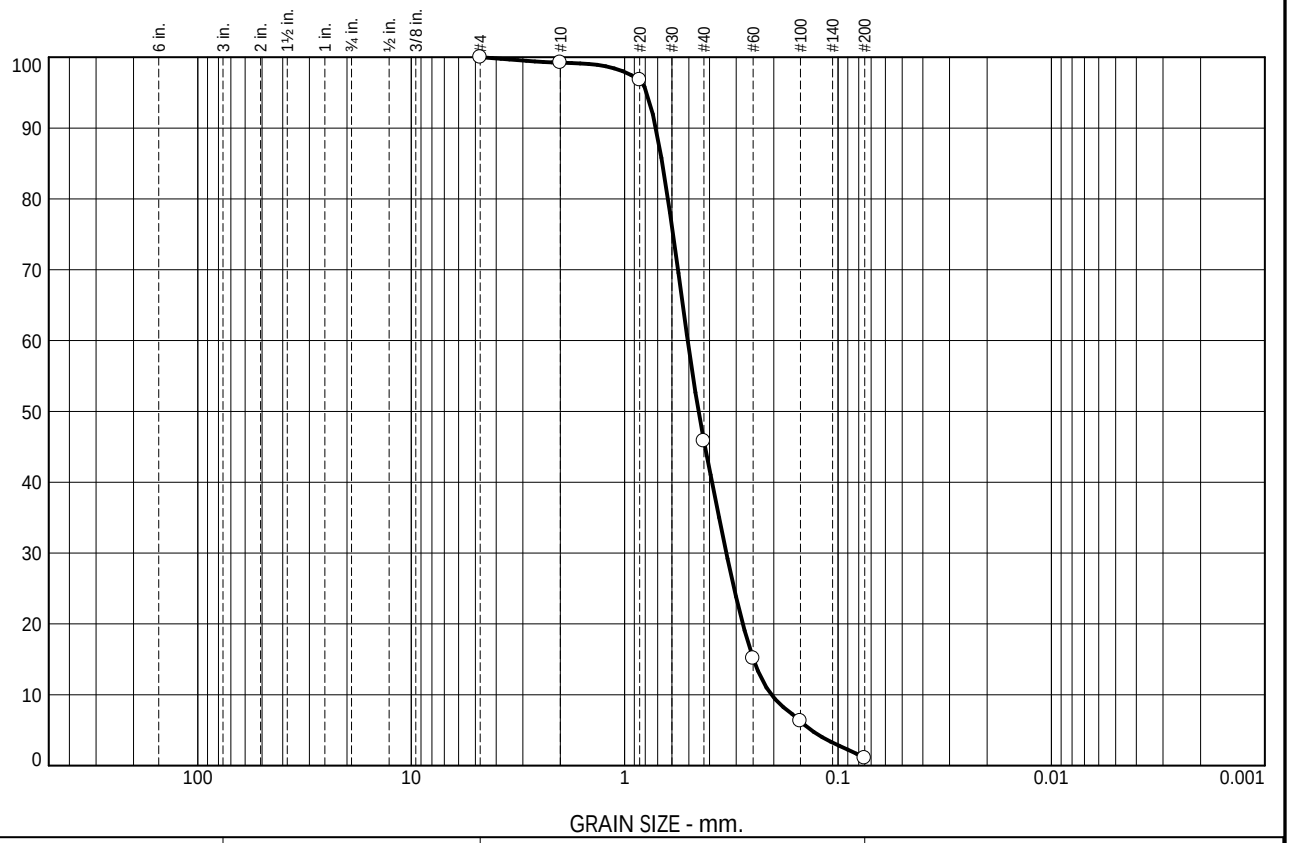
Cranston, RI

Client: GZA GeoEnvironmental, Inc.
Project: Columbus Avenue Seawall Reconstruction
Salem, MA
Project No: 18.0171674.04 Figure 22-S-1574

Tested By: FR Checked By: Rebecca Roth

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.8	53.4	44.8	1.0	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.2		
#20	96.8		
#40	45.8		
#60	15.1		
#100	6.3		
#200	1.0		

* (no specification provided)

Soil Description

Brown f-m SAND, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.7134 D_{85}= 0.6655 D_{60}= 0.5060
D_{50}= 0.4505 D_{30}= 0.3334 D_{15}= 0.2490
D_{10}= 0.2053 C_u= 2.46 C_c= 1.07

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Sediment
Sample Number: SED-7

Date: 05.12.22

Thielsch Engineering Inc.

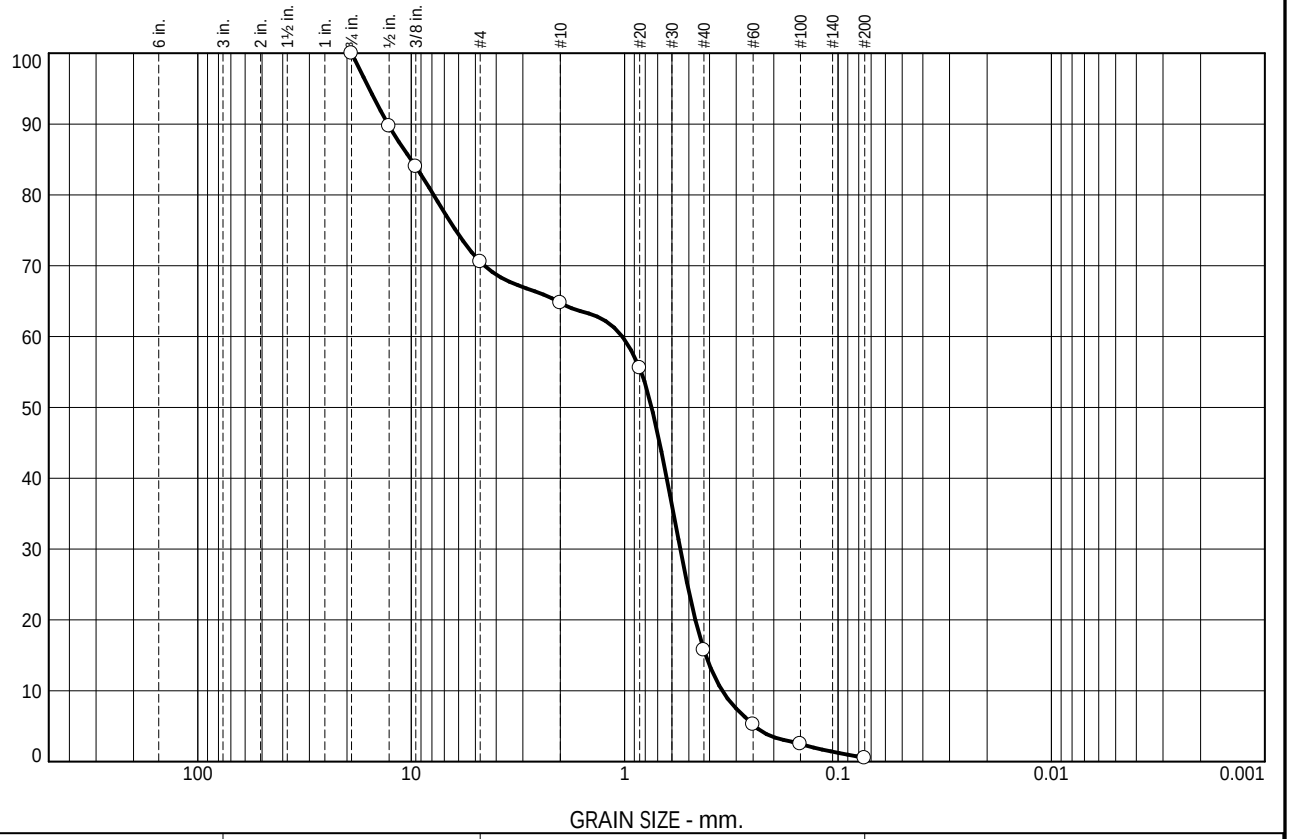
Cranston, RI

Client: GZA GeoEnvironmental, Inc.
Project: Columbus Avenue Seawall Reconstruction
Salem, MA
Project No: 18.0171674.04 Figure 22-S-1575

Tested By: FR Checked By: Rebecca Roth

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	29.4	5.8	49.1	15.2	0.5	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	89.7		
3/8"	84.0		
#4	70.6		
#10	64.8		
#20	55.6		
#40	15.7		
#60	5.2		
#100	2.5		
#200	0.5		

* (no specification provided)

Soil Description

Brown f-m SAND, some fine Gravel, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 12.8646 D_{85}= 10.0365 D_{60}= 1.0253
D_{50}= 0.7469 D_{30}= 0.5483 D_{15}= 0.4169
D_{10}= 0.3486 C_u= 2.94 C_c= 0.84

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Sediment
Sample Number: SED-8

Date: 05.12.22

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental, Inc.
Project: Columbus Avenue Seawall Reconstruction
Salem, MA
Project No: 18.0171674.04 Figure 22-S-1576

Tested By: FR Checked By: Rebecca Roth

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

ATTACHMENT C – REGULATORY PERMIT DOCUMENTS

MASSACHUSETTS ENVIRONMENTAL POLICY ACT CERTIFICATE NO. 16445, DATED NOVEMBER 22, 2021

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1081
http://www.mass.gov/eea

November 22, 2021

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Columbus Avenue Seawall Reconstruction
PROJECT MUNICIPALITY	: Salem
PROJECT WATERSHED	: Atlantic Ocean – Juniper Cove
EEA NUMBER	: 16445
PROJECT PROPONENT	: City of Salem
DATE NOTICED IN MONITOR	: September 22, 2021

Pursuant to the Massachusetts Environmental Policy Act (MEPA) (M.G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **does not require** an Environmental Impact Report (EIR).

Project Description

As described in the Environmental Notification Form (ENF) and supplemental information, the City of Salem (City) proposes to remove an existing stone and masonry seawall that is in poor condition and replace it with a new cut granite stone wall ±466 linear feet (lf) in length off Columbus Avenue in Salem. The project will include an increase of the height of the seawall (by 1.5 to 3 feet) to elevation 11.5 feet NAVD88[1] along the approximate existing wall alignment; installation of a new 8-foot-wide flood barrier gate at the seawall opening (decreasing the width of the existing 20-foot wide opening by 12 feet); replacement of the existing ±24-foot by ±19-foot granite block landing and access steps with a ±17-foot by 20-foot granite landing and steps with a reinforced concrete core and 30-foot-wide footing to a depth of ±1.5 NAVD88; reconstruction of the five-foot-wide paved sidewalk along the landward side of the seawall including a 3- to 4-foot wide grass strip; and salt marsh restoration in the fronting salt marsh resource area including placing coir rolls along seaward edge of the existing marsh and adding

[1] All elevations in this Certificate reference North American Vertical Datum of 1988 (NAVD88), unless otherwise noted.

new clean sand fill and supplemental salt marsh plantings. In addition, the project will reconstruct 10 lf of adjacent seawall at 44 Columbus Avenue and 30 Bay View Avenue to tie-in and match the proposed Columbus Avenue Seawall. The project is proposed to provide increased protection and coastal resiliency against wave effects, flooding, and sea level rise (SLR). Columbus Avenue is an evacuation route during storms and includes critical utilities for residences in the community. The project is anticipated to be constructed in a single phase between November 2022 and May 2023.

Project Site

The 8.70-acre project site includes the Columbus Avenue seawall which is located along the northwestern portion of Juniper Cove in Salem between the properties of 44 Columbus Avenue and 30 Bay View Avenue. The seawall is a damaged and deteriorating older fieldstone and granite block masonry structure that is ±474 lf long with a ±20-foot wide opening. The seawall provides foreshore protection to the public roadway (Columbus Avenue), sidewalk, utilities, and residential dwellings. It is fronted by the publicly accessible "Steps Beach" and an area of salt marsh vegetation along the southwest portion of the beach area. The top of the seawall is an uneven surface, consisting of vertically protruding stones. The seawall varies in elevation from ±10.1 feet NAVD88 at the southwestern corner to 8.5 feet NAVD88 at the northeastern corner. Neighboring private walls on each end are at the same approximate elevation as the adjacent Columbus Avenue wall.

Wetland resource areas in the project area include Coastal Dune, Coastal Beach, Salt Marsh, Land Containing Shellfish (LCS), Land Under Ocean (LUO), and Land Subject to Coastal Storm Flowage (LSCSF). According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (Panel No. 25009C0436G, effective July 16, 2014), the entire project site is located within the Special Flood Hazard Area Zone AE with a Base Flood Elevation (BFE) 11 ft NAVD88. The project site includes mapped habitat for soft-shell clam (*Mya arenaria*) within the intertidal mudflat.

Environmental Impacts and Mitigation

Based on supplemental information, environmental impacts associated with the project include alteration of Coastal Dune (735 sf temporary)[2], Coastal Beach (223 sf permanent and 2,670 sf temporary), Salt Marsh (2,870 sf permanent and 1,000 sf temporary), and LSCSF (5,800 sf permanent and 10,170 sf temporary). Measures to avoid, minimize and mitigate environmental impacts will include construction within the general footprint of the existing seawall, enhancement of salt marsh, and construction period best management practices (BMPs) including sediment and erosion controls measures.

Jurisdiction and Permitting

The project is undergoing MEPA review and requires preparation of an ENF pursuant to 301 CMR 11.03(3)(b)(1)(a)[3], 11.03(3)(b)(1)(c), 11.03(3)(b)(6), and 11.03(10)(b)(1)[3] because it requires Agency Actions and will result in the alteration of Coastal Dune and 1,000 or more sf of Salt Marsh, reconstruction of an existing solid fill structure of 1,000 or more sf base area, and demolition of all or any exterior part of any Historic Structure listed in or located in any Historic District listed in the State

[2] Supplemental information, submitted on October 27, 2021, redefined Coastal Bank in the ENF as Coastal Dune.
[3] The ENF omits identifying exceedance of these thresholds, which are applicable.

Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth, respectively. The project requires a Section 401 Water Quality Certification (WQC) and a Chapter 91 (c. 91) License from the Massachusetts Department of Environmental Protection (MassDEP). The City received an initial grant from the Executive Office of Energy and Environmental Affairs (EEA) Dam and Seawall Repair or Removal Program for design and permitting and requested a second grant for the construction phase. The project is subject to Federal Consistency Review by the Massachusetts Office of Coastal Zone Management (CZM).

The project requires an Order of Conditions from the Salem Conservation Commission (or in the case of appeal, a Superseding Order of Conditions from MassDEP), submittal of a pre-construction notification (PCN) to the U.S. Army Corps of Engineers (ACOE) seeking authorization under the General Permits for Massachusetts in accordance with Section 404 of the Federal Clean Water Act, and review by the Massachusetts Historical Commission (MHC) pursuant to M.G.L. Chapter 9, sections 26-27C (950 CMR 71.00)[4].

Because the City is seeking Financial Assistance, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

Review of the ENF

The ENF describes existing and proposed conditions and contains site plans and cross-sections. It provides an analysis of alternatives and describes measures to avoid, minimize and mitigate project-related impacts. The City provided supplemental information to the MEPA Office on October 27, 2021 to address questions and comments provided at the MEPA remote consultation session (held on October 8, 2021) and provide revised plans; and on November 22, 2021 to provide a response to comments on the ENF. For purposes of clarity, all supplemental materials are referred to herein as the "ENF" unless otherwise referenced. Comments do not request further analysis of impacts in an EIR; however, outstanding issues have been identified which must be addressed in permitting. The Proponent should consult with the MEPA Office if material changes to the design of the project are made during subsequent permitting to determine if further review is warranted in the form of a Notice of Project Change (NPC).

I acknowledge comments from the two abutters who reside at the opposite ends of the Columbus Avenue seawall where it is proposed to tie-in to adjacent walls (44 Columbus Avenue and 30 Bay View Avenue). These comments express concerns regarding potential future flooding and exacerbation of existing flooding during storm events onto these properties and further inland into the neighborhood based on the current proposed tie-in for a total of only 10 lf along each of the adjacent walls. I expect the City will continue to work with State Agencies and local residents to further refine the project design to avoid any flooding impacts on neighboring properties, particularly in light of the anticipated effects of climate change. I note that the issuance of this Certificate does not signify the conclusion of the public engagement process for this project. The Wetlands Protection Act (WPA), WQC and c. 91 review processes include additional opportunities for public review and comment and MassDEP has sufficient regulatory authority to address outstanding issues during permitting.

[4] The ENF did not identify the requirement for MHC review.

Alternatives Analysis

The ENF includes a detailed evaluation of seven alternatives including: No-Build; Repair/ Reconstruction; Sloped Stone Revetment; Reinforced Concrete Seawall; Hybrid Concrete and Stone Veneer Seawall; and the Preferred Alternative (as described herein). The latter four alternatives consider seawall replacement within the existing structure footprint.

The No-Build Alternative would leave in place a deteriorating seawall which is susceptible to failure due to its age, condition, lack of consistent maintenance, and lack of proper stone sizing and design. It is also vulnerable to the increasing severity of coastal storms and higher water levels; spot repairs were performed after damage occurred during the 2018 Nor'easters. The seawall is likely to experience additional degradation and potentially failure compromising the roadway, public access, utilities and residential dwellings. The relatively low wall elevation at the northeast end contributes to increased flooding and wall overtopping, and several sinkholes were observed landward of the wall along the sidewalk. In addition, the salt marsh area was observed to be partly desiccated and degraded with various 'pockmark' voids up to 2 feet deep, severe erosion along the seaward end with complete loss of salt marsh vegetation and substrate up to 2 feet deep, and erosion and undermining at the toe of the salt marsh substrate. The No-Build Alternative was dismissed because it would not provide adequate protection to existing infrastructure nor provide a resilient shoreline with minimal maintenance, and it would not address public safety and public access concerns due to the existing damaged and deteriorated seawall and beach access landing structure. Moreover, if the salt marsh area is left as-is, it will likely continue to degrade and erode.

The Repair/Reconstruction Alternative would repair and restore the existing stone masonry seawall in-kind. It would not address the potential for future compromise due to storm surge and flooding conditions, and it would require continuous future maintenance to repair and repoint the walls. The ENF estimates the cost to maintain the existing stone walls with mortar joints may be upwards of $75,000 to $105,000 every three to five years assuming 3,000 sf of wall. This alternative is not considered appropriate because it would not provide adequate long-term protection to existing infrastructure considering future compromise due to storm surge and flooding conditions, would not provide a resilient shoreline, would require additional frequent and costly maintenance, and would not adequately address public safety and public access concerns due to the existing damaged and deteriorated seawall.

The Sloped Stone Revetment Alternative would replace the existing seawall with a sloped stone revetment with a rough face which is generally preferred over vertical seawalls due to its ability to dissipate wave energy and prevent scour and erosion. The ENF indicates that a sloped revetment is not considered feasible at the project site because there are numerous site constraints such as the publicly accessible beach and area of salt marsh vegetation fronting the existing seawall; the inability to move the structure landward due to proximity to Columbus Avenue, sidewalk, utilities, and residential dwellings; and the inability to move the structure seaward due to proximity to existing salt marsh and potential loss of habitat, goal of maintaining continued public access and use of 'Steps Beach', and permitting implications (effort and costs) for the placement of stone seaward of existing structures.

The Reinforced Concrete Seawall Alternative would replace in-kind the existing stone masonry seawall with a cast-in-place reinforced concrete wall, which would be constructed within the same approximate footprint and alignment as the existing seawall and be founded on a cast-in-place reinforced

concrete footing that would extend a minimum of four feet below existing grade on a crushed stone base over compacted subgrade soils, or cast directly on existing bedrock if it was encountered above the proposed footing elevation. This alternative would improve the structure's longevity with new reinforced concrete wall, however, the City preferred to consider alternatives which would better match the existing aesthetics than concrete. The ENF does not provide information on the environmental impacts associated with this alternative.

The Hybrid Wall Alternative would replace in-kind the existing stone masonry seawall with a hybrid wall consisting of an inner concrete core wall and a stone block veneer, which would be constructed within the same approximate footprint and alignment as the existing wall structures. However, the overall structure would be larger in width than the existing walls and would extend further landward due to the added stone veneer. The hybrid wall would be founded on a concrete foundation or pinned directly to bedrock. The concrete inner core wall would be reinforced. The stone veneer would consist of dimensional stone blocks dowelled into the inner concrete core wall and mortar between the stone joints. The ENF estimates costs for repair/repointing of the stone veneer upwards of $45,000 to $75,000 every three to five years assuming 3,000 sf of wall. This alternative would improve the structure's longevity with new concrete inner core wall and stone veneer and eliminate emergency stabilization methods which can negatively impact environmental resources. However, it was not selected because it would have the highest upfront cost to construct (±2.5 times more than Repair Alternative and ±1.3 times more than the Reinforced Concrete Seawall Alternative), concern for material availability for the dimensional stone block veneer, and the continuous maintenance requirement. The ENF does not provide information on the environmental impacts associated with this alternative.

According to the ENF, the Preferred Alternative proposes seawall reconstruction and salt marsh enhancement to increase shoreline stabilization and coastal storm/flood protection and resiliency, while minimizing the environmental impacts of construction. Project components include:

- Reconstructed seawall with large cut granite stone wall founded on a reinforced concrete footing to provide increased protection to Columbus Avenue, sidewalk, dwellings, utilities, and other landside features with the following design elements:
  - increase rugosity (wall friction) compared to existing flat-faced masonry wall
  - increase wall height from ±1.5 feet to 3 feet to elevation 11.5 feet NAVD88, which is ±0.5 feet above the current FEMA BFE, to reduce the overtopping of the walls
  - conformance to natural shape of the shoreline within the existing seawall footprint that will not extend further seaward
  - maintain top of wall width of ±2 feet to allow for potential future increase in wall height
  - top three rows of stone block dowelled together for increased stability and resilience
  - reduce wall opening to 8-foot-wide and install a permanent hinged flood barrier gate
  - founded on a cast-in-place reinforced concrete footing extending a minimum of four feet below existing grade on a crushed stone base over compacted subgrade soils or cast directly on existing bedrock if it is encountered above the proposed footing elevation (minimum depth of four feet will be maintained to protect against scour and erosion)
  - granite capstone with a slight reveal on the front face of the seawall to provide some reduction in wave overtopping
  - tie-in with the existing adjacent stone masonry seawalls at each end by reconstructing 10 lf of existing adjacent seawalls to match the proposed Columbus Avenue wall type and

height (in addition, a maximum ±10-lf of existing wall beyond the reconstructed portion may be temporarily removed and reset to facilitate the full depth reconstruction)
    - reconstruct the granite block topped landing and granite block steps with new ±18-feet by 20-feet granite block topped landing and concrete core infill with steps on all three sides for continued public access to the beach
- Increased protection and public safety in terms of emergency response, public access, and direct protection of life, limb, and property
- Inclusion of nature-based and natural elements to create a more resilient shoreline that can provide increased storm damage prevention and flood control including:
    - Stabilize toe of existing marsh to reduce erosion and undermining with 222 lf of new coir rolls/fabric, clean sand fill and salt marsh plantings
    - Fill and stabilize "pockmark" voids within the existing marsh with clean sand, biodegradable blankets and planting with vegetation as recommended by Agencies
    - Enhance salt marsh with new and supplemental plantings (1000 plugs of *Spartina patens* and 2500 plugs of *Spartina alterniflora)*
    - Protect and limit disturbance to existing salt marsh area by removal of timber posts used to secure boats, and installation of seasonal fencing/netting and new perimeter coir rolls
    - Coastal dune enhancement with new salt tolerant plantings at southeastern corner
- Minimized maintenance of the seawall and associated costs

Comments from MassDEP recommend that the City consider an alternative to relocate the seawall landward to avoid coastal wetland impacts (and reconfigure the vertical face of the granite block wall to reduce wave energy and deflection) based on available space associated with a 3-4-foot-wide grass swath proposed between Columbus Avenue and the sidewalk. The ENF indicates that relocating the wall landward is not appropriate due to the proximity of the wall to the roadway, sidewalk, utilities, and residential dwellings.

Environmental Justice

The project site is located within one mile of Environmental Justice (EJ) populations that are designated based on Minority, Income, and Minority and Income. The ENF identifies four mapped EJ block groups within one mile of the project site which are located within the Cities of Salem and Beverly. According to the ENF, the project is not considered reasonably likely to negatively affect such EJ populations, since the project is intended to reconstruct an existing seawall and beach access landing with increased protection and coastal resiliency against wave effects, flooding, and SLR for the benefit of all populations. The EJ populations are not in the vicinity of the abutting properties where concerns of increased flooding have been raised.

Wetlands

The project includes temporary and permanent impacts to coastal wetland resources including Coastal Dune, Coastal Beach, Salt Marsh and LSCSF. The Salem Conservation Commission will review the project for its consistency with the Wetland Protection Act, the Wetlands Regulations (310 CMR 10.00) and associated performance standards. MassDEP will also review the project for consistency with the c. 91 regulations (310 CMR 9.00) and with the 401 WQC regulations (314 CMR 9.00). The project may be subject to CZM federal consistency review, in which case it must be found to be consistent with

CZM's enforceable program policies. I refer the City to the detailed comments from CZM, MassDEP, and DMF which provide guidance and recommendation for further analysis and identify outstanding issues that must be addressed during permitting.

The project proposes to alter 2,870 sf of salt marsh area by filling voids and eroded areas with suitable clean sand fill and installing new salt marsh plugs. The proposed work will help enhance the existing salt marsh providing an improvement with increased shoreline stabilization. The City should avoid, if possible, additional alteration to salt marsh that will occur during the excavation for the placement of the 6.5-foot-wide concrete footing. The ENF states that clean sand fill will be added to unvegetated areas of the salt marsh as a substrate for new plantings with a maximum of four inches of clean sand allowed above existing vegetation. CZM comments indicate that it is unclear how placement of this fill over existing vegetation will support the restoration. Every effort should be taken to avoid placing sand over existing salt marsh vegetation because fill may cause impacts to the existing vegetation. The Massachusetts Division of Marine Fisheries (DMF) recommends that all boats be prohibited from mooring in the marsh because depressions and erosions may be caused by the storage of small boats. Removing the wooden posts from the marsh that have been used to secure boats in the past will reduce these impacts, and continued management of foot traffic and boat launching in this area will be important to the overall success of the restoration and plantings.

Comments from DMF indicate it supports the City's objective to restore and enhance the development of a resilient marsh. It also supports a targeted beach nourishment at points of erosion and where needed to increase the elevation for salt marsh restoration. Maintenance of a resilient shoreline would benefit from enhancement of the fringing marsh which functions to hold sediment and buffer the shoreline as well as serving as important habitat for fish and invertebrates. The City should provide a detailed fill/nourishment and planting plan, with methods and design supported by references, including source and species of plants, acclimation of plants to local salinity conditions, timing of planting, material storage, and soil amendments, if any, for the restoration area, in addition to irrigation and fencing needs, in permitting for review, along with a detailed overall monitoring and maintenance plan and standard operating procedures to avoid invasive species introduction and spread. The marsh restoration and living shoreline development work should be designed and created by a wetland scientist with proven experience in saltmarsh restoration. Supplemental information suggests an annual inspection, but CZM comments recommend a more robust and frequent monitoring plan that includes inspection for the need to tighten anchors for the coir rolls, identify and address scour issues, monitor the success of the salt marsh plantings, and any potential contingency options for implementation if the proposed approach is not successful because regular monitoring, maintenance, and design modifications are often needed to ensure the success of a salt marsh restoration project.

While there may be benefits to restoring the "pockmark voids" and erosion in the salt marsh, the City should define what is considered a "void" versus a natural feature; explain possible reasons for the development of voids; and identify methods or actions to prevent them in the future in permitting documents. As voids within the marsh platform may be naturally occurring, fill to support re-vegetation should be limited to only those identified areas of erosion or scour directly adjacent to or behind the existing stone riprap seaward of the marsh. Small wooden stakes may be needed to hold the fabric in place while the vegetation roots get established. Because this can take several growing seasons, the maintenance plan for the project should include maintenance of this element.

Supplemental information provides details regarding how coir logs proposed along the seaward

side of the salt marsh will be anchored in place (four-foot-long, two-inch by four-inch boards). Final design of the coir roll toe protection and anchoring system will be determined and developed throughout the project permitting phase and for final design/preparation of project bid documents. The intent of the coir rolls will be to provide temporary toe protection while the new salt marsh vegetation is established. Upon successful growth of salt marsh, the coir rolls may be removed upon the recommendation of the wetland scientist. CZM comments recommend that the means of anchoring the coir rolls should be reconsidered to ensure that the system is adequate to maintain the rolls in place for the duration of the project life because the proposed approach is unlikely to effectively counteract the considerable buoyancy of the coir, particularly in those areas where the rolls are placed over rock and because of their size, they may exacerbate scour. Because coir rolls can become dislodged in large storm events, they should be tagged with the location and name of the project so that they can be retrieved if they are displaced to another area by high water or wave events. Coir rolls and their anchors should be monitored regularly to ensure minimal scour, identify any damage to the coir rolls, and ensure that they remain in place, which is particularly important immediately following a storm or significant wave event. A detailed construction sequence should be provided, along with a contingency plan in the event there is a storm or King Tide during construction.

Comments from CZM indicate that the base of the footings for the new wall appears to be shallower at the ends of the project versus the rest of the wall (elevation 6 and 4 feet NAVD 88, respectively) (current high tide line is at 6.4 feet NAVD88). Supplemental information indicates that the proposed wall footing is stepped to maintain a minimum 4-foot depth below existing grade to the bottom of the footing. Existing grade at the corners increases to approximate elevation 9.5 feet NAVD88 and 7 feet NAV88 at the west and east corners, respectively. The proposed seawall does not need to extend greater than 4 feet below existing grade. If the footing elevation was at a consistent elevation the seawall construction would require a nearly 10-foot-deep excavation at the west corner. The City should provide additional documentation to demonstrate that the tie-in design at the end of the structure will avoid end scour that may increase or exacerbate existing impacts to adjacent properties in permitting documents.

The ENF indicates that the existing upland vegetation seaward of the seawall will be replaced with native salt tolerant plantings. The City should develop a planting plan that includes details of the removal and replacement of the vegetation, species to be used, and maintenance of this element over time and submit it for review during permitting.

Waterways

The MassDEP Waterways Regulation Program (WRP) has determined that most of the project site includes flowed and filled tidelands subject to c. 91 jurisdiction. WRP has determined that proposed work activities are a water-dependent use, pursuant to 310 CMR 9.12(2)(a)(9) and 310 CMR 9.12(2)(a)(11) and will require authorization through a c. 91 Waterways License and a Dredge Permit as it involves shoreline stabilization, dredging of aquatic sediments and associated fill in flowed and filled tidelands of Juniper Cove. WRP will perform a full technical review of the project once detailed plans are submitted with the c. 91 Waterways Application that meet the minimum filing standards set forth in 310 CMR 9.11(3). The City should consult with WRP to identify any specific technical issues prior to filing the c. 91 Waterways Application.

Climate Change Adaptation and Resiliency

As described in the ENF, the top of the existing seawall is below BFE and will be raised 1.5 to 3 feet to a uniform elevation of 11.5 feet NAVD88 (±0.5 feet above the current FEMA BFE). Given the vulnerability of this site, CZM comments recommend that the City consider alternatives that provide additional height to the seawall to further improve coastal resiliency while avoiding impacts to adjacent properties. Supplemental information indicates that the proposed wall design allows for the potential future increase in wall height to help protect against SLR. MassDEP comments express concern regarding the proposed height increase of the existing seawall. In many instances, increasing the height of the seawall may provide some additional flood protection; however, the design did not account for SLR or storm surge, and the overall proposed design may perpetuate wave reflection and associated erosion which could exacerbate coastal flooding. The City should provide additional information to explain how the increased wall elevation will not exacerbate existing wave reflection and refraction onto adjacent wetland resource areas, properties or roadways in permitting documents. The City should conduct outreach to ensure that the community understands the expected design life of the project regardless of the elevation of the final design.

I emphasize the importance of enhancing and maintaining coastal resource areas such as a fronting beach and salt marsh to dissipate wave energy because the frequency, duration, and intensity of this wave interaction will increase with rising sea levels. The City should consider mitigation strategies to reduce potential impacts from energy reflection on fronting resources and adjacent areas from the proposed additional height on the reconstructed seawall. CZM and MassDEP comments recommend maximizing the roughness of the new wall to better dissipate reflected energy, minimizing the size, altering the design of the landing to reduce energy reflection, and adding sediment to the beach front to further dissipate and absorb wave energy.

Supplemental information indicates that the proposed granite block seawall will have increased roughness compared to the existing wall, which will help to mitigate energy reflection by improving dissipation. The City should include additional information in permitting documents to demonstrate that the proposed granite block wall will provide this improvement to ensure that the new wall does not reflect more energy than the existing wall.

According to supplemental information, the existing landing and beach access steps will be replaced with a similar on grade structure with a slightly smaller footprint. Supplemental information indicates that a pile-supported structure was not chosen because of possible shallow depth to bedrock, aesthetics, and the more limited longevity of a timber structure versus a solid structure in a high energy environment. Because this reconstruction offers the opportunity for redesigning the existing structure, the new design should reduce the existing impacts of scour on the fronting salt marsh and beach. CZM comments indicate that pile-supported access structures can be constructed from more durable materials than wood, and piles and piers are often pinned to bedrock in this type of environment. Comments from MassDEP, CZM and DMF recommend that the City further analyze alternatives that reduce impacts to fronting resource areas and reduce reflected wave energy to adjacent areas such as a smaller size; use of pilings rather than solid support; a pile supported walkover design, that are more resilient to wave action and also eliminate the need for the opening in the seawall and associated flood barrier; and a removable design for the deck and stairs to allow their removal to avoid the most significant impacts during the winter season, or when the floodgate is installed before storm events.

According to Agency comments, a significant mitigation strategy to reduce additional wave energy reflection caused by the increased wall elevation and minimize impacts to adjacent properties is addition of sand to the beach to dissipate wave energy and reduce wave reflection off the wall. Supplemental information indicates that, while the City may consider this in the future, a challenge for implementation of beach nourishment is a local perception that flood waters currently overtop the wall in part because of the existing sand built up in the corners, which is believed to be causing a ramping effect and exacerbating flooding. CZM comments note that the elevation of coastal flood waters is determined by the elevation of the ocean, which is not affected by local nearshore topography, and additional sediment in front of a wall provides an important buffer to reduce the energy associated with the waves, which decreases the overtopping and reflection off the wall. The City should engage in continued public outreach and education regarding coastal processes and the benefits of nourishment to both storm damage prevention and recreation to address this issue and allow this mitigation strategy to be implemented as part of this project. A grain size analysis should be completed, and the results submitted with permitting documents to demonstrate that any fill brought in as part of the beach and/or salt marsh restoration is compatible with existing sediments.

The City should develop a comprehensive plan to assess, implement and track nature-based solutions that will aid in mitigating damage from SLR and storm surge in Juniper Cove. At a minimum, the City should monitor the profile of the beach face and identify specific nourishment thresholds and volumes needed to maintain the beach profile over time.

The City actively participates in the Commonwealth's Municipal Vulnerability Preparedness (MVP) Program, which is a community-driven process to define natural and climate-related hazards, identify existing and future vulnerabilities and strengths of infrastructure, environmental resources and vulnerable populations, and develop, prioritize and implement specific actions the City can take to reduce risk and build resilience. The City should maintain MVP certification and continue to prioritize and implement community-supported, nature-based resiliency projects based on MVP program core principles.

Historical Resources

According to comments from MHC, the seawall and granite landing are listed in the State and National Registers of Historic Places as contributing elements to the Salem Willows Historic District. Demolition of the seawall and landing would constitute an "adverse effect" pursuant to 950 CMR 71.05(a) and 71.07(2)(b)(3) through the destruction or alteration of all or part of a State Register property. The City should consult with MHC to explore alternatives that would avoid, minimize, or mitigate the adverse effect of the proposed demolition pursuant to 950 CMR 71.07(3).

Construction Period

Supplemental information describes general construction methods and procedures including sequencing; construction access, staging, and limits of work; and support of excavations and dewatering. Permitting plans should include the location of proposed staging area(s) for the excavated beach sand and other materials and explain how it will be stored for reuse. All construction and demolition (C&D) activities should be managed in accordance with applicable MassDEP's regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The City will install BMPs on the

project site to control erosion and sedimentation during the construction period. The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11).

I encourage the City to require contractors to use construction equipment with engines manufactured to Tier 4 federal emission standards or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). If oil and/or hazardous materials are found during construction, the City should notify MassDEP in accordance with the Massachusetts Contingency Plan (310 CMR 40.0000). The City should develop a spills contingency plan. All C&D activities should be undertaken in compliance with the conditions of all State and local permits. I encourage the City to reuse/recycle C&D debris to the maximum extent.

Conclusion

The ENF has adequately described and analyzed the project and its alternatives and assessed its potential environmental impacts and mitigation measures. Based on review of the ENF and comments received on it, and in consultation with State Agencies, I have determined that an EIR is not required. Remaining issues can be addressed through the local, State and federal permitting and review processes. I encourage the City to continue to consult with State Agencies during subsequent permitting to adequately consider climate change and flooding impacts in project design while balancing the need to protect coastal wetland resources. To the extent material changes to project design are made during permitting, the City is directed to consult with the MEPA Office to determine the need for further review.

K. Theoharides

November 22, 2021
Date

Kathleen A. Theoharides

Comments Received:

10/08/2021	Massachusetts Department of Environmental Protection (MassDEP) – Waterways Regulation Program (WRP)
10/12/2021	Massachusetts Historical Commission (MHC)
10/18/2021	Guy Ford
10/18/2021	Lewis Legon
10/19/2021	Massachusetts Division of Marine Fisheries (DMF)
11/12/2021	Massachusetts Office of Coastal Zone Management (CZM)
11/12/2021	MassDEP – Northeast Regional Office (NERO)

KAT/PPP/ppp

ORDER OF CONDITIONS FILE NO. 046-0796, ISSUED AUGUST 27, 2024

SO.ESSEX #208 Bk:42342 Pg:053
09/25/2024 11:49 AM CONDN Pg 1/20
eRecorded

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
46-796
MassDEP File #

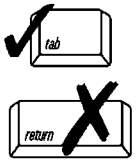
eDEP Transaction #

Salem
City/Town

A. General Information

Please note: this form has been modified with added space to accommodate the Registry of Deeds Requirements

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. From: Salem
Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

Deborah — a. First Name
Duhamel — b. Last Name
City of Salem — c. Organization
98 Washington Street — d. Mailing Address
Salem — e. City/Town
MA — f. State
01970 — g. Zip Code

4. Property Owner (if different from applicant):

a. First Name
b. Last Name
c. Organization
d. Mailing Address
e. City/Town
f. State
g. Zip Code

5. Project Location:

46 Columbus Ave — a. Street Address
Salem — b. City/Town
44 — c. Assessors Map/Plat Number
146 — d. Parcel/Lot Number
Latitude and Longitude, if known: 42d32m00s — d. Latitude; 70d52m12s — e. Longitude

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):

Essex — a. County
b. Certificate Number (if registered land)
7503 — c. Book
487 — d. Page

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: 46-796
MassDEP File #

eDEP Transaction #

Salem
City/Town

7. Dates: 08/05/2024 (a. Date Notice of Intent Filed) | 08/20/2024 (b. Date Public Hearing Closed) | 08/27/2024 (c. Date of Issuance)

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

Columbus Ave Seawall Reconstruction Project
a. Plan Title

GZA Environmental, Inc.
b. Prepared By

Anders B. Bjarngard
c. Signed and Stamped by

08/2024
d. Final Revision Date

As Shown
e. Scale

f. Additional Plan or Document Title

g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

a. ☐ Public Water Supply b. ☒ Land Containing Shellfish c. ☒ Prevention of Pollution

d. ☐ Private Water Supply e. ☒ Fisheries f. ☒ Protection of Wildlife Habitat

g. ☒ Groundwater Supply h. ☒ Storm Damage Prevention i. ☒ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

B. Findings (cont.)

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of**

the performance standards which the proposed work cannot meet is attached to this Order.

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☐ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) _____ a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. ☐ Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. ☐ Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			

11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☒ Coastal Beaches	223 sf (perm) 2670 (temp) a. square feet	b. square feet	cu yd c. nourishment	cu yd d. nourishment
14. ☒ Coastal Dunes	735 sf (temp) a. square feet	b. square feet	cu yd c. nourishment	cu yd d. nourishment
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☒ Salt Marshes	a. square feet	b. square feet	3870 c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. c/y dredged	b. c/y dredged		
21. ☒ Land Subject to Coastal Storm Flowage	5800 sf (perm), 10170 sf (temp) a. square feet	b. square feet		
22. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

B. Findings (cont.)

* **#23**. If the project is for

23. ☐ Restoration/Enhancement *:

the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

a. square feet of BVW | b. square feet of salt marsh

24. ☐ Stream Crossing(s):

a. number of new stream crossings | b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. The work is a maintenance dredging project as provided for in the Act; or
   b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
   c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on 08/27/2027 unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.

C. General Conditions Under Massachusetts Wetlands Protection Act

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

    "Massachusetts Department of Environmental Protection" [or, "MassDEP"]

    "File Number 64-796 "

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be

marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

19. The work associated with this Order (the "Project")
    (1) ☐ is subject to the Massachusetts Stormwater Standards
    (2) ☒ is NOT subject to the Massachusetts Stormwater Standards

    If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

    a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

    b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
    i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
    ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
    iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:

1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

Attached conditions are issued under both the Wetlands Protection Act and local ordinance.

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The Salem (Conservation Commission) hereby finds (check one that applies):

   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

   1. Municipal Ordinance or Bylaw | 2. Citation

   Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

   b. ☒ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

   Salem Wetlands Protection Ordinance (1. Municipal Ordinance or Bylaw) | Ch. 50 (2. Citation)

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

   Attached conditions are issued under both the Wetlands Protection Act and local ordinance.

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

08/27/2024
1. Date of Issuance

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

4
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant. These names typed below represent the intent to sign the foregoing document electronically. Signatures are made in accordance with MGL c.110G and pursuant to the Commissions electronic signature authorization Certificate of vote on 8/16/2022 in Book 41135, Page 117 on 8/17/2022 at the South Essex Registry of Deeds.

/s/ Bart Hoskins Signature	Bart Hoskins Printed Name
/s/ William Jacob Signature	William Jacob Printed Name
/s/ Lucia DelNegro Signature	Lucia DelNegro Printed Name
/s/ Justin Bates Signature	Justin Bates Printed Name
Signature	Printed Name
Signature	Printed Name
Signature	Printed Name
Signature	Printed Name

☒ by hand delivery on

08/27/2024
Date

☐ by certified mail, return receipt requested, on

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Salem
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Project Location | MassDEP File Number

Has been recorded at the Registry of Deeds of:

County | Book | Page

for: Property Owner

and has been noted in the chain of title of the affected property in:

Book | Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

Request for Departmental Action Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:

46-796
Provided by DEP

A. Request Information

1. Location of Project

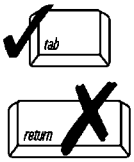
a. Street Address

b. City/Town, Zip

c. Check number

d. Fee amount

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



2. Person or party making request (if appropriate, name the citizen group's representative):

Name

Mailing Address

City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)

3. Applicant (as shown on Determination of Applicability (Form 2), Order of Resource Area Delineation (Form 4B), Order of Conditions (Form 5), Restoration Order of Conditions (Form 5A), or Notice of Non-Significance (Form 6)):

Name

Mailing Address

City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)

4. DEP File Number:

B. Instructions

1. When the Departmental action request is for (check one):

☐ Superseding Order of Conditions – Fee: $120.00 (single family house projects) or $245 (all other projects)

☐ Superseding Determination of Applicability – Fee: $120

☐ Superseding Order of Resource Area Delineation – Fee: $120

B. Instructions (cont.)

Send this form and check or money order, payable to the *Commonwealth of Massachusetts,* to:

Department of Environmental Protection
Box 4062
Boston, MA 02211

2. On a separate sheet attached to this form, state clearly and concisely the objections to the Determination or Order which is being appealed. To the extent that the Determination or Order is based on a municipal bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

3. Send a **copy** of this form and a **copy** of the check or money order with the Request for a Superseding Determination or Order by certified mail or hand delivery to the appropriate DEP Regional Office (see https://www.mass.gov/service-details/massdep-regional-offices-by-community).

4. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

SALEM CONSERVATION COMMISSION

DEP FILE #64-0796
46 Columbus Ave
City of Salem, Massachusetts

ADDITIONAL FINDINGS

This Order permits the project that includes the removal of the existing deteriorated and damaged stone masonry seawall, and the construction of 464 feet of new, large cut granite stone seawall. It will also include the installation of a new 10-foot wide flood barrier gate, the reconstruction of the granite block landing and access steps, and reconstruction of the paved sidewalk along the landward side of the seawall. This project will include salt marsh enhancements. Additionally, 10 feet of adjacent seawall at 44 Columbus Ave and 30 Bay View Ave will be reconstructed to tie-in and match the proposed Columbus Ave Seawall.

Based on the Estimated Habitats of Rare Wildlife and Certified Vernal Pools Map (August 2021 data, MassMapper) from Natural Heritage & Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries and Wildlife, it has been determined that this project does not occur near any habitat of state-listed rare wildlife species nor contain any vernal pools.

This order is issued under both the Wetlands Protection Act and Salem's Wetlands Protection & Conservation Ordinance.

GENERAL CONDITIONS

1. This Order of Conditions must be recorded in its entirety **(including all three (3) pages of Special Conditions)** at the Essex County Registry of Deeds or the Land Court for the district in which the land is located, after the expiration of the 10-day appeal period and within 30 days of the issuance. **A copy of the recording information must be submitted to the Salem Conservation Commission before any work approved in this Order commences.**

2. Approval of this application does not constitute compliance with any law or regulation other than M.G.L Chapter 131, Section 40, Wetlands Regulations 310 CMR 10.00 and the City of Salem Wetlands Protection Ordinance, Salem Code Chapter 50.

3. All work shall be performed in accordance with this Order of Conditions and approved site plan(s). No alteration of wetland resource areas or associated buffer zones, other than that approved in this Order, shall occur on this property without prior approval from the Commission.

4. Prior to any work commencing on site, a DEP Sign showing **DEP File #64-0796** must be installed at the entrance to the site and seen from the public way, but not placed on a living tree.

5. No work approved in this Order may commence until the ten (10) day appeal period has lapsed from the date of the issuance of this Order.

6. With respect to this Order, the Commission designates the Conservation Agent as its agent with powers to act on its behalf in administering and enforcing this Order.

7. The Commission or its Agent, officers, or employees shall have the right to enter and inspect the property at any time for compliance with the conditions of this Order, the Wetlands Protection Act MGL Chapter 131, Section 40, the Wetlands Regulations 310 CMR 10.00, and shall have the right to require any data or documentation that it deems necessary for that evaluation.

8. The term "Applicant" as used in this Order of Conditions shall refer to the owner, any successor in interest or successor in control of the property referenced in the Notice of intent, supporting documents and this Order of Conditions. The Commission shall be notified in writing within 30 days of all transfers of title of any portion of the property that takes place prior to issuance of the Certificate of Compliance.

9. It is the responsibility of the applicant to procure all other applicable federal, state and local permits and approvals associated with this project. These permits may include but are not necessarily limited to the following:

   (1) Section 404 of the Federal Water Pollution Control Act (P.L. 92-500, 86 stat. 816), U.S. Army Corps of Engineers.
   (2) Water Quality Certification in accordance with the Federal Water Pollution Control under authority of sec. 27(5) of Chapter 21 of the Massachusetts General Laws as codified in 314 CMR 9.00.
   (3) Design Requirements for Construction in Floodplains under the State Building Code (780 CMR 744.).

10. If there are conflicting conditions within this Order, the stricter condition(s) shall rule.

11. All work shall be performed so as to ensure that there will be no sedimentation into wetlands and surface waters during construction or after completion of the project.

12. The Commission or its Agent shall have the discretion to modify the erosion/siltation control methods and boundary during construction if necessary.

13. The Commission reserves the right to impose additional conditions on portions of this project or this site to mitigate any actual or potential impacts resulting from the work herein permitted.

14. The work shall conform to the following attached plans and special conditions:

Final Approved Plans

Title
Columbus Avenue Seawall Reconstruction Project

Dated
08/2024

Signed and stamped by:
Anders B. Bjarngard Civil

On file with
Salem Conservation Commission

15. Any proposed changes in the approved plan(s) or any deviation in construction from the approved plan(s) shall require the applicant to file a Notice of Project Change with the Commission. The Notice shall be accompanied by a written inquiry prior to their implementation in the field, as to whether the change(s) is substantial enough to require filing a new Notice of Intent or a request to correct or amend this Order of Conditions. A copy of such request shall at the same time be sent to the Department of Environmental Protection.

16. In conjunction with the sale of this property or any portion thereof before a Certificate of Compliance has been issued, the applicant or current landowner shall submit to the Commission a statement signed by the buyer that he/she is aware of an outstanding Order of Conditions on the property and has received a copy of the Order of Conditions.

17. [Reserved].

PRIOR TO CONSTRUCTION

18. **Prior to the commencement of any activity on this site other than activities listed above, there must be a Pre-Construction Meeting** on site between the project supervisor, the contractor responsible for the work, and the Conservation Agent and/or a member of the Conservation Commission to ensure that the requirements of the Order of Conditions are understood. The staked erosion control line shall be adjusted, if necessary, during the pre-construction meeting. **Please contact the Conservation Agent at (978) 619-5685 at least forty-eight (48) hours prior to construction to arrange for the Pre-Construction Meeting.**

19. Prior to the pre-construction meeting and commencement of any activity on this site, sedimentation and erosion control barriers shall be installed as shown on the approval plan(s) and detail drawings. The Commission and/or its Agent **shall inspect and approve such installation at the pre-construction meeting.**
20. No clearing of vegetation, including trees, or disturbance of soil shall occur prior to the pre-construction meeting. Minimal disturbance of shrubs and herbaceous plants shall be allowed prior to the pre-construction meeting if absolutely necessary in order to place erosion control stakes where required.
21. There shall be adequate additional erosion and sediment controls stored onsite for emergency purposes.

EROSION CONTROL

22. Appropriate erosion control devices shall be in place prior to the beginning of any phase of construction, and shall be maintained during construction in any wetland resource area and/or buffer zones. The

erosion control measures shown on the approval plan(s) and provisions in the Order will be the minimum standards for this project; the Commission or its Agent may require additional measures.

23. All debris, fill and excavated material shall be stockpiled a location far enough away from the wetland resource areas to prevent sediment from entering wetland resource areas.
24. Erosion and sedimentation control devices shall be inspected after each storm event and repaired or replaced as necessary. Any accumulated silt adjacent to the barriers shall be removed.
25. The area of construction shall remain in a stable condition at the close of each construction day.
26. Any de-watering of trenches or other excavation required during construction shall be conducted so as to prevent siltation of wetland resource areas. All discharge from de-watering activities shall be filtered through straw bale sediment traps, silt filter bags or other means approved by the Commission or its Administrator.
27. Within thirty (30) days of completion of construction on any given portion of the project, all disturbed areas in the completed portion of the site shall be permanently stabilized with rapidly growing vegetative cover, using sufficient top soil to assure long-term stabilization of disturbed areas.
28. If soils are to be disturbed for longer than two (2) months, a temporary cover of rye or other grass should be established to prevent erosion and sedimentation. If the season is not appropriate for plant growth, exposed surface shall be stabilized by other appropriate erosion control measures, firmly anchored, to prevent soils from being washed by rain or flooding.

DURING CONSTRUCTION

29. A copy of this Order of Conditions and the plan(s) approved in this Order shall be available on site at all times when work is in progress.
30. No alteration or activity shall occur beyond the limit of work as defined by the siltation barriers shown on the approved plan(s).
31. All waste products, grubbed stumps, slash; construction materials, etc. shall be deposited at least 100 feet from wetland resource areas and 200 feet from river.
32. Cement trucks shall not be washed out in any wetland resource or buffer zone area, nor into any drainage system. Any deposit of cement or concrete products into a buffer zone or wetland resource area shall be immediately removed.
33. All exposed sub-soils shall be covered by a minimum of three (3) inches of quality screened loam topsoil prior to seeding and final stabilization.
34. Immediately following drainage structure installation all inlets shall be protected by silt fence, strawbale barriers and/or silt bags to filter silt from stormwater before it enters the drainage system.
35. There shall be no pumping of water from wetland resource areas.
36. All equipment shall be inspected regularly for leaks. Any leaking hydraulic lines, cylinders or any other components shall be fixed immediately.
37. During construction, all drainage structures shall be inspected regularly and cleaned as necessary.
38. The applicant is hereby notified that failure to comply with all requirements herein may result in the issuance of enforcement actions by the Conservation Commission including, but not limited to, civil administrative penalties under M.G.L Chapter 21A, section 16.

AFTER CONSTRUCTION

39. Upon completion of construction and final soil stabilization, the applicant shall submit the following to the Conservation Commission to request a Certificate of Compliance (COC):
    (1) A Completed Request for a Certificate of Compliance form (WPA Form 8A or other form if required by the Conservation Commission at the time of request).
    (2) A letter from a Registered Professional Engineer certifying compliance of the property with this Order of Conditions.
    (3) An "As-Built" plan signed and stamped by a Registered Professional Engineer or Land Surveyor showing post-construction conditions within all areas under the jurisdiction of the Massachusetts Wetlands Protection Act. This plan shall include at a minimum:
        (a) All wetland resource area boundaries with associated buffer zones and regulatory setback areas taken from the plan(s) approved in this Order of Conditions;
        (b) Locations and elevations of all stormwater management conveyances, structures and best management designs, including foundation drains, constructed under this Order within any wetland resource area or buffer zone;
        (c) Distances from any structures constructed under this Order to wetland resource areas - "structures" include, but are not limited to, all buildings, septic system components, wells, utility lines, fences, retaining walls, and roads/driveways;
        (d) A line delineating the limit of work - "work" includes any filling, excavating and/or disturbance of soils or vegetation approved under this Order;

40. When issued, the Certificate of Compliance must be recorded at the Essex County Registry of Deeds and a copy of the recording submitted to the Salem Conservation Commission.
41. If the completed work differs from that in the original plans and conditions, the report must specify how the work differs; at which time the applicant shall first request a modification to the Order. Only upon review and approval by the Commission, may the applicant request in writing a Certificate of Compliance as described above.
42. Erosion control devices shall remain in place and properly functioning until all exposed soils have been stabilized with final vegetative cover and the Conservation Commission and/or its Agent has authorized their removal.

ADDITIONAL CONDITIONS

43. The submission of a full restoration plan will be submitted to the Conservation Agent that contains details of the intended restoration. This will be submitted prior to any work beginning.
44. A qualified wetlands scientist will be directly involved in the restoration planting to provide necessary expertise.

401 WATER QUALITY CERTIFICATION APPLICATION NO. 25-WW08-0001-APP, DATED MARCH 17, 2025

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

March 17, 2025

Deborah Duhamel
City of Salem
98 Washington St, 2nd Floor
Salem, MA 01970

DEP WQC APPLICATION # 25-WW08-0001-APP
DEP FILE # 064-0796
EEA # 16445
USACE NAE-2024-02849

RE: 401 WATER QUALITY CERTIFICATION FOR MINOR DREDGING
Application for: MINOR DREDGING – BRP WW 08

AT: Columbus Ave Seawall- 46 Columbus Ave, Salem, MA 01970
North Shore

Dear Ms. Deborah Duhamel:

The Department of Environmental Protection ("MassDEP") has reviewed your application for a 401 Water Quality Certification for Dredging and Fill as referenced above and is basing its certification upon an evaluation of the information contained in the application which is relevant to water quality considerations. In accordance with the provisions of Section 401 of the Federal Clean Water Act (33 U.S.C. § 1251 *et seq*.), M.G.L. c. 21, §§ 26-53, and 314 CMR 9.00, MassDEP has determined there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

The waters of this portion of the Project Drainage Area are designated in the Massachusetts Surface Water Quality Standards as Class SB. Such waters are intended "as a habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation." Antidegradation provisions of these Standards require that "existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." Further, Salem Harbor is designated as a Shellfish harvesting area.

This information is available in alternate format. Please contact Melixza Esenyie at 617-626-1282.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

The above-referenced project involves the removal of the old and construction of a new seawall at Columbus Ave Salem. When completed, this project will create barrier from flooding as well as create new sidewalks and access to the waterfront. The existing deteriorating seawall and stone masonry at 46 Columbus will be removed and constructed in its place will be a 484 linear feet large cut granite stone seawall. Of those linear feet, 464 is along the main alignment with 10 liner feet tie-ins on each end. A new 10-foot-wide flood barrier gate is to be installed at the seawall opening, the granite block access steps are to be reconstructed along with the 5-foot-wide paved sidewalk along the landward side of the seawall. Additionally, 10 linear feet of adjacent seawall will be installed at 4 Columbus Ave and 30 Bay View Ave and match the proposed design of the Columbus Ave Seawall.

Sediment Chemistry Results: Chemical testing is not required as the sediment to be dredged contains less than 10% by weight of particles passing through the No. 200 U.S. Standard Series Testing Sieve (nominal opening 0.0029 inches) and due diligence review demonstrates that the area is unlikely to contain anthropogenic concentrations of oil or hazardous materials.

Public Notice: The Permit Application public notice was published in The Salem News on February 12, 2025. No comments were received by MassDEP during the 21-day public comment period pursuant to 314 CMR 9.05(3)(e), which ended on March 5, 2025.

Section 61 Findings: Pursuant to M.G.L. Chapter 30, Sections 61 to 62H inclusive [the Massachusetts Environmental Policy Act (“MEPA”)], the project, as referenced in the Permit Application, DEP Application # 25-WW08-0001, was required to file an Expanded Environmental Notification Form (“EENF”). The City of Salem (the “Proponent”) filed the EENF for the construction of the project under EEA # 16445 and noticed the EENF in the Environmental Monitor (the “Monitor”) on September 22, 2021. In the Certificate issued on November 22, 2021, the Secretary of Energy and Environmental Affairs (the “Secretary”) determined that “the potential impacts of this project do not warrant further MEPA review” and that “outstanding issues may be addressed during the local, State, and federal permitting processes.” Further, the Proponent requested a Waiver from the categorical requirement to prepare an Environmental Impact Report (“EIR”) and noticed such in the Monitor on November 22, 2021. In the Final Record of Decision (“FROD”) issued on November 22, 2021, the Secretary granted “a waiver from the categorical requirement to prepare an EIR.” MassDEP has reviewed the findings in both the EENF Certificate and the FROD and confirms that based on the avoidance, minimization, and mitigation measures undertaken by the Proponent, in conjunction with the requirements set forth in this 401 WQC, all outstanding issues have been addressed satisfactorily.

Pursuant to 314 CMR 4.00, 314 CMR 9.05(1), 314 CMR 9.06(1), 314 CMR 9.06(2), 314 CMR 9.07(1), 314 CMR 9.07(2), 314 CMR 9.07(3), 314 CMR 9.07(7), 314 CMR 9.09(1), and 314 CMR 9.09(2), the following Special Conditions are necessary to ensure that sediment dredging and disposal practices are implemented in such a manner as to

prevent water quality degradation and to maintain the chemical, physical, and biological integrity of the Waters of the United States within the Commonwealth. These conditions ensure that practicable steps are taken to avoid and minimize water quality impacts from turbidity and sedimentation associated with sediment dredging, disposal, and/or transportation.

Therefore, based on information currently in the record, MassDEP grants a 401 WQC for this project subject to the following conditions to maintain or attain water quality, to minimize any damage to the environment that may result from the project, and to ensure compliance with appropriate provisions of state law. MassDEP certifies that there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

1. The contractor shall take all steps necessary to assure that the proposed activities will be conducted in a manner that will avoid violations of the anti-degradation provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, that protect all waters, including wetlands.

2. Prior to the start of work, or for any portion of the work thereafter, MassDEP shall be notified of any change(s) in the proposed project or plans that may affect waters or wetlands. MassDEP will determine whether the change(s) requires a revision to this Certification.

3. Dredging in accordance with this 401 WQC may begin following the 21-day appeal period and once all other permits have been received.

4. All work shall be performed in accordance with the following documents and plans:

    - Application for Permit, # 25-WW08-0001-APP, dated January 29, 2025, with attachments.

    - Plan entitled “APP A Columbus Ave Seawall Reconstruction Permit Plans,” consisting of 7 sheets, various scales, dated November 2024 signed and stamped by DAS, GZA GeoEnvironmental, Inc.

    - The letter from Iris Seto, Massachusetts Division of Marine Fisheries to Salem Conservation Commission, dated August 20, 2024.

5. MassDEP shall be notified, attention David Wong, david.w.wong@mass.gov, one week prior to the start of in-water work so that MassDEP staff may inspect the work for compliance with the terms and conditions of this 401 WQC.

6. The term of the 401 WQC of the Permit remains in effect for the same duration as the federal permit that requires it.

7. During the project period, there shall be no discharge or spillage of fuel, oil, or other pollutants, including sediments, onto any part of the site. The applicant shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident, or vandalism.

8. No later than four weeks after issuance of this 401 WQC, the applicant shall submit a notification procedure outlining the reporting process to MassDEP for incidents relating to dredging activities that impact surrounding resource areas and habitats including, but not limited to, observed dead or distressed fish or other aquatic organisms, observed oily sheen on the surface of the water, a sediment spill, a turbidity plume beyond the deployed Best Management Practices ("BMPs"), and a barge or equipment accident/spill. If at any time during implementation of the project such an incident occurs, the applicant shall immediately notify MassDEP and all site related activities impacting the water shall cease until the source of the problem is identified and adequate mitigating measures are deployed to the satisfaction of MassDEP.

9. Future maintenance dredging is not authorized under this 401 WQC.

10. All equipment/machinery shall be stored above the Mean High Tide Line (MHTL) and outside any wetland resource areas when not in use.

11. Disposal of any volume of dredged material at any location in tidal waters is subject to approval by MassDEP and the Massachusetts Office of Coastal Zone Management ("CZM").

12. Storing, servicing, or cleaning of equipment, including but not limited to fueling, changing, adding, or applying lubricants or hydraulic fluids, or washing/rinsing of trucks or equipment, shall be performed outside resource areas.

13. During the project period, there shall be no discharge or spillage of fuel, oil, or other pollutants, including sediments, onto any part of the site. The applicant shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident, or vandalism.

14. Upon completion of the project, remnants of project debris such as sediment control components, shall be removed and disposed of appropriately at an offsite facility. This condition is necessary to prevent degradation to wetlands and waters.

Failure to comply with this 401 WQC is grounds for enforcement, including civil and criminal penalties, under M.G.L. c. 21, § 42, 314 CMR 9.00, M.G.L. c. 21A, § 16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

This 401 WQC does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations. Any changes made to the project as described in the previously submitted Permit Application or supplemental documents will require further notification to and, if an amendment is required, approval by MassDEP.

NOTICE OF APPEAL RIGHTS

Certain persons shall have a right to request an adjudicatory hearing concerning 401 WQCs by MassDEP when an application is required:

a. the applicant or property owner;
b. any person aggrieved by the decision who has submitted written comments during the public comment period;
c. any ten persons of the Commonwealth pursuant to M.G.L. c. 30A where a group member has submitted written comments during the public comment period; or
d. any governmental body or private organization with a mandate to protect the environment, which has submitted written comments during the public comment period.

Any person aggrieved, any ten persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c. 30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to MassDEP, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within 21 days from the date of issuance of this Certificate.

Department of Environmental Protection
Case Administrator
Office of Appeals and Dispute Resolution
100 Cambridge Street, Suite 900
Boston, MA 02114

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands Program at:

Department of Environmental Protection
Wetlands Program
100 Cambridge Street, Suite 900
Boston, MA 02114

A Notice of Claim for Adjudicatory Hearing shall comply with MassDEP's Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information pursuant to 314 CMR 9.10(3):

a. the Permit Application Number;
b. the complete name of the applicant and address of the project;
c. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
d. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found at 314 CMR 9.02;
e. a clear and concise statement that an adjudicatory hearing is being requested;
f. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Certificate, including specifically the manner in which it is alleged to be inconsistent with the MassDEP's Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written 401 WQC; and
g. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Conservation and Recreation (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
PO Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. MassDEP may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Should you have any questions relative to this 401 WQC, please contact David Wong, david.w.wong@mass.gov.

Sincerely,

Lisa Rhodes
Wetlands Program Chief

ecc:

Lucas Taylor and David Smith, GZA GeoEnvironmental, 144 Elm St, Amesbury, MA 01913
Katie Kennedy, Salem Conservation Commission, 120 Washington Street, Salem, MA 01970
Jill Provencal and Phil DiPietro, MassDEP Northeast Regional Office, 150 Presidential Way, Woburn, MA 01801
Paul Sneeringer, Maninder Singh, and Paul Maniccia, Department of the Army, New England District, Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751
Iris Seto and Forest Schenck, Division of Marine Fisheries, 30 Emerson Avenue, Gloucester, MA 01930
Sean Duffey, Office of Coastal Zone 251 Causeway Street, Suite 800, Boston, MA 02114
Edward Reiner, US EPA, 5 Post Office Square, Suite 100, Boston, MA 02109

attachments: Communication for Non-English Speaking Parties document
Plans of Record



Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of EJ at the telephone number listed below.

Español Spanish
Este documento es importante y debe ser traducido de inmediato. Si necesita este documento traducido, comuníquese con la Directora de Diversidad de MassDEP al número de teléfono que aparece más abajo.

Português Portuguese
Este é um documento importante e deve ser traduzido imediatamente. Se precisar de uma tradução deste documento, entre em contato com o Diretor de Diversidade da MassDEP nos números de telefone listados abaixo.

繁體中文 Chinese Traditional
本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼聯絡 MassDEP 多元化負責人。

简体中文 Chinese Simplified
本文件非常重要，应立即翻译。如果您需要翻译这份文件，请用下面列出的电话号码与 MassDEP 的多元化主任联系。

Ayisyen Kreyòl Haitian Creole
Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradwi l imedyatman. Si ou bezwen dokimar sa a tradwi, tanpri kontakte Direktè Divèsite MassDEP la nan nimewo telefòn endike anba.

Việt Vietnamese
Tài liệu này rất quan trọng và cần được dịch ngay lập tức. Nếu quý vị cần dịch tài liệu này, xin liên lạc với Giám đốc Đa dạng của MassDEP theo các số điện thoại ghi dưới đây.

ប្រទេសកម្ពុជា Khmer/Cambodian
ឯកសារនេះគឺសំខាន់ហើយគួរត្រូវបានបកប្រែភ្លាមៗ។ ប្រសិនបើអ្នកត្រូវការឱ្យគេបកប្រែឯកសារនេះ
សូមទាក់ទងមកនាយកផ្នែកពិពិធកម្មរបស់ MassDEP តាមលេខទូរស័ព្ទខាងក្រោម។

Kriolu Kabuverdianu Cape Verdean
Kel dukumentu li é inpurtánti y debe ser traduzidu imidiatamenti. Se bu meste di kel dukumentu traduzidu, pur favor kontakta Diretor di Diversidádi di MassDEP na numeru abaxu indikadu.

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • https://www.mass.gov/environmental-justice
(Version revised 4.21.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это важный документ, и он должен быть безотлагательно переведен. Если вам нужен перевод данного документа, пожалуйста, свяжитесь с директором по вопросам многообразия (Diversity Director) компании MassDEP по указанному ниже телефону.

العربية Arabic

هذه الوثيقة مهمة ويجب ترجمتها على الفور. اذا كنت بحاجة الى هذه الوثيقة مترجمة، يرجى الاتصال بمدير التنوع PMassDE على أرقام الهواتف المدرجة أدناه.

한국어 Korean

이 문서는 중요하고 즉시 번역해야 합니다. 이 문서의 번역이 필요하시다면, 아래의 전화 번호로 MassDEP 의 다양성 담당 이사에 문의하시기 바랍니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է և պետք է անմիջապես թարգմանվի:
Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանել, դիմեք MassDEP-ի բազմազանության տնօրենին ստորև նշված հեռախոսահամարով:

فارسی Farsi Persian

این سند مهم است و باید فورا ترجمه شود.
اگر به ترجمه این سند نیاز دارید، لطفا با مدیر بخش تنوع نژادی MassDEP به شماره تلفن ذکر شده در زیر تماس بگیرید.

Français French

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, veuillez communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Sofern Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an den Diversity Director MassDEP unter der unten aufgeführten Telefonnummer.

Ελληνική Greek

Το παρόν έγγραφο είναι σημαντικό και θα πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του παρόντος εγγράφου, παρακαλούμε επικοινωνήστε με τον Διευθυντή Διαφορετικότητας του MassDEP στους αριθμούς τηλεφώνου που αναγράφονται παρακάτω.

Italiano Italian

Comunicazione per parti che non parlano inglese. Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, potete contattare il Direttore di Diversità di MassDEP al numero di telefono elencato di seguito.

Język Polski Polish

Dokument ten jest ważny i powinien zostać natychmiast przetłumaczony. Jeśli potrzebujesz przetłumaczonej wersji dokumentu, prosimy o kontakt z dyrektorem ds. różnorodności MassDEP pod jednym z numerów telefonu wymienionych poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका तुरंत अनुवाद किया जाना चाहिए. यदि आपको इस दस्तावेज़ का अनुवाद करने की आवश्यकता है, तो कृपया नीचे सूचीबद्ध टेलीफोन नंबरों पर मासडेप्स डाइवर्सिटी के निदेशक से संपर्क करें.

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • https://www.mass.gov/environmental-justice

CHAPTER 91 LICENSE NO. WW01-0000721, DATED NOVEMBER 14, 2025

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

November 14, 2025

City of Salem, Deborah Duhamel, City Engineer
c/o Lucas Taylor, GZA
144 Elm Street
Amesbury, MA 01913

RE: ISSUANCE OF CHAPTER 91 LICENSE №: WW01-0000721; 46 Columbus Avenue, 44 Columbus Avenue, and 30 Bay View Avenue in Salem, Essex County

Dear Ms. Duhamel:

The Department of Environmental Protection Waterways Regulation Program (the "Department") hereby issues the above-referenced Waterways License, enclosed, authorizing certain activities pursuant to M.G.L. Chapter 91, the Public Waterfront Act and its regulations 310 CMR 9.00. Any change in use or alteration of any structure or fill not authorized by this License shall render this License void.

No work shall be undertaken until the License and accompanying Mylar Plans have been duly recorded in the applicable County Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property.

RECORDING OF THE LICENSE

This License and accompanying Mylar Plans must be recorded within the chain of title of the affected property at the applicable County Registry of Deeds or, if registered land, with the Land Registration Office within sixty (60) days from the date of license issuance. In the case of recorded land, the License shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the project is located. In the case of the registered land, the License shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the project is located. Failure to record this License within the chain of title of the affected property within sixty (60) days of the date of issuance will render this License void pursuant to 310 CMR 9.18.

This information is available in alternate format. Please contact MassDEP at 617-292-5500.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

Upon recording the License and Plan, you must notify the Department by accessing your Authorization record at https://eplace.eea.mass.gov/citizenaccess and entering the recording information. Instructions for entering recording information may be found at: https://www.mass.gov/doc/eplace-waterways-recording-information-amendment/download
Failure to notify the Department of the recording of this License is a violation of 310 CMR 9.00.

CERTIFICATE OF COMPLIANCE
Pursuant to 310 CMR 9.19, once the licensed project is complete, the Licensee must file a Request for a Certificate of Compliance form, BRP WW05, within sixty (60) days of completion but in no event later than five (5) years from the License's issuance date. The license for any project for which such a request is not filed and certificate issued may be revoked pursuant to 310 CMR 9.26.

Please contact the Waterways Regulation Program at dep.waterways@mass.gov if there are any questions.

Sincerely,

Daniel J. Padien
Program Chief
Waterways Regulation Program

cc: City of Salem Office of the Mayor
City of Salem Planning Board
City of Salem Conservation Commission
City of Salem Harbormaster

Encl: Chapter 91 Waterways License No. WW01-0000721

The Commonwealth of Massachusetts

No. WW01-0000721

Whereas, The City of Salem

of -- Salem -- in the County of -- Essex -- and Commonwealth aforesaid, has applied to the Department of Environmental Protection for license to -- remove, construct, and maintain a seawall and conduct shoreline restoration, as further detailed below ----------

and has submitted plans of the same; and whereas due notice of said application, ~~and of the time and place fixed for a hearing thereon~~, has been given, as required by law, to the -- Municipal Official -- of the -- City of Salem; ----------

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor, authorizes and licenses the said --

City of Salem -- subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to perform the following activities (note: seawall removal, installation, and all associated activities both seaward and landward are described based on the total length of the project (approximately 494 linear feet); however, portions of the west end of the project will occur landward of the meandering Historic High Water Mark (combined approximately 110 linear feet), and landward of Chapter 91 jurisdiction):

- Removal of the existing granite block landing/steps and seawall along approximately 474 linear feet of Columbus Avenue, and 20-foot long sections of adjoining existing seawall at 30 Bay Avenue and 44 Columbus Avenue, including demolition of structures and excavation within of 4,881-square feet of filled tidelands;
- Improvement dredging within a 1,536-square foot area to facilitate construction of the new seawall, and backfilling;

- Construction and maintenance of approximately 464 linear feet of new granite stone seawall with a concrete footing to elevation 11.5 feet NAVD88;
- Construction and maintenance of 10 linear feet of new granite stone seawall with a concrete footing to elevation 11.5 feet NAVD88, and reconstruction of 10 linear feet of temporarily removed and reset in-kind existing seawall at each 44 Columbus Avenue and 30 Bay View Avenue;
- Construction and maintenance of a new 360-square foot granite block landing with a concrete footing including steps and a flood gate barrier;
- Replacement, improvement, and maintenance of the sidewalk and landscaping along the landward side of the new Columbus Avenue seawall;
- Placement of sand fill material with coir roll borders and salt marsh plantings within an area of 2,870 square feet within the salt marsh at the southwest area of the project site;
- Placement of beach nourishment sand fill material within an area of 2,655 square feet adjacent to the new seawall at the northeast area of the project site;
- Authorization and maintenance of approximately 132 linear feet (640 square feet) of existing riprap within the southwest area of he project site;
- Construction and maintenance of four (4) timber outhauls (2 on each side of the granite block landing) ----------

within filled and flowed tidelands of -- Juniper Cover -- at 46 Columbus Avenue, 44 Columbus Avenue, and 30 Bay View Avenue -- in the -- City of Salem -- and in accordance with the locations shown and details indicated on the accompanying License Plan No. WW01-0000721 (8 sheets) signed and sealed on October 29, 2025 by Anders B. Bjarngard, Massachusetts Professional Engineer No. 39766.

Specific Legislative Authorizations and/or Licenses issued for the project site include Department of Environmental Protection License No. WW06-0000143 issued on April 2, 2025, for the property at 30 Bay View Avenue.

The structures and fill authorized hereby shall be limited to the following uses: shoreline stabilization, flood control, and public access to waterfront open space and flowed tidelands, and habitat restoration.

This License is valid for an unlimited term, pursuant to 310 CMR 9.15(1)(c).

Dredging is authorized for a period of five (5) years subsequent to the date of issuance.

This License is subject to the following Special Conditions and Standard Conditions:

SPECIAL CHAPTER 91 LICENSE CONDITIONS

1. Any structural alteration, change in use, or other modifications to that explicitly authorized herein and contained on the License Plans, shall require the prior review of the Department to determine whether additional licensing is required pursuant to M.G.L. Chapter 91 and the Waterways Regulations at 310 CMR 9.00.

2. All structures and fill authorized herein shall be constructed to meet the Engineering and Construction Standards pursuant to 310 CMR 9.37.

3. The use of unencapsulated polystyrene as part of any permanent or temporary component of the structures and/or fill authorized herein is prohibited.

4. The Licensee shall maintain all structures in accordance with the terms and conditions specified herein or this License may expire, pursuant to 310 CMR 9.25(1)(c).

5. The Licensee shall allow agents of the Department to enter the project site to verify compliance with the conditions of this License.

6. All work authorized herein shall be completed within five (5) years of the date of license issuance. The construction period may be extended by the Department for one (1) or more one (1) year periods without public notice, provided that the Applicant submits to the Department thirty (30) days prior to the end of the construction period, a written request to extend the period and provides adequate justification for said extension.

7. Within sixty (60) days of completion of the licensed project, the Licensee shall request in writing that the Department issue a Certificate of Compliance in accordance with 310 CMR 9.19. The request shall be accompanied by a certification by a registered professional engineer licensed to do business in the Commonwealth that the project was completed in accordance with the plans, specifications, and conditions of this License.

Please see Page 4 for additional conditions to this License

STANDARD CHAPTER 91 LICENSE CONDITIONS

1. Acceptance of this License shall constitute an agreement by the Licensee to conform with all terms and conditions stated herein.

2. This License is granted upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee prior to the commencement of any activity or use authorized pursuant to this License.

3. Any change in use or any substantial structural alteration of any structure or fill authorized herein shall require the issuance by the Department of a new License in accordance with the provisions and procedures established in Chapter 91 of the Massachusetts General Laws. Any unauthorized substantial change in use or unauthorized substantial structural alteration of any structure or fill authorized herein shall render this License void.

4. This License shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This License may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee and those persons who have filed a written request for such notice with the Department and afforded them a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this License void and the Commonwealth may proceed to remove or cause removal of any structure or fill authorized herein at the expense of the Licensee, its successors and assigns as an unauthorized and unlawful structure and/or fill.

5. The structures and/or fill authorized herein shall be maintained in good repair and in accordance with the terms and conditions stated herein and the details indicated on the accompanying license plans.

6. Nothing in this License shall be construed as authorizing encroachment in, on or over property not owned or controlled by the Licensee, except with the written consent of the owner or owners thereof. The Licensee stated that the City of Salem, Patricia Berking, and Guy Ford were the property owners at the time the application was submitted.

7. This License is granted subject to all applicable Federal, State, County, and Municipal laws, ordinances and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, M.G.L. Chapter 131, §40.

8. This License is granted upon the express condition that the use of the structures and/or fill authorized hereby shall be in strict conformance with all applicable requirements and authorizations of the MassDEP.

9. This License authorizes structure(s) and/or fill on:

X Private Tidelands - In accordance with the public easement that exists by law on Private Tidelands, the Licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

X Commonwealth Tidelands - The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, upon lands lying seaward of the low water mark and upon any other lands defined as Commonwealth Tidelands. Said lands are held in trust by the Commonwealth for the benefit of the public.

_____ Great Pond of the Commonwealth - The Licensee shall not restrict the public's right to use and to pass freely upon lands lying seaward of the high water mark for any lawful purpose.

_____ Navigable River or Stream - The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, in the waterway.

No restriction on the exercise of these public rights shall be imposed unless otherwise expressly provided in this License.

10. Unless otherwise expressly provided by this License, the Licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede or discourage the free flow of pedestrian movement thereon.

STANDARD CHAPTER 91 DREDGING CONDITIONS

1. Acceptance of this authorization shall constitute an agreement by the Licensee/Permittee to conform to all terms and conditions stated herein.

2. Any modification from that explicitly authorized herein and contained on the Plans shall require prior review of the Department to determine whether additional authorization is required pursuant to M.G.L. Chapter 91, the Public Waterfront Act, and the Waterways Regulations at 310 CMR 9.00.

3. The Licensee/Permittee shall inform the Department in writing at least three (3) days before commencing any authorized dredging or dredge material disposal.

4. This authorization is issued upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee/Permittee prior to the commencement of any activity hereby authorized.

5. This authorization shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This authorization may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee/Permittee, or his agent, and those persons who have filed a written request, with the Department, for such notice and have afforded the Licensee/Permittee a reasonable opportunity to correct said noncompliance. Failure to correct noncompliance after the issuance of a written notice by the Department shall render this authorization void.

6. This authorization is issued subject to all applicable federal, state, county, and municipal laws, ordinances, bylaws, and regulations, including but not limited to, a valid Order of Conditions issued pursuant to the Wetlands Protection Act, M.G.L. Chapter 131, §40 and a valid Water Quality Certification issued pursuant 314 CMR 9.00.

7. This authorization is issued upon the express condition that dredging, transportation, and disposal of dredge material shall be in strict conformance with all applicable requirements and authorizations of the Department. Any subsequent maintenance dredging and transportation and disposal of dredge material during the term of this authorization shall be in strict conformance with all applicable requirements and authorizations of the Department.

8. Unless otherwise authorized in accordance with a Special Condition of this authorization, no maintenance dredging beyond the time authorized herein is permitted.

9. The dredging under this authorization shall be conducted as to cause no unnecessary obstruction of the free passage of vessels.

10. In conducting the dredging authorized, care shall be taken to cause no shoaling. If, however, any shoaling is caused, the Licensee/Permittee shall, at his expense, remove the shoal areas. The Licensee/Permittee shall pay all costs of supervision, and if at any time the Department deems necessary a survey or surveys of the area dredged, the Licensee/Permittee shall pay all costs associated with such work.

11. Nothing in this authorization shall be construed as to impair the legal rights of any persons or authorize dredging on land not owned by the Licensee/Permittee without consent of the owner(s) of such property.

12. The Licensee/Permittee shall assume and pay all claims and demands arising in any manner from the work authorized herein and shall save harmless and indemnify the Commonwealth of Massachusetts, its officers, employees, and agents from all claims, audits, damages, costs and expenses incurred by reason thereof.

13. Whosoever violates any provisions of this authorization shall be subject to a fine of twenty-five thousand dollars and zero cents ($25,000.00) per day for each day such violation occurs or continues, or by imprisonment for not more than one year, or both such fine and imprisonment; or shall be subject to civil penalty not to exceed twenty-five thousand dollars and zero cents ($25,000.00) for each day such violation occurs or continues.

14. In the event of any conflict between the Special Conditions and the Standard Conditions, the Special Conditions shall prevail.

The amount of tidewater displaced by the work hereby authorized has been ascertained by said Department, and compensation thereof has been made by the said -- City of Salem -- by paying into the treasury of the Commonwealth -- $2.00 -- for each cubic yard so displaced (*N/A - exempt pursuant to 310 CMR 9.16(4)(a)*), being the amount hereby assessed by said Department.

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying Mylar plan are recorded within the chain of title for all affected properties within sixty (60) days from the date hereof, in the appropriate Registry of Deeds for the -- County of -- Essex.

In witness whereas, said Department of Environmental Protection have hereunto set their hands this 14th day of November in the year 2025.

Commissioner _____
Bonnie Heiple

Program Chief _____
Daniel J. Padien

Department of Environmental Protection

THE COMMONWEALTH OF MASSACHUSETTS

This License is approved in consideration of the payment into the treasury of the Commonwealth by the said -- City of Salem -- the further sum of -- (*N/A - exempt pursuant to 310 CMR 9.16(4)(a)*) -- the amount determined by the Governor as a just and equitable charge for rights and privileges hereby granted in the land of the Commonwealth.

BOSTON,

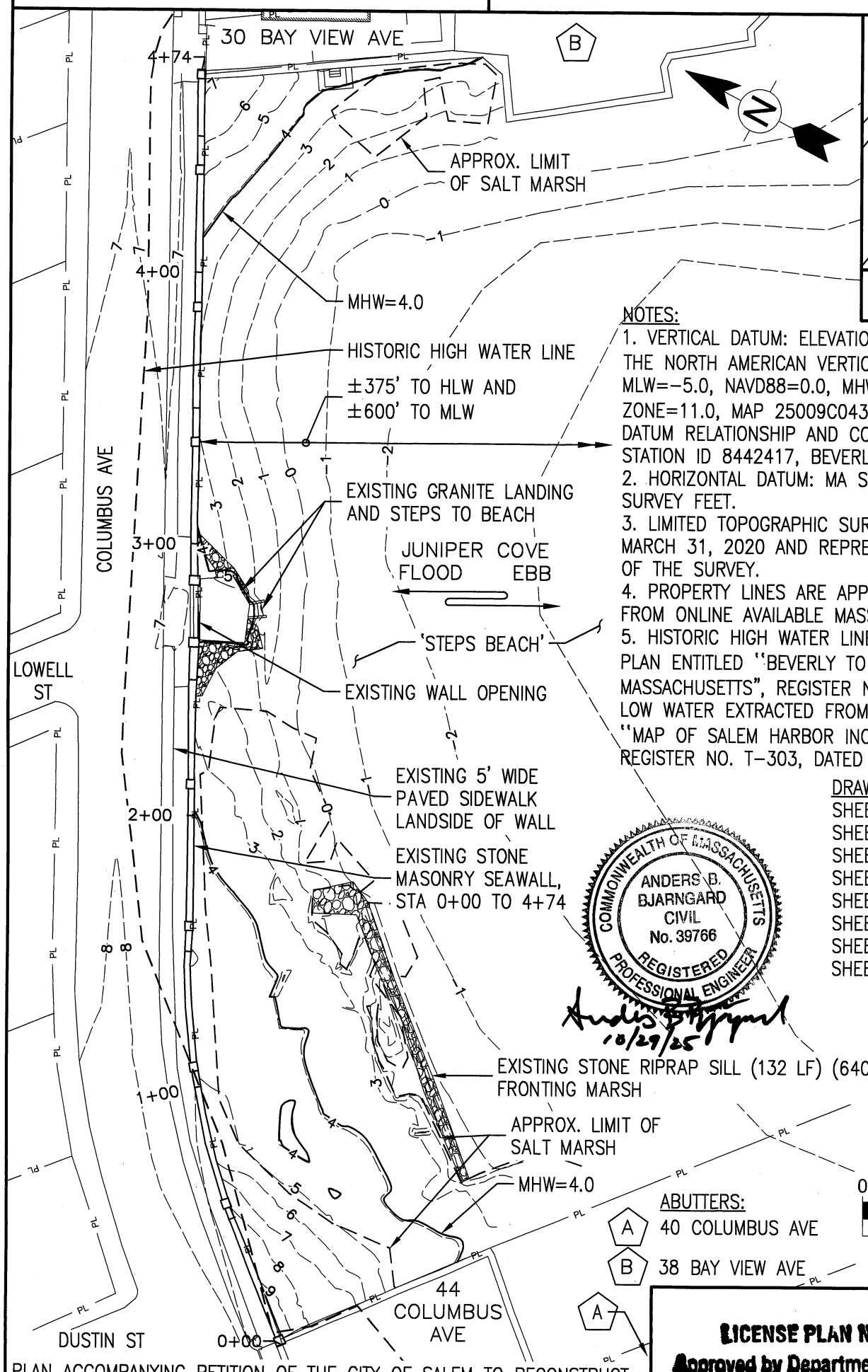
Approved by the Governor.

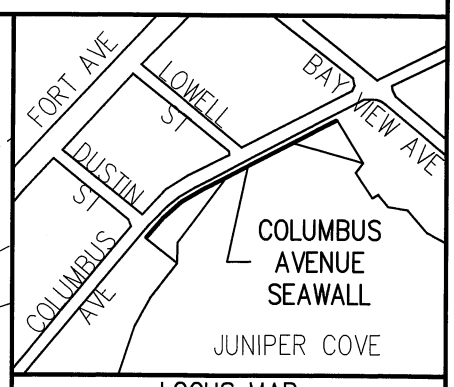
_____
Maura T. Healey, Governor

I CERTIFY THAT THIS PLAN, AS PREPARED, CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

Anders B Bjarngard 10/29/2025

NAME DATE





LOCUS MAP
SCALE: 1"=400'

NOTES:

1. VERTICAL DATUM: ELEVATIONS ARE IN FEET AND REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) MLW=−5.0, NAVD88=0.0, MHW=4.0, FEMA 100−YR FLOOD ZONE=11.0, MAP 25009C0436G, EFF. 7/16/2014. TIDAL DATUM RELATIONSHIP AND CONVERSION REFERENCED TO NOAA STATION ID 8442417, BEVERLY HARBOR, MA.
2. HORIZONTAL DATUM: MA STATE PLANE MAINLAND, NAD83, US SURVEY FEET.
3. LIMITED TOPOGRAPHIC SURVEY PERFORMED BY GZA ON MARCH 31, 2020 AND REPRESENTS CONDITIONS AT THE TIME OF THE SURVEY.
4. PROPERTY LINES ARE APPROXIMATE AND WERE SCALED FROM ONLINE AVAILABLE MASSGIS DATA LAYERS.
5. HISTORIC HIGH WATER LINE EXTRACTED FROM SURVEY COAST PLAN ENTITLED "BEVERLY TO SALEM, INCLUDING SALEM, MASSACHUSETTS", REGISTER NO. T2603, DATED 1902. HISTORIC LOW WATER EXTRACTED FROM SURVEY COAST PLAN ENTITLED "MAP OF SALEM HARBOR INCLUDING THE CITY AND ISLANDS", REGISTER NO. T−303, DATED 1849 AND 1850.

DRAWING INDEX:

SHEET 1−EXISTING PLAN
SHEET 2−PROPOSED SITE PLAN
SHEET 3−PROPOSED EXCAVATION PLAN
SHEET 4−PROPOSED PROFILE
SHEET 5−PROPOSED SECTIONS 1
SHEET 6−PROPOSED SECTIONS 2
SHEET 7−PROPOSED SEAWALL DETAILS
SHEET 8−PROPOSED LANDING DETAILS

COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER
10/29/25

EXISTING PLAN
SHEET 1 OF 8
OCTOBER 21, 2025

ABUTTERS:
A 40 COLUMBUS AVE
B 38 BAY VIEW AVE

0 50 100
SCALE IN FEET
SCALE: 1"=50'

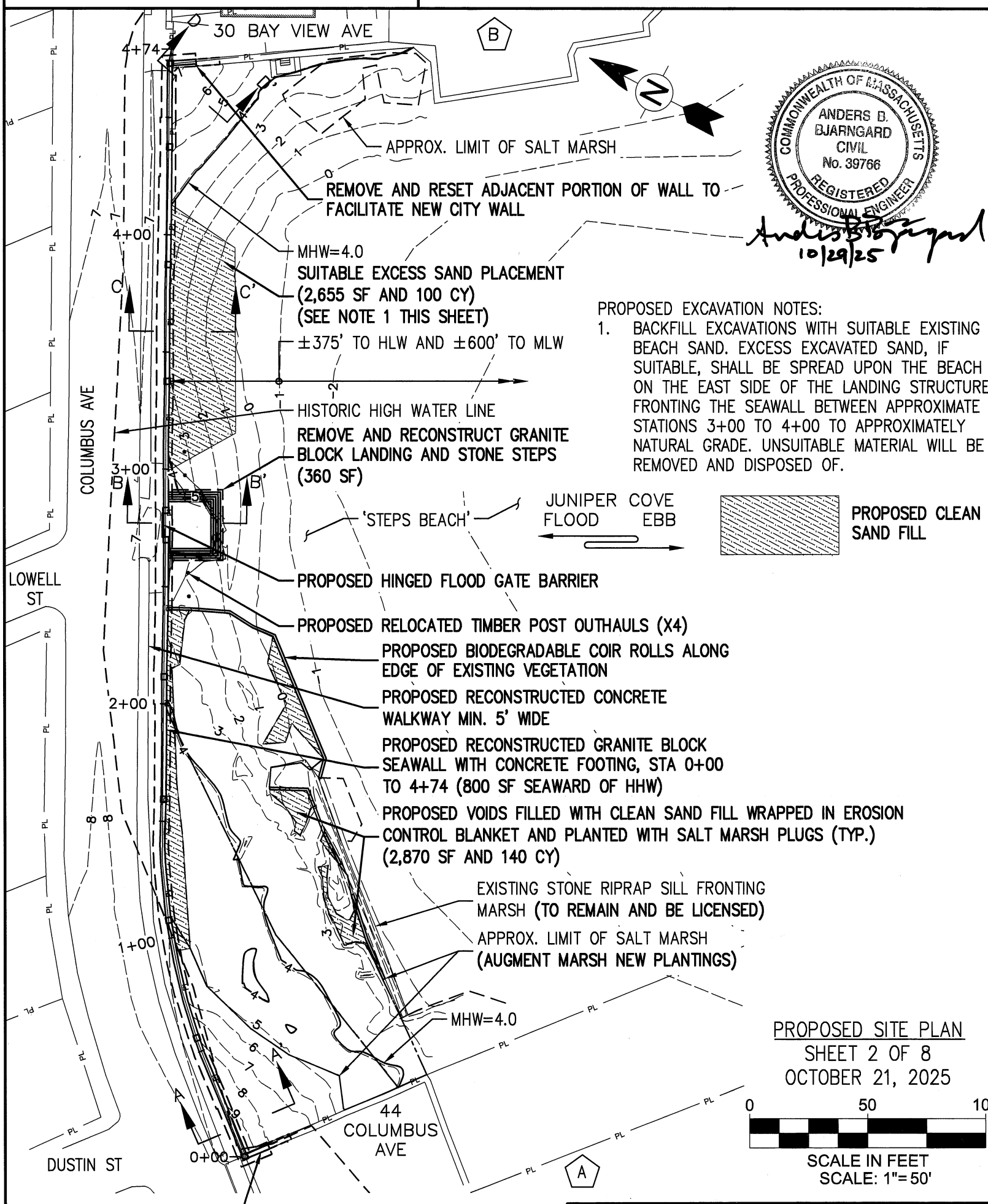
PLAN ACCOMPANYING PETITION OF THE CITY OF SALEM TO RECONSTRUCT AND MAINTAIN A SEAWALL, LANDING AND BEACH ACCESS STRUCTURE, SALT MARSH IMPROVEMENTS, NEW TIMBER POST OUTHAULS, AND EXISTING RIPRAP WITHIN FILLED AND FLOWED TIDELANDS OF JUNIPER COVE AT 44 AND 46 COLUMBUS AVENUE AND 30 BAY VIEW AVENUE, SALEM, ESSEX COUNTY, MASSACHUSETTS.

LICENSE PLAN NO. WW01-0000721
Approved by Department of Environmental Protection of Massachusetts 11/14/2025

I CERTIFY THAT THIS PLAN, AS PREPARED, CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

Anders B Bjarngard 10/29/2025

NAME DATE



PROPOSED EXCAVATION NOTES:

1. BACKFILL EXCAVATIONS WITH SUITABLE EXISTING BEACH SAND. EXCESS EXCAVATED SAND, IF SUITABLE, SHALL BE SPREAD UPON THE BEACH ON THE EAST SIDE OF THE LANDING STRUCTURE FRONTING THE SEAWALL BETWEEN APPROXIMATE STATIONS 3+00 TO 4+00 TO APPROXIMATELY NATURAL GRADE. UNSUITABLE MATERIAL WILL BE REMOVED AND DISPOSED OF.

COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER

Anders B Bjarngard 10/29/25

PROPOSED SITE PLAN
SHEET 2 OF 8
OCTOBER 21, 2025

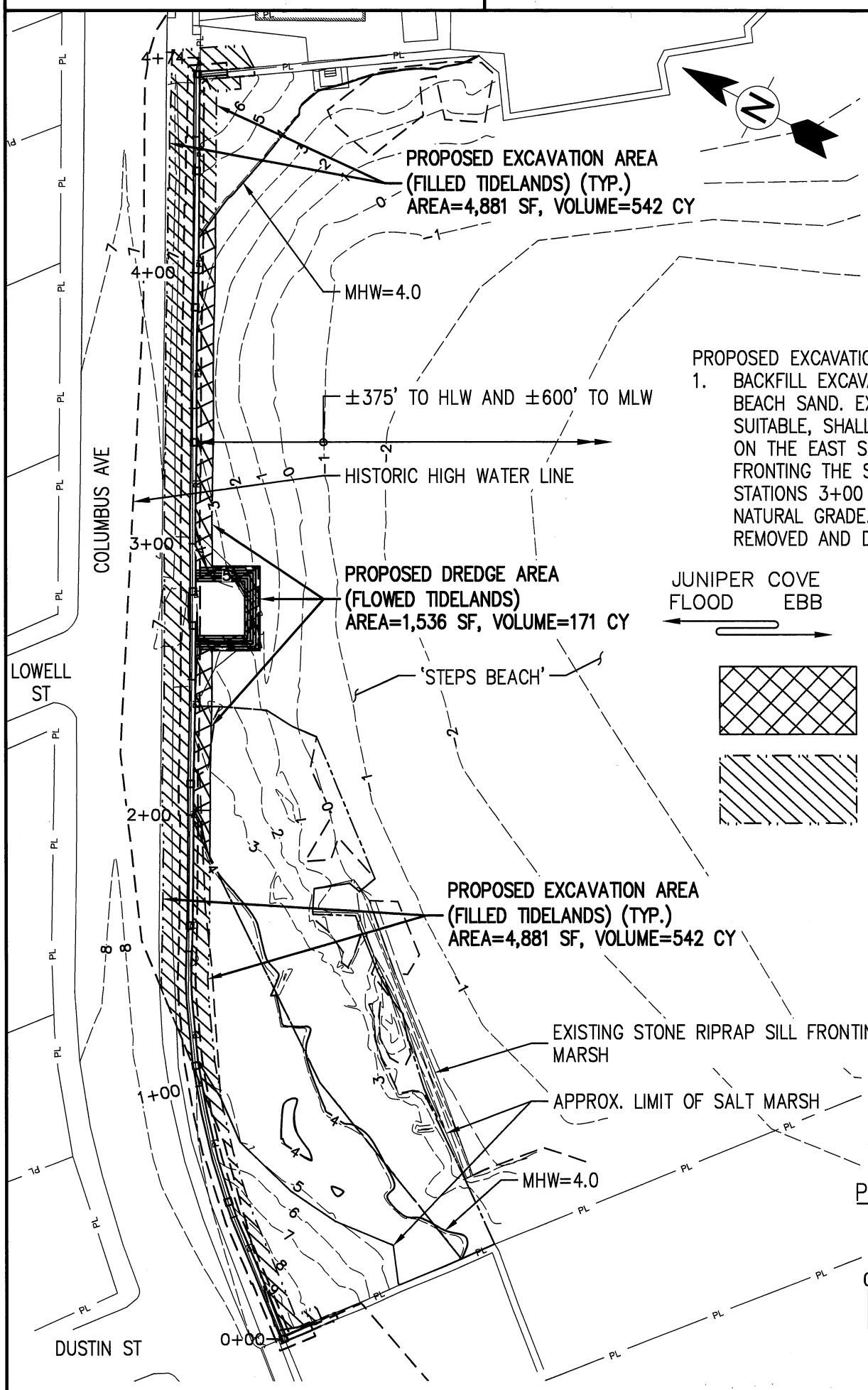
0 50 100
SCALE IN FEET
SCALE: 1"= 50'

LICENSE PLAN NO. WW01-000721
Approved by Department of Environmental Protection
Date: 11/14/2025

I CERTIFY THAT THIS PLAN, AS PREPARED, CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

Anders B Bjarngard 10/29/2025

NAME DATE



PROPOSED EXCAVATION NOTES:

1. BACKFILL EXCAVATIONS WITH SUITABLE EXISTING BEACH SAND. EXCESS EXCAVATED SAND, IF SUITABLE, SHALL BE SPREAD UPON THE BEACH ON THE EAST SIDE OF THE LANDING STRUCTURE FRONTING THE SEAWALL BETWEEN APPROXIMATE STATIONS 3+00 TO 4+00 TO APPROXIMATELY NATURAL GRADE. UNSUITABLE MATERIAL WILL BE REMOVED AND DISPOSED OF. SEE SHEET 2.

JUNIPER COVE
FLOOD EBB

PROPOSED DREDGE AREA
(FLOWED TIDELANDS)
AREA=1,536 SF, VOLUME=171 CY

PROPOSED EXCAVATION AREA
(FILLED TIDELANDS)
AREA=4,881 SF, VOLUME=542 CY

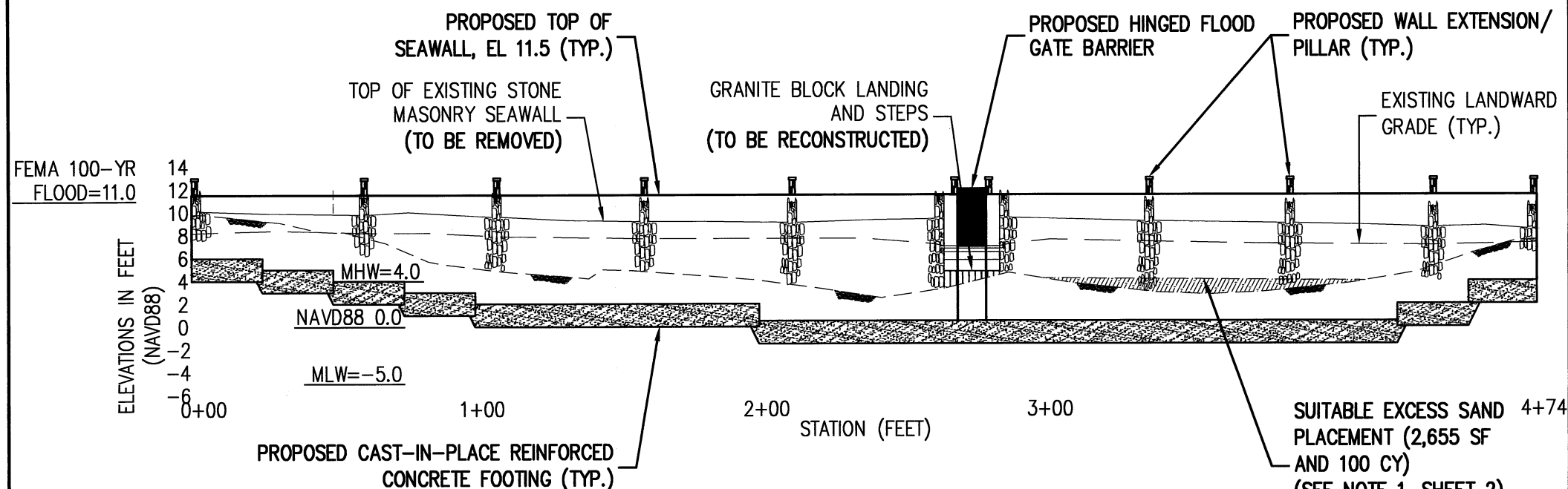
COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER

Anders B Bjarngard
10/29/25

PROPOSED EXCAVATION PLAN
SHEET 3 OF 8
OCTOBER 21, 2025

0 50 100
SCALE IN FEET
SCALE: 1"= 50'

LICENSE PLAN NO. WW01-000721
Approved by Department of Environmental Protection
Date: 11/14/2025



PROPOSED SEAWALL PROFILE
VERTICAL: 1"=12.5'
HORIZONTAL: 1"=50'

0 12.5 25
VERTICAL SCALE IN FEET
SCALE: 1"= 12.5'

0 50 100
HORIZONTAL SCALE IN FEET
SCALE: 1"= 50'

I CERTIFY THAT THIS PLAN, AS PREPARED, CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

Anders B Bjarngard
NAME

10/29/2025
DATE

COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER

Anders B Bjarngard
10/29/25

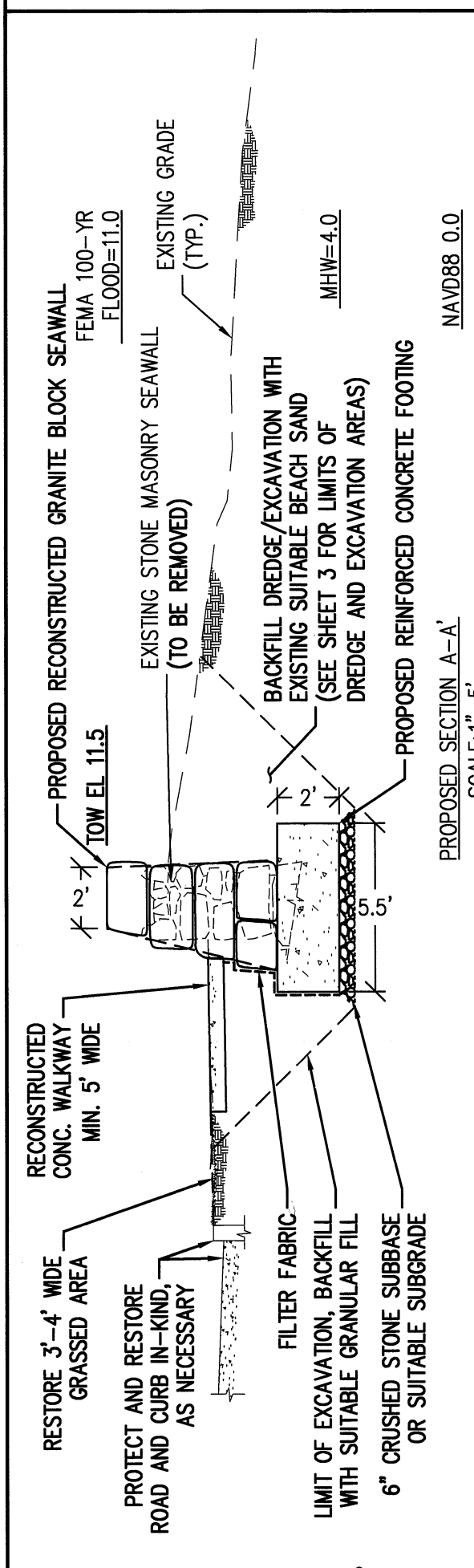
PROPOSED PROFILE
SHEET 4 OF 8
OCTOBER 21, 2025

LICENSE PLAN NO. WW01-000721
Approved by Department of Environmental Protection
Date: 11/14/2025

I CERTIFY THAT THIS PLAN, AS PREPARED, CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

NAME

10/29/2025
DATE



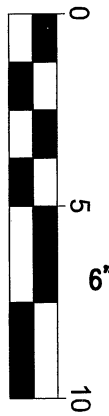
COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER
10/29/25

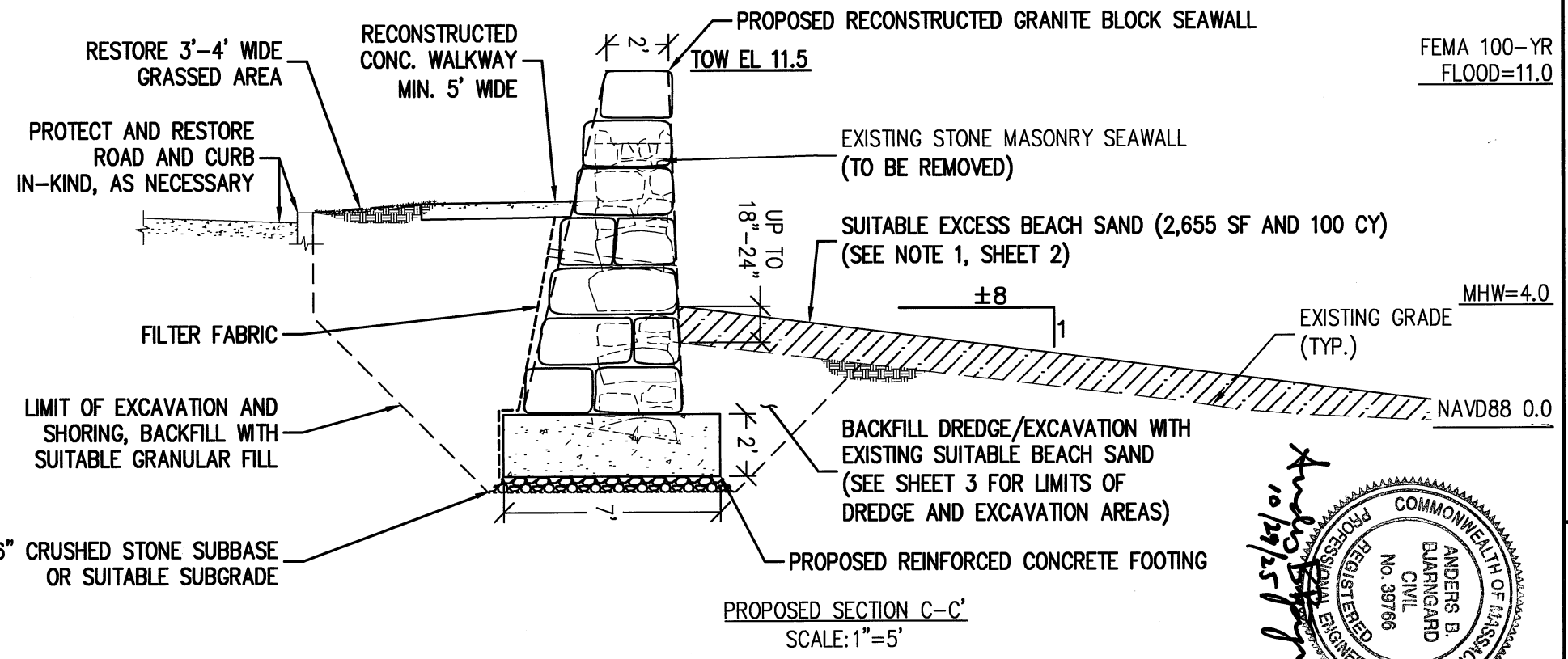
PROPOSED SECTIONS 1
SHEET 5 OF 8
OCTOBER 21, 2025

0 5 10
SCALE IN FEET
SCALE: 1"= 5'

LICENSE PLAN NO. WW01-0000721
Approved by Department of Environmental Protection
Date: 11/14/2025

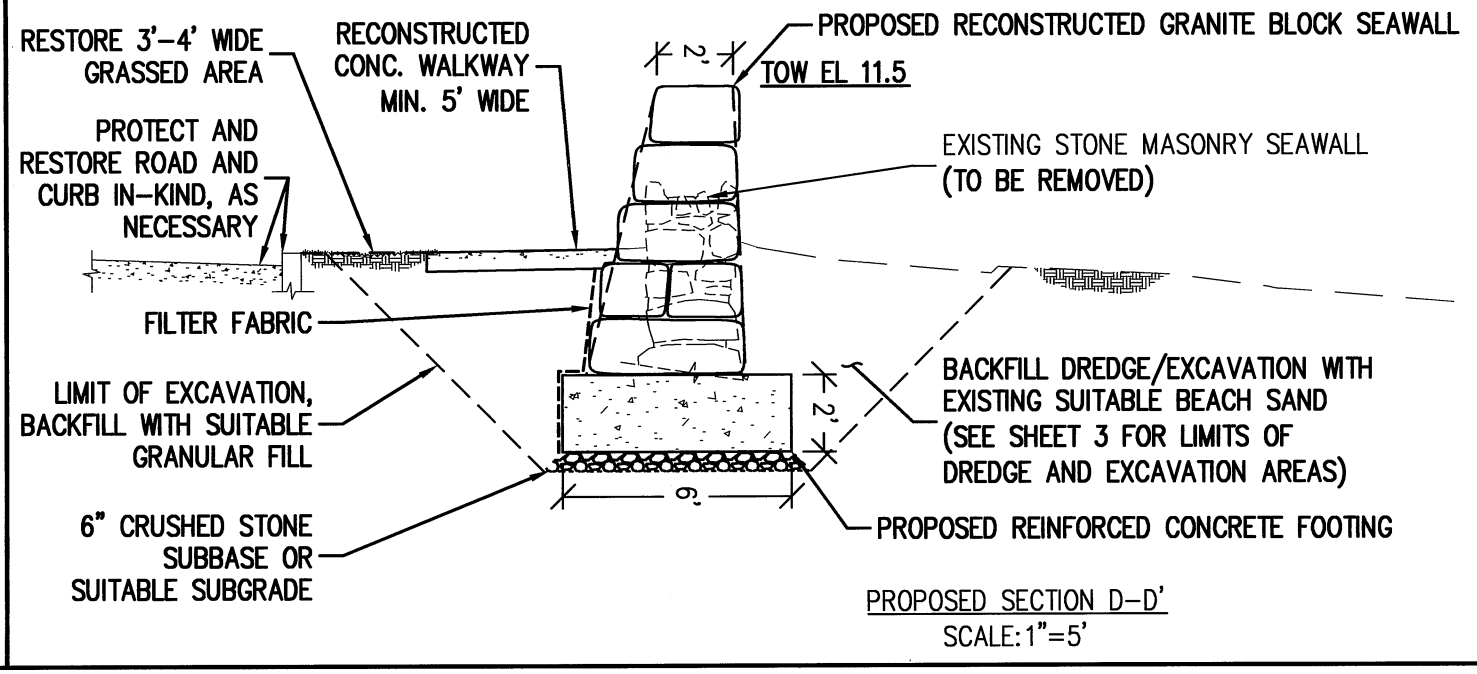
PROPOSED SECTIONS 2
SHEET 6 OF 8
OCTOBER 21, 2025





PROPOSED SECTION C-C'
SCALE: 1"=5'





PROPOSED SECTION D-D'
SCALE: 1"=5'

I CERTIFY THAT THIS PLAN, AS PREPARED, CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

Anders B. Bjarngard
NAME

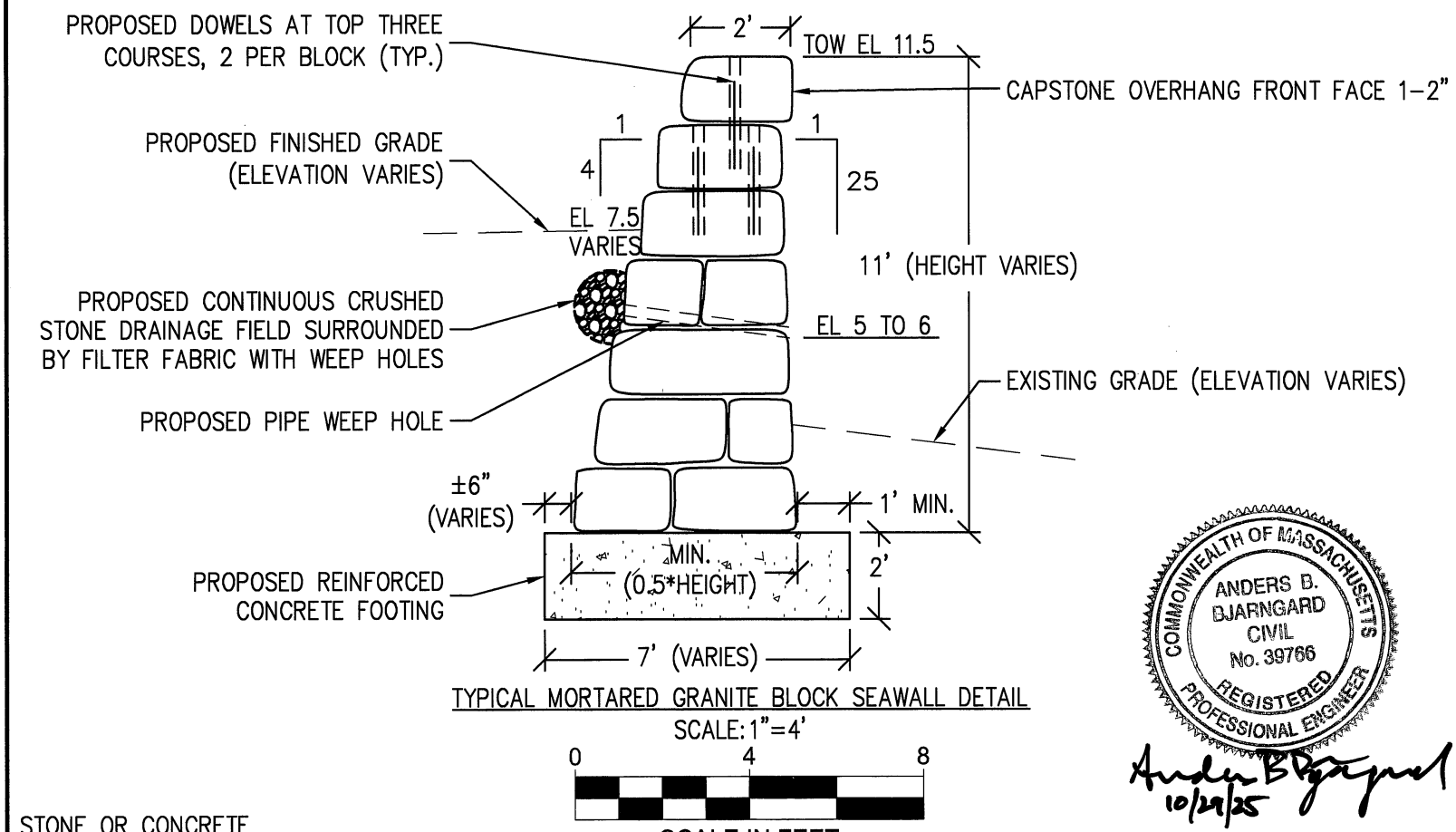
10/29/25
DATE

LICENSE PLAN NO. WW01-00079Z1
Approved by Department of Environmental Protection
Date: 11/14/2025

I CERTIFY THAT THIS PLAN, AS PREPARED, CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

NAME

10/29/2025
DATE



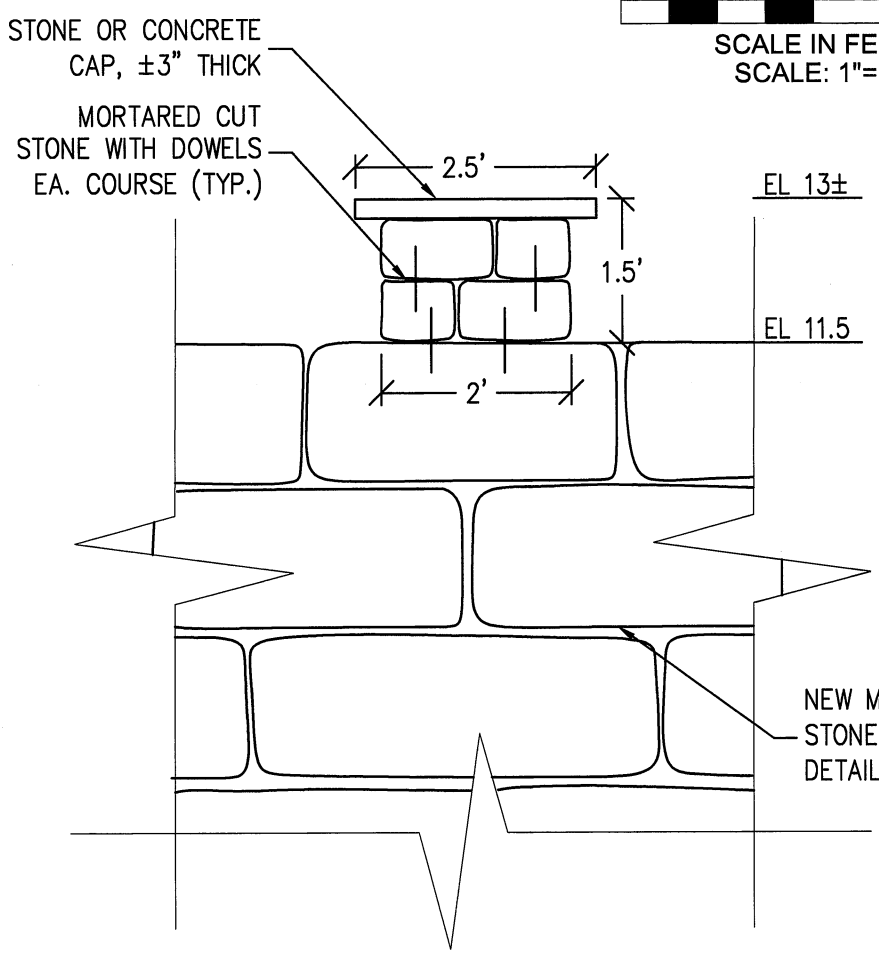
TYPICAL MORTARED GRANITE BLOCK SEAWALL DETAIL
SCALE: 1"=4'

0 4 8

SCALE IN FEET
SCALE: 1"=4'

COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER

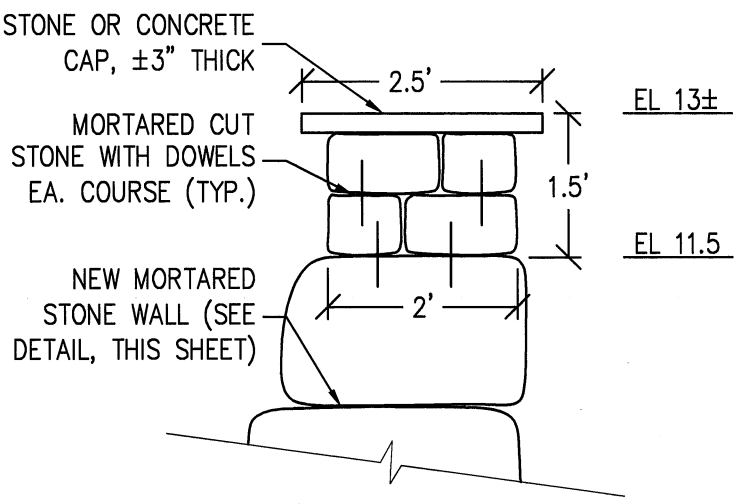
10/29/25



WALL PILLAR/EXTENSION PROFILE DETAIL
SCALE: 1"=2'

0 2 4

SCALE IN FEET
SCALE: 1"=2'



WALL PILLAR/EXTENSION SECTION DETAIL
SCALE: 1"=2'

0 2 4

SCALE IN FEET
SCALE: 1"=2'

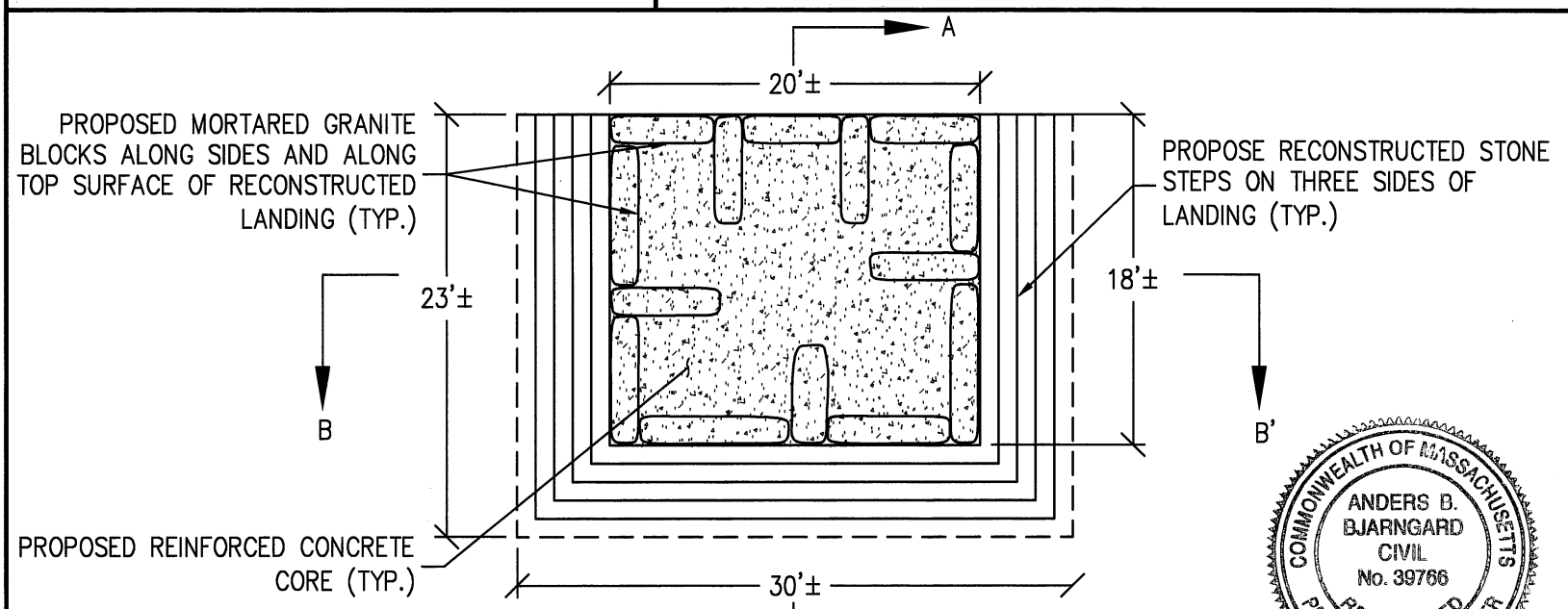
PROPOSED SEAWALL DETAILS
SHEET 7 OF 8
OCTOBER 21, 2025

LICENSE PLAN NO. WW01-0000721
Approved by Department of Environmental Protection
Date: 11/14/2025

I CERTIFY THAT THIS PLAN, AS PREPARED, CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

Anders B Bjarngard 10/29/2025

NAME DATE

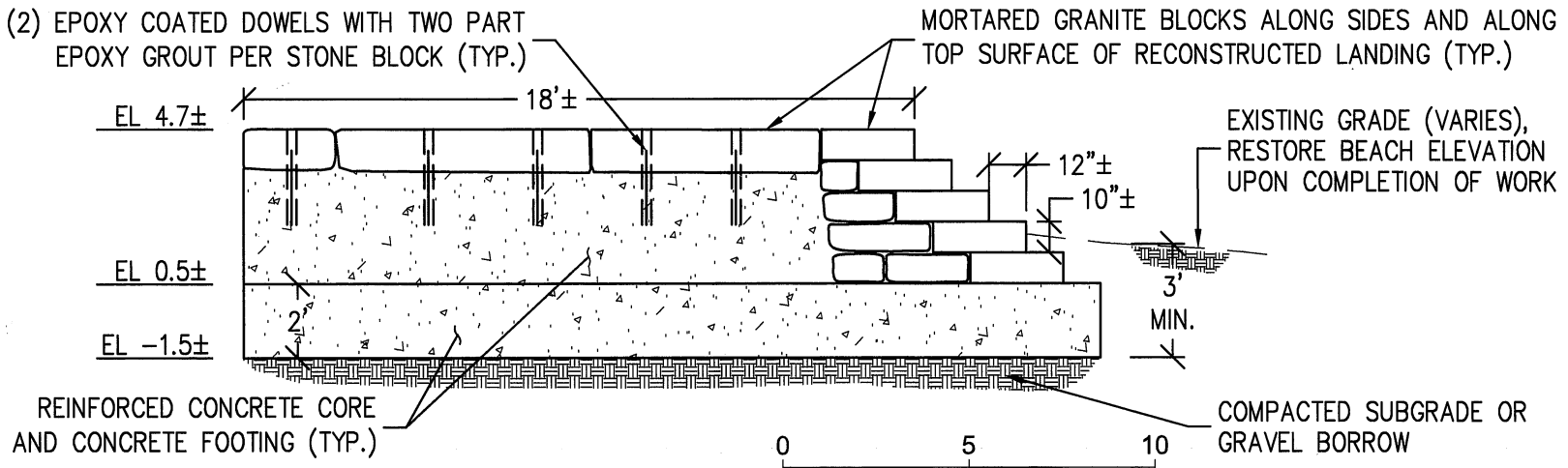


PROPOSED LANDING DETAIL PLAN
SCALE: 1"=10'

0 10 20
SCALE IN FEET
SCALE: 1"= 10'

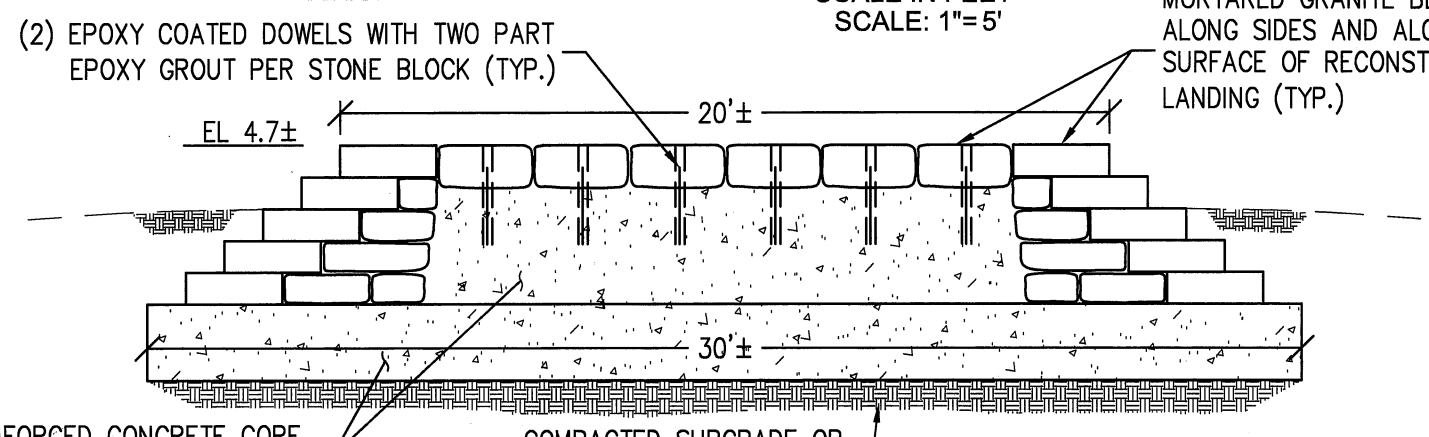
COMMONWEALTH OF MASSACHUSETTS
ANDERS B. BJARNGARD
CIVIL
No. 39766
REGISTERED PROFESSIONAL ENGINEER

Anders B Bjarngard 10/29/25



SECTION A–A': PROPOSED LANDING DETAIL SECTION
SCALE: 1"=5'

0 5 10
SCALE IN FEET
SCALE: 1"= 5'



SECTION B–B': PROPOSED LANDING DETAIL SECTION
SCALE: 1"=5'

0 5 10
SCALE IN FEET
SCALE: 1"= 5'

PROPOSED LANDING DETAILS
SHEET 8 OF 8
OCTOBER 21, 2025

LICENSE PLAN NO. WW01-0000721
Approved by Department of Environmental Protection
Date: 11/14/2025

DEPARTMENT OF THE ARMY PERMIT NAE-2024-02849, DATED FEBRUARY 27, 2026 AND MEMORANDUM OF AGREEMENT

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

February 27, 2026

CENAE-RDM-M
File Number: NAE-2024-02849

Deborah Duhamel
City of Salem
98 Washington Street
Salem, Massachusetts 01970
Sent by email: dduhamel@salem.com

Dear Deborah Duhamel:

We have reviewed your Department of the Army (DA) permit application to perform work and place fill in tidal waters to reconstruct an existing seawall. Work involves placing about 68 cubic yards of granite stone fill in an 820 square foot area along a 464 linear foot stretch of the beach. A 2,655 square foot area of the beach is proposed to be nourished with 100 cubic yards of fill material. Approximately 140 cubic yards of salt marsh material will be deposited in 2,870 square feet of salt marsh for restoration purposes. A 10-foot-wide permanent flood barrier gate will be installed. Excavation and construction access will temporarily impact about 2,670 square feet of the intertidal area. The project is located in Juniper Cove at 46 Columbus Avenue in Salem, Massachusetts 01970. The work is described on the enclosed plans titled “COLUMBUS AVENUE SEAWALL RECONSTRUCTION PROJECT,” on seven sheets, and dated “NOVEMBER 2024.”

Based on the information that you have provided, we verify that the activity is authorized under General Permit # 2, 7, and 9 of the June 2, 2023, federal permit known as the Massachusetts General Permits (GPs). The GPs are available at https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit.

Please review the enclosed GPs carefully, in particular the general conditions beginning on page 35, and ensure that you and all personnel performing work authorized by the GPs are fully aware of and comply with its terms and conditions. A copy of the GPs and this verification letter shall be available at the work site as required by General Condition 17. You must perform this work in compliance with the following special conditions:

1. No nearshore disposal or beach nourishment activities shall be conducted within 25 feet of tidal special aquatic sites (SAS).

2. You shall ensure that any discharge of poured concrete is contained within cells or watertight forms until concrete has set.

3. Plantings should not include invasive and other unacceptable plant species, which are specified in App. K of the New England District Compensatory Mitigation Standard Operation Procedures.

4. You shall remove controls upon completion of work, but not until all exposed soil and other fills, as well as any work waterward of OHW or the HTL, are permanently stabilized. Sediment and debris collected should be removed and placed at an upland location in a manner that will prevent erosion into a waterway or wetland.

5. You shall comply with the Memorandum of Agreement executed on February 24, 2026.

This authorization expires on June 1, 2028. You must commence or have under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization and we recommend you contact us *before* the work authorized herein expires. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction as we must approve any changes before you undertake them. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with the special condition(s) provided above or all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization does not obviate the need to obtain other federal, state, or local authorizations required by law. Applicants are responsible for applying for and obtaining any other approvals.

Your project is located within, or may affect resources within, the coastal zone. The Massachusetts Office of Coastal Zone Management (CZM) has already determined that no further Federal Consistency Review is required.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at https://regulatory.ops.usace.army.mil/customer-service-survey.

Please contact Abigail Thrall of my staff at abigail.e.thrall@usace.army.mil or (978) 318-8029 if you have any questions.

Sincerely,

Craig Jarnot
Chief, Massachusetts Branch
Regulatory Division

cc:
David A. Smith, GZA GeoEnvironmental, Inc., david.smith@gza.com
U.S. EPA Region 1, R1_CWA404_REG@epa.gov
Alexa Cacacie, NMFS, Gloucester, MA; alexa.cacacie@noaa.gov
David Simmons, USFWS, New England Field Office, Concord, NH; david_simmons@fws.gov
Sean Duffey, Coastal Zone Management, Boston, MA, sean.duffey@mass.gov
Patrice Bordonaro, Coastal Zone Management, Boston, MA, patrice.bordonaro@mass.gov
Jill Provencal, DEP NERO, Wetland and Waterways, Wilmington, MA; jill.provencal@state.ma.us
Kristin Divris, DEP NERO, Wetland and Waterways, Wilmington, MA; Kristin.Divris@mass.gov
Philip Di Pietro, DEP NERO, Wetland and Waterways, Wilmington, MA; philip.dipietro@mass.gov
MassDEP-WRP, Boston, MA; dep.waterways@mass.gov
David Robinson, MA Board of Underwater Archaeological Resources (BUAR); david.s.robinson@mass.gov
Salem Conservation Commission, Rmccarthy@salem.com, bdolan@salem.com

US Army Corps of Engineers®
New England District

COMPLIANCE CERTIFICATION FORM

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

Permit Number: NAE-2024-02849

Project Manager: Abigail Thrall

Name of Permittee: Deborah Duhamel, City of Salem

Permit Issuance Date: 2/27/2026

Note: Choose one of the following. Choose the 2nd when mitigation required.
Please sign this certification and return it to our office upon completion of the activity.

Please sign this certification and return it to our office upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not after the mitigation monitoring, which requires separate submittals.

E-MAIL TO: cenae-r-ma@usace.army.mil; or

MAIL TO: Massachusetts Section
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee _____ Date _____

Printed Name _____ Date of Work Completion _____

( ) _____ ( ) _____

Telephone Number Telephone Number

COLUMBUS AVENUE SEAWALL RECONSTRUCTION PROJECT
46 COLUMBUS AVENUE
SALEM, MASSACHUSETTS

PREPARED FOR

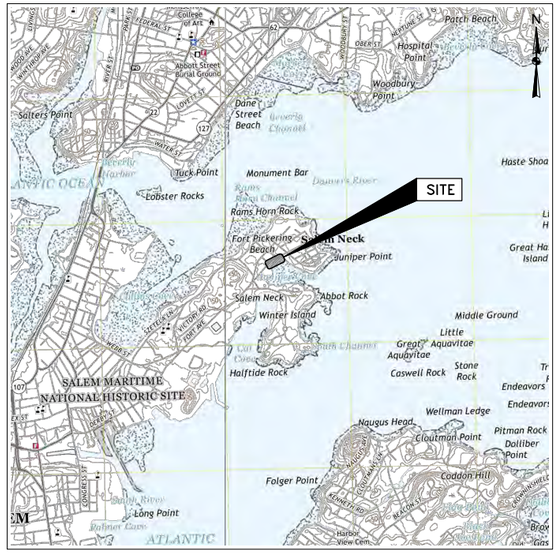
CITY OF SALEM
98 WASHINGTON STREET, 2ND FLOOR
SALEM, MA 01970

PREPARED BY

GZA GEOENVIRONMENTAL, INC.
144 ELM STREET
AMESBURY, MA 01913

INDEX OF DRAWINGS

1 COVER SHEET
2 EXISTING CONDITIONS PLAN AND PROFILE
3 EXISTING SECTIONS
4 PROPOSED CONDITIONS PLAN AND PROFILE
5 PROPOSED SECTIONS
6 PROPOSED DETAILS 1
7 PROPOSED DETAILS 2



PROJECT LOCUS MAP

SOURCE: USGS TOPOGRAPHIC QUADRANGLES
SCANNED BY MASSGIS AND DISTRIBUTED IN 2018

CONTOUR ELEVATIONS REFERENCE NAVD 88,
CONTOURS AND ELEVATIONS ARE SHOWN IN FEET

0 1000' 2000' 4000' 6000'

SCALE: 1" = 2000 FEET



AERIAL ORTHO IMAGERY MAP

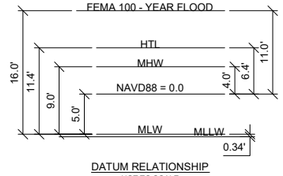
SOURCE: BING AERIAL MAP DOWNLOADED FROM
AUTOCAD GEOLOCATION MAP SERVICES

0 1000' 2000' 4000' 6000'

SCALE: 1" = 2000 FEET

LEGEND

- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- MEAN HIGH WATER [MHW]
- HIGH TIDE LINE [HTL]
- APPROXIMATE PROPERTY LINE
- SHELLFISH SUITABILITY AREA LIMITS
- CHAPTER 91 HISTORIC HIGH WATER LINE
- EXISTING DRAIN LINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- SALT MARSH AREA
- POCKMARKS WITHIN SALT MARSH AREA
- GRASS
- EXISTING WATER GATE
- EXISTING HYDRANT
- EXISTING GAS UTILITY
- EXISTING DRAIN MANHOLE
- EXISTING SEWER MANHOLE
- EXISTING CATCH BASIN



DATUM RELATIONSHIP
NOT TO SCALE

PERMITTING ONLY
NOT FOR CONSTRUCTION

GENERAL NOTES

1. VERTICAL DATUM: ELEVATIONS ARE IN FEET AND REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88): MLW=-5.0, NAVD88=0.0, MHW=4.0, HTL=6.4, FEMA 100-YEAR FLOOD ZONE AE=11.0. TIDAL DATUM RELATIONSHIP AND CONVERSION REFERENCED TO NOAA TIDAL STATION ID 8442417, BEVERLY HARBOR, BEVERLY, MA.
2. HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, NAD83, US FEET.
3. LIMITED TOPOGRAPHIC SURVEY PERFORMED BY GZA GEOENVIRONMENTAL, INC., ON MARCH 31, 2020 AND REPRESENTS CONDITIONS AT THE TIME OF THE SURVEY.
4. APPROXIMATE SALT MARSH LIMITS SHOWN BASED ON SURVEY OBSERVATIONS BY GZA GEOENVIRONMENTAL, INC., ON MARCH 31, 2020.
5. EXISTING UTILITIES SHOWN BASED ON ELECTRONIC FILES PROVIDED BY THE CITY OF SALEM. LOCATION OR PRESENCE OF UTILITIES ARE APPROXIMATE. VERIFY LOCATIONS, DEPTHS, AND OVERHEAD CLEARANCE OF ALL EXISTING UTILITIES AND NOTIFY THE APPROPRIATE UTILITY COMPANY AND AUTHORITY TO ALLOW MARKING OF THEIR LINES.
6. PROPERTY LINES ARE APPROXIMATE AND WERE SCALED FROM ONLINE AVAILABLE MASSGIS DATA LAYERS.
7. SHELLFISH SUITABILITY AREA (SOFT-SHELLED CLAM) LIMITS AND CHAPTER 91 HISTORIC HIGH WATER LINE SCALED FROM ONLINE AVAILABLE MASSGIS DATA LAYERS.

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

COLUMBUS AVENUE SEAWALL RECONSTRUCTION
46 COLUMBUS AVENUE
SALEM, MASSACHUSETTS

COVER SHEET

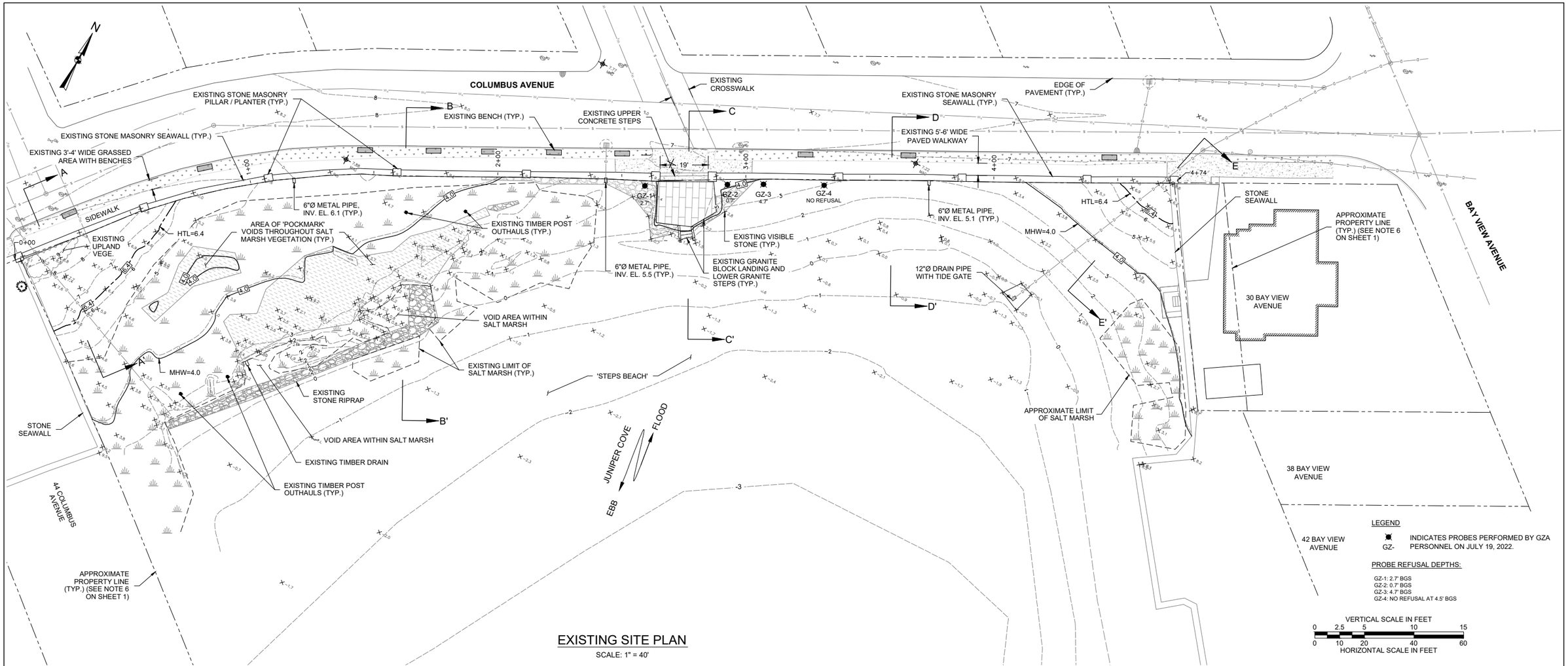
PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
CITY OF SALEM
98 WASHINGTON STREET, 2ND FLOOR
SALEM, MASSACHUSETTS

PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 1
DESIGNED BY: DAS	DRAWN BY: AJP	SCALE: AS SHOWN	
DATE: NOVEMBER 2024	PROJECT NO. 18.0171674.04/.08	REVISION NO. -	SHEET NO. 1 OF 7

© 2024 - GZA GeoEnvironmental, Inc. - G:\...\18\01\71\67\4 Sales Columbus Ave\WP\Permit\20241031 01 67 4 Columbus Ave Seawall Reconstruction Cover Sheet_v7.dwg [COVER SHEET (ANSI)] November 01, 2024 - 12:38pm by ajaye

© 2024 – GZA GeoEnvironmental, Inc. G:\ZA~J\171600'S\18.0171674.04 SALEM COLUMBUS AVE WALL\FIGURES\CAD\DWGS\18.0171674.04 COLUMBUS AVE SEAWALL RECONSTRUCTION.DWG EXISTING PLAN–USACE NOVEMBER 1, 2024 12:53PM LUCAS TAYLOR



EXISTING SITE PLAN

SCALE: 1" = 40'

LEGEND

GZ- ● INDICATES PROBES PERFORMED BY GZA PERSONNEL ON JULY 19, 2022.

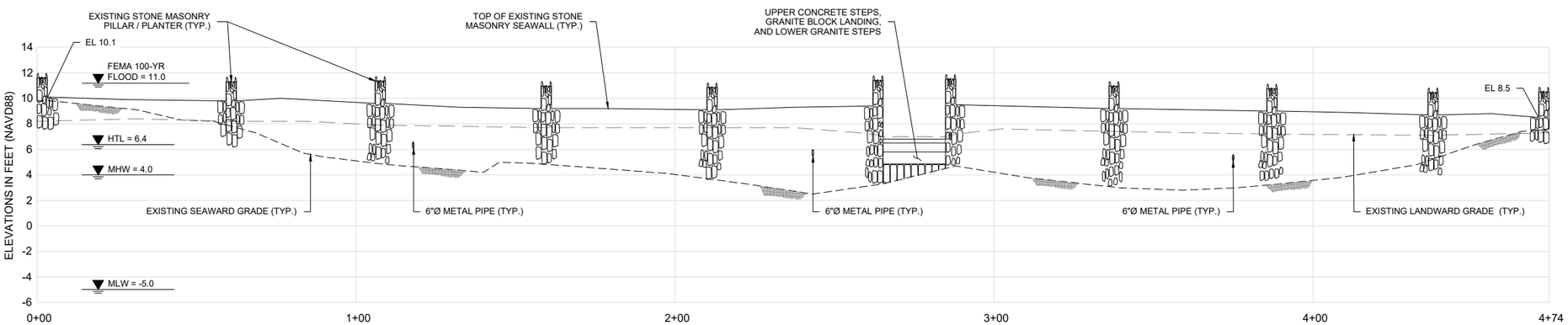
PROBE REFUSAL DEPTHS:

GZ-1: 2.7' BGS
GZ-2: 0.7' BGS
GZ-3: 4.7' BGS
GZ-4: NO REFUSAL AT 4.5' BGS

VERTICAL SCALE IN FEET
0 2.5 5 10 15

0 10 20 40 60
HORIZONTAL SCALE IN FEET

0 10 20 40 60
SCALE IN FEET



EXISTING SEAWALL PROFILE

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 40'

PERMITTING ONLY
NOT FOR CONSTRUCTION

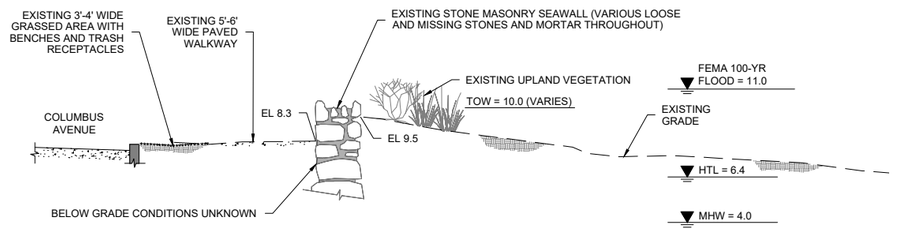
NO.	ISSUE/DESCRIPTION	BY	DATE

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
46 COLUMBUS AVENUE
SALEM, MASSACHUSETTS

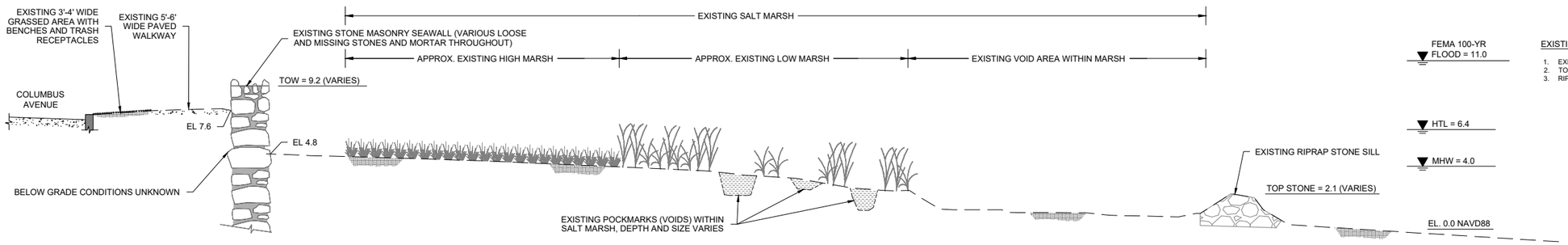
EXISTING CONDITIONS PLAN AND PROFILE

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: CITY OF SALEM 98 WASHINGTON STREET, 2ND FLOOR SALEM, MASSACHUSETTS	
PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 2
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: NOVEMBER 2024	PROJECT NO. 18.0171674.04/.08	REVISION NO. -	SHEET NO. 2 OF 7



EXISTING SECTION A - A': STA 0+14

SCALE: 1" = 8'

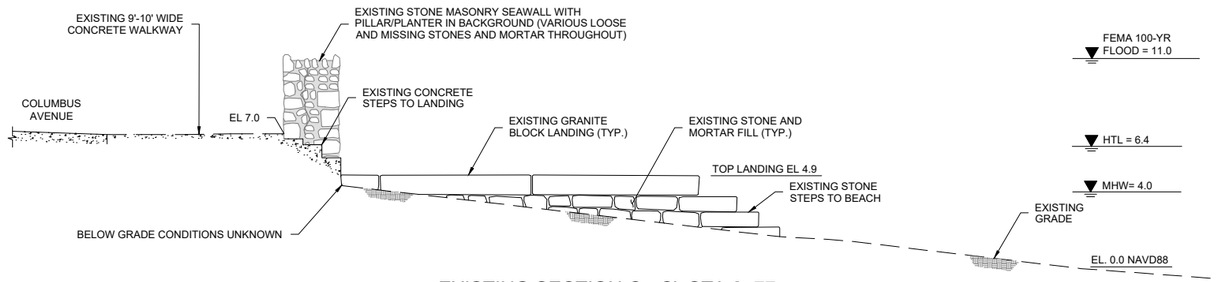


EXISTING SECTION B - B': STA 1+63

SCALE: 1" = 8'

EXISTING STONE RIPRAP NOTES

1. EXISTING RIPRAP GENERALLY CONSISTS OF STONE SIZED ±2' TO 2.5'Ø (±0.5 TO 1 TON IN WEIGHT).
2. TOP OF STONE ELEVATION VARIES FROM APPROXIMATELY 2.1 TO 2.7 FEET NAVD88.
3. RIPRAP SILL IS GENERALLY 5' WIDE BUT VARIES ALONG ITS LENGTH.



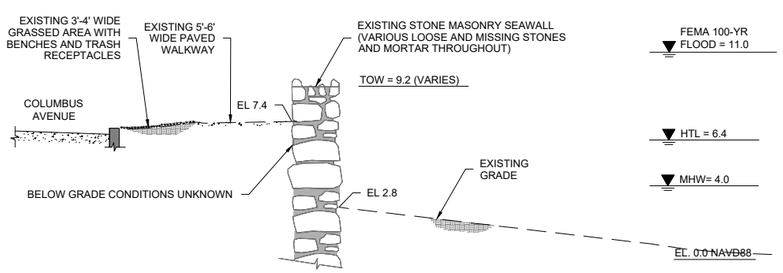
EXISTING SECTION C - C': STA 2+77

SCALE: 1" = 8'

0 2 4 8 12

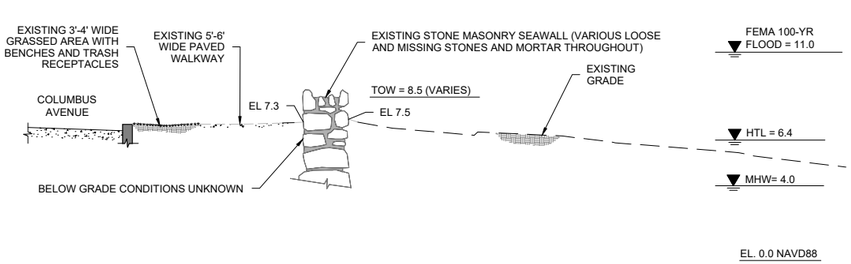
SCALE IN FEET

PERMITTING ONLY
NOT FOR CONSTRUCTION



EXISTING SECTION D - D': STA 3+59

SCALE: 1" = 8'



EXISTING SECTION E - E': STA 4+70

SCALE: 1" = 8'

NO.	ISSUE/DESCRIPTION	BY	DATE

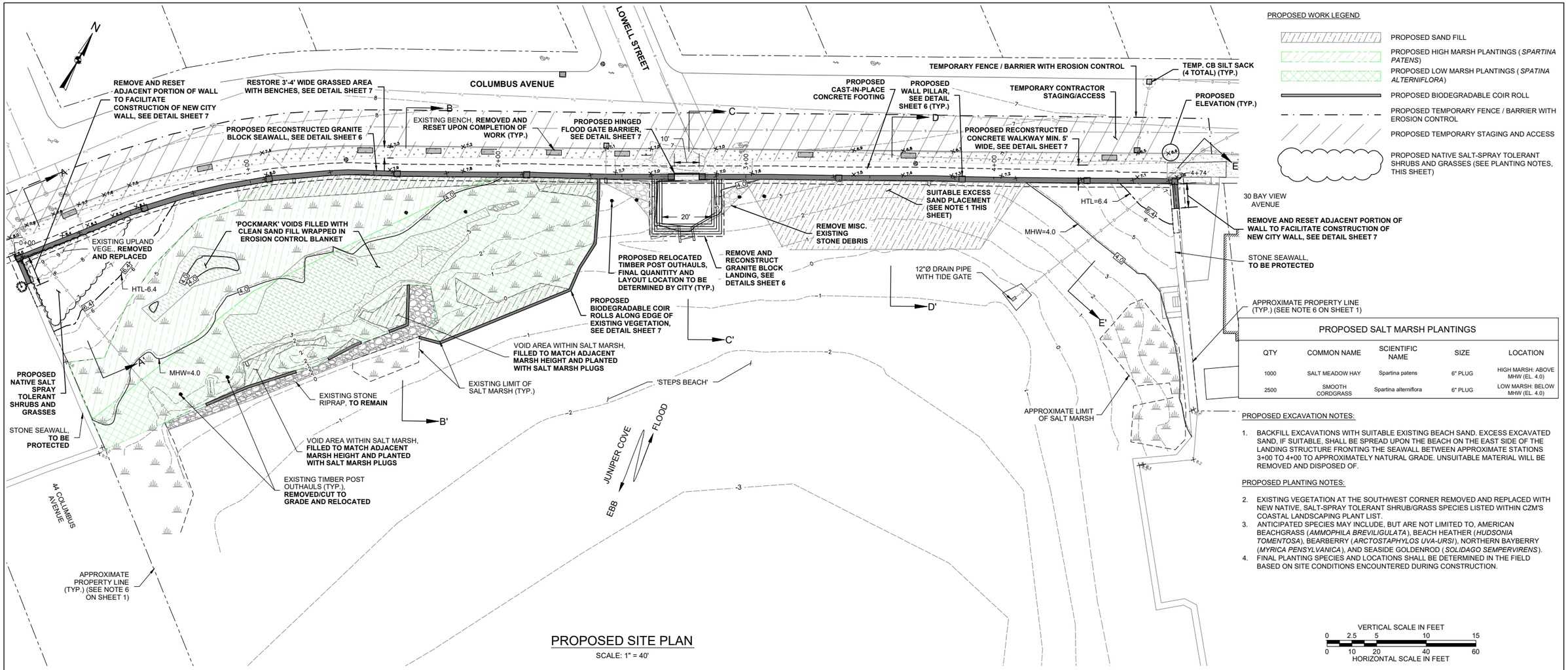
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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
46 COLUMBUS AVENUE
SALEM, MASSACHUSETTS

EXISTING SECTIONS

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: CITY OF SALEM 98 WASHINGTON STREET, 2ND FLOOR SALEM, MASSACHUSETTS	
PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 3
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: NOVEMBER 2024	PROJECT NO. 18.0171674.04/.08	REVISION NO. -	SHEET NO. 3 OF 7

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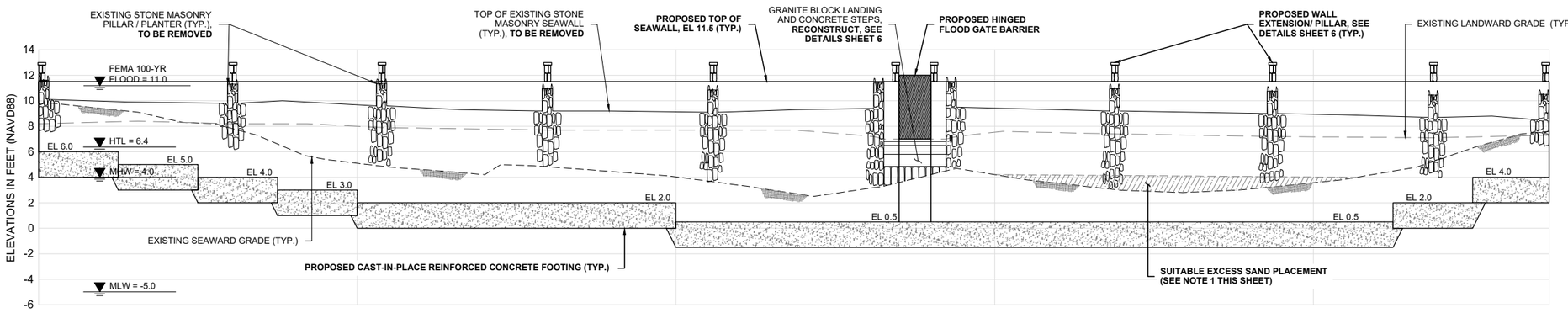


PROPOSED SITE PLAN

SCALE: 1" = 40'

PROPOSED WORK LEGEND

- PROPOSED SAND FILL
- PROPOSED HIGH MARSH PLANTINGS (*SPARTINA PATENS*)
- PROPOSED LOW MARSH PLANTINGS (*SPATINA ALTERNIFLORA*)
- PROPOSED BIODEGRADABLE COIR ROLL
- PROPOSED TEMPORARY FENCE / BARRIER WITH EROSION CONTROL
- PROPOSED TEMPORARY STAGING AND ACCESS
- PROPOSED NATIVE SALT-SPRAY TOLERANT SHRUBS AND GRASSES (SEE PLANTING NOTES, THIS SHEET)



PROPOSED SEAWALL PROFILE

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 40'

PROPOSED SALT MARSH PLANTINGS

QTY	COMMON NAME	SCIENTIFIC NAME	SIZE	LOCATION
1000	SALT MEADOW HAY	Spartina patens	6" PLUG	HIGH MARSH: ABOVE MHW (EL. 4.0)
2500	SMOOTH CORDGRASS	Spartina alterniflora	6" PLUG	LOW MARSH: BELOW MHW (EL. 4.0)

PROPOSED EXCAVATION NOTES:

1. BACKFILL EXCAVATIONS WITH SUITABLE EXISTING BEACH SAND. EXCESS EXCAVATED SAND, IF SUITABLE, SHALL BE SPREAD UPON THE BEACH ON THE EAST SIDE OF THE LANDING STRUCTURE FRONTING THE SEAWALL BETWEEN APPROXIMATE STATIONS 3+00 TO 4+00 TO APPROXIMATELY NATURAL GRADE. UNSUITABLE MATERIAL WILL BE REMOVED AND DISPOSED OF.

PROPOSED PLANTING NOTES:

2. EXISTING VEGETATION AT THE SOUTHWEST CORNER REMOVED AND REPLACED WITH NEW NATIVE, SALT-SPRAY TOLERANT SHRUB/GRASS SPECIES LISTED WITHIN CZM'S COASTAL LANDSCAPING PLANT LIST.
3. ANTICIPATED SPECIES MAY INCLUDE, BUT ARE NOT LIMITED TO, AMERICAN BEACHGRASS (*AMMOPHILA BREVILIGULATA*), BEACH HEATHER (*HUDSONIA TOMENTOSA*), BEARBERRY (*ARCTOSTAPHYLOS UVA-URSI*), NORTHERN BAYBERRY (*MYRICA PENSYLVANICA*), AND SEASIDE GOLDENROD (*SOLIDAGO SEMPERVIRENS*).
4. FINAL PLANTING SPECIES AND LOCATIONS SHALL BE DETERMINED IN THE FIELD BASED ON SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

VERTICAL SCALE IN FEET
0 2.5 5 10 15
HORIZONTAL SCALE IN FEET
0 10 20 40 60
SCALE IN FEET
0 10 20 40 60

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
46 COLUMBUS AVENUE
SALEM, MASSACHUSETTS

PROPOSED CONDITIONS PLAN AND PROFILE

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
CITY OF SALEM
98 WASHINGTON STREET, 2ND FLOOR
SALEM, MASSACHUSETTS

PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 4
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: NOVEMBER 2024	PROJECT NO. 18.0171674.04/.08	REVISION NO. -	SHEET NO. 4 OF 7

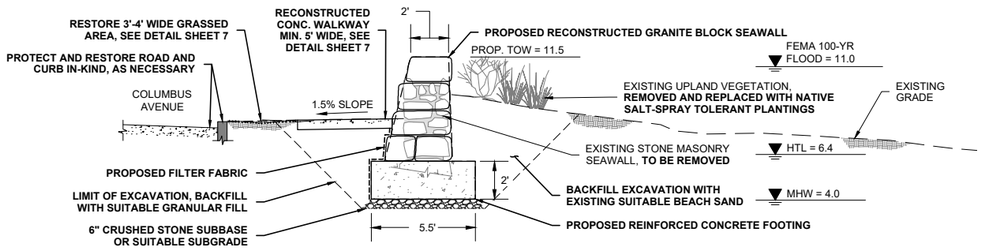
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PROTECTION OF EXISTING FEATURES NOTE:

1. PROVIDE SHORING/SUPPORT OF EXCAVATION BETWEEN PROPOSED WORK AREA AND EXISTING FEATURES TO REMAIN (E.G. UTILITIES, ADJACENT STRUCTURES, CURB AND ROADWAY).

PROPOSED EXCAVATION NOTES:

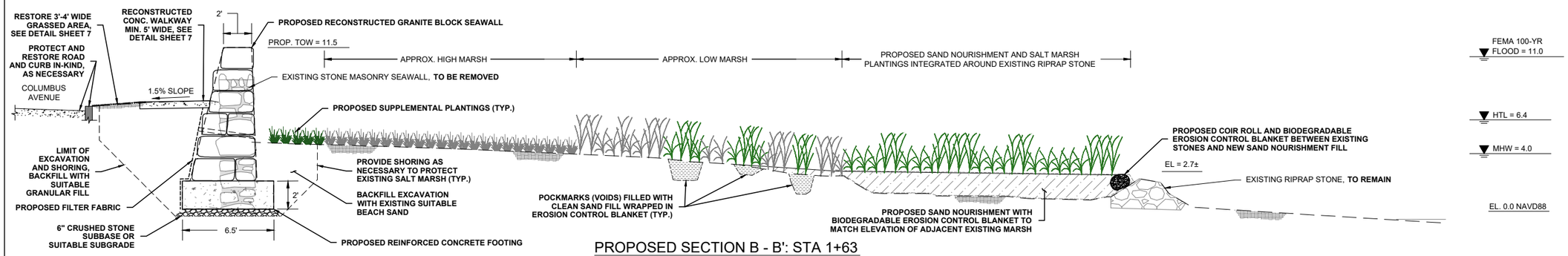
1. BACKFILL EXCAVATIONS WITH SUITABLE EXISTING BEACH SAND. EXCESS EXCAVATED SAND, IF SUITABLE, SHALL BE SPREAD UPON THE BEACH ON THE EAST SIDE OF THE LANDING STRUCTURE FRONTING THE SEAWALL BETWEEN APPROXIMATE STATIONS 3+00 TO 4+00 TO APPROXIMATELY NATURAL GRADE. UNSUITABLE MATERIAL WILL BE REMOVED AND DISPOSED OF.



PROPOSED SECTION A - A': STA 0+14

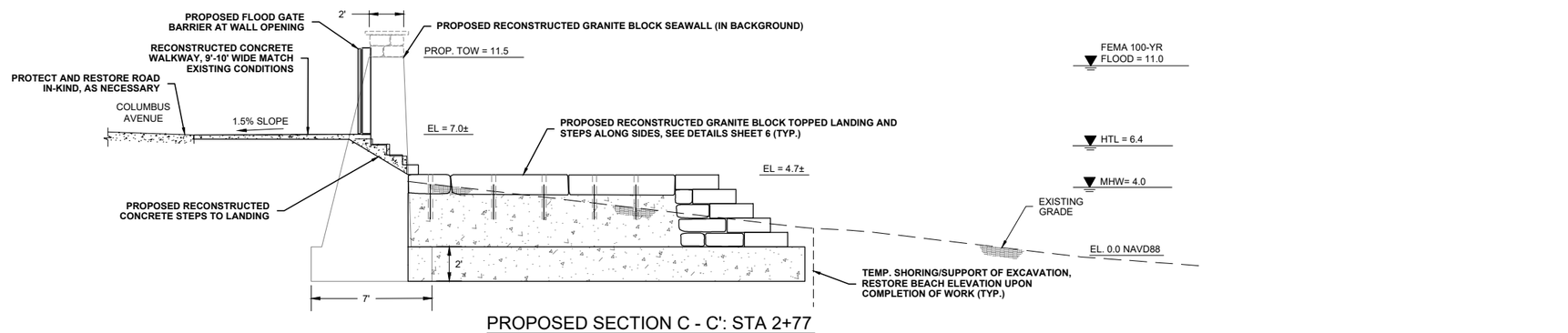
EL. 0.0 NAVD88

SCALE: 1" = 8'



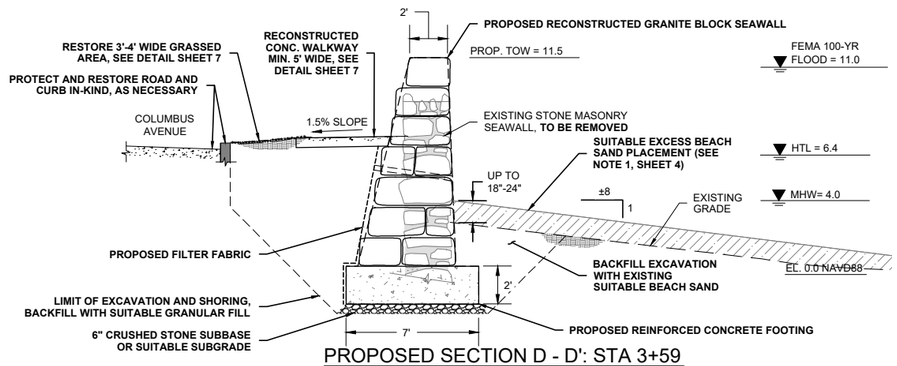
PROPOSED SECTION B - B': STA 1+63

SCALE: 1" = 8'



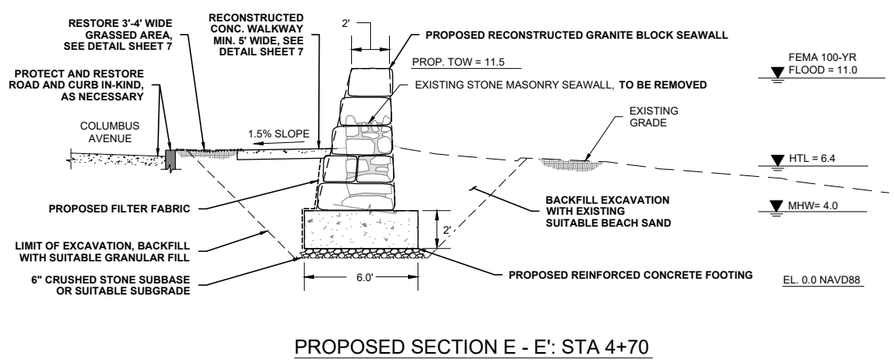
PROPOSED SECTION C - C': STA 2+77

SCALE: 1" = 8'



PROPOSED SECTION D - D': STA 3+59

SCALE: 1" = 8'



PROPOSED SECTION E - E': STA 4+70

SCALE: 1" = 8'

0 2 4 8 12

SCALE IN FEET

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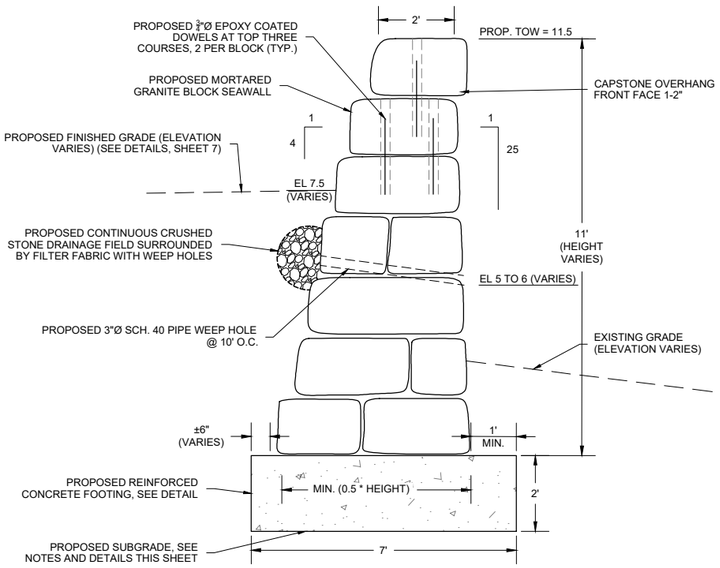
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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
46 COLUMBUS AVENUE
SALEM, MASSACHUSETTS

PROPOSED SECTIONS

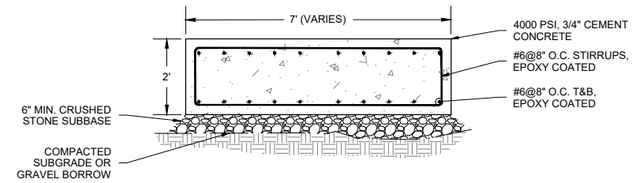
PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		CITY OF SALEM 98 WASHINGTON STREET, 2ND FLOOR SALEM, MASSACHUSETTS	
PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 5
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: NOVEMBER 2024	PROJECT NO. 18.0171674.04/.08	REVISION NO. -	SHEET NO. 5 OF 7

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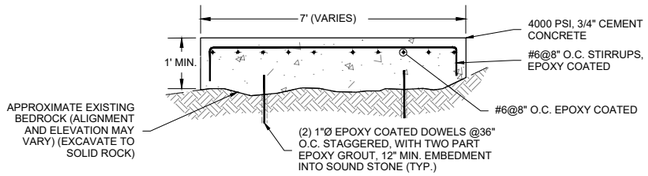
TYPICAL PROPOSED MORTARED GRANITE BLOCK SEAWALL DETAIL

SCALE: 1" = 4'



TYPICAL PROPOSED FOOTING DETAIL ON GRADE

SCALE: 1" = 4'

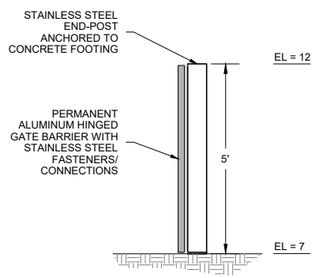


TYPICAL PROPOSED FOOTING DETAIL ON BEDROCK

SCALE: 1" = 4'

PROPOSED FOOTING NOTES:

1. CEMENT CONCRETE SHALL BE 4000 PSI, 3/4" AGGREGATE.
2. REINFORCING STEEL SHALL BE EPOXY COATED.
3. ALL REINFORCING BARS ARE TO BE A MINIMUM 3" CLEAR FROM FACE OF CONCRETE.
4. SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION DETERMINE FOOTING DETAIL USED. SHOULD SOLID ROCK BE ENCOUNTERED ABOVE THE PROPOSED BOTTOM OF FOOTING ELEVATION, THE PROPOSED FOOTING SHALL BE DOWELED INTO ROCK (FOLLOW DETAIL, THIS SHEET).

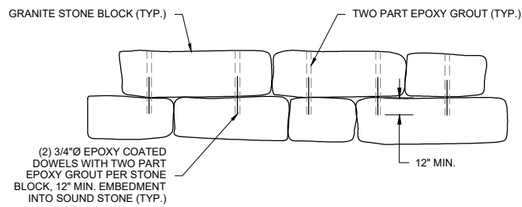


PROPOSED FLOOD BARRIER DETAIL

SCALE: 1" = 4'

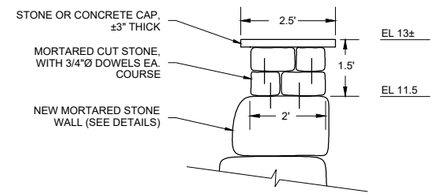
PROPOSED FLOOD BARRIER NOTES:

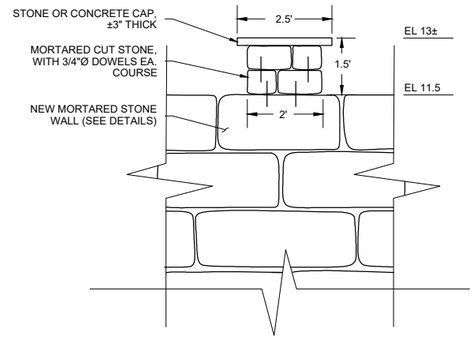
1. FINAL FLOOD BARRIER DESIGN BY OTHERS.
2. PERMANENT HINGED GATE BARRIER WITH 180 DEGREE SWING RADIUS.
3. ANTI-THEFT LOCKING.



STONE MASONRY ANCHORING DETAIL

SCALE: N.T.S.



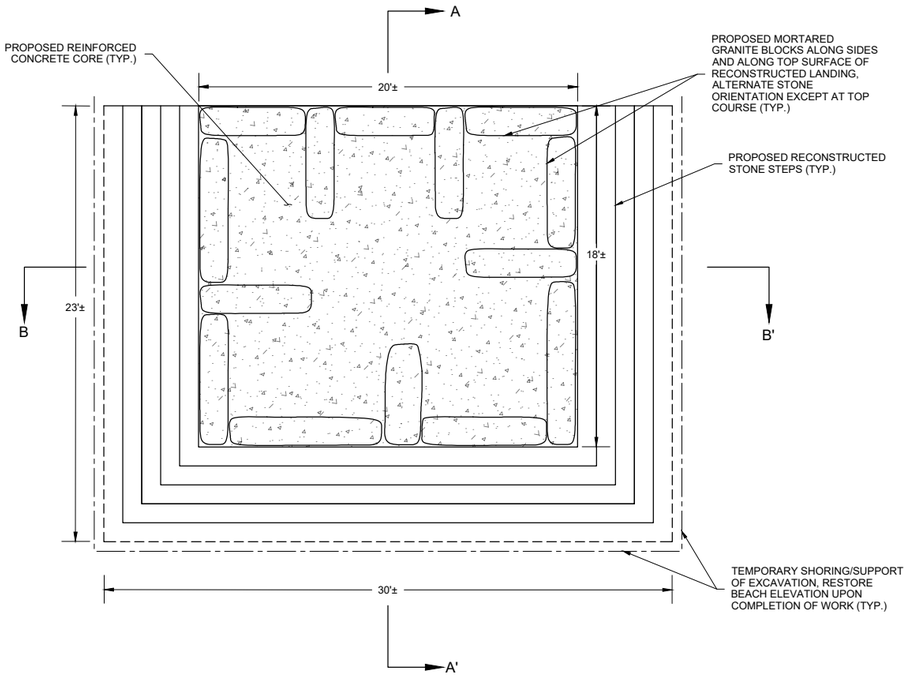


WALL PILLAR/ EXTENSION DETAIL

SCALE: 1" = 4'

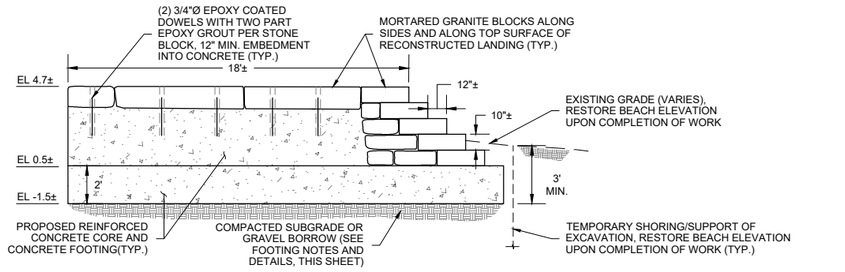
STATION	TOP OF WALL EL. (NAVD88)	BOTTOM OF WALL EL. (NAVD88)	BOTTOM OF FOOTING EL. (NAVD88)	TOTAL STRUCTURE HEIGHT (FT)	FOOTING WIDTH (FT)
0+00 TO 0+25	11.5	6.0	4.0	7.5	5.5
0+25 TO 0+50	11.5	5.0	3.0	8.5	6.0
0+50 TO 0+75	11.5	4.0	2.0	9.5	6.0
0+75 TO 1+00	11.5	3.0	1.0	10.5	6.5
1+00 TO 2+00	11.5	2.0	0.0	11.5	6.5
2+00 TO 4+25	11.5	0.5	-1.5	13.0	7.0
4+25 TO 4+50	11.5	2.0	0.0	11.5	6.5
4+50 TO 4+74	11.5	4.0	2.0	9.5	6.0

PROPOSED WALL AND FOOTING SCHEDULE TABLE



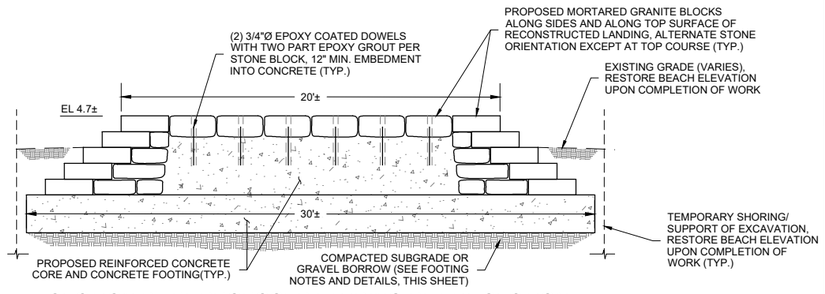
PROPOSED LANDING DETAIL PLAN

SCALE: 1" = 8'



SECTION A - A': PROPOSED LANDING DETAIL SECTION

SCALE: 1" = 8'



SECTION B - B': PROPOSED LANDING DETAIL SECTION

SCALE: 1" = 8'

0 1 2 4 6
SCALE IN FEET

0 2 4 8 12
SCALE IN FEET

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COLUMBUS AVENUE SEAWALL RECONSTRUCTION
46 COLUMBUS AVENUE
SALEM, MASSACHUSETTS

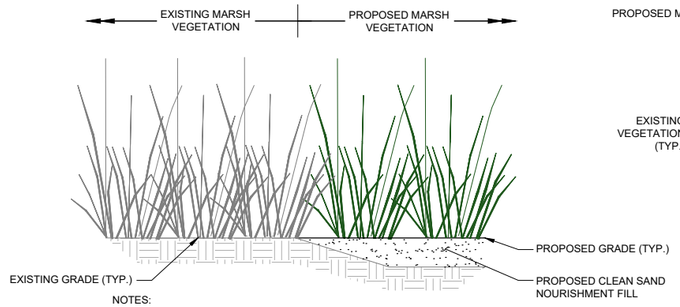
PROPOSED DETAILS 1

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
CITY OF SALEM
98 WASHINGTON STREET, 2ND FLOOR
SALEM, MASSACHUSETTS

PROJ MGR:	DAS	REVIEWED BY:	DAS	CHECKED BY: ABB	DRAWING 6
DESIGNED BY:	DAS	DRAWN BY:	LFT	SCALE: AS SHOWN	
DATE: NOVEMBER 2024		PROJECT NO. 18.0171674.04/.08		REVISION NO. -	SHEET NO. 6 OF 7

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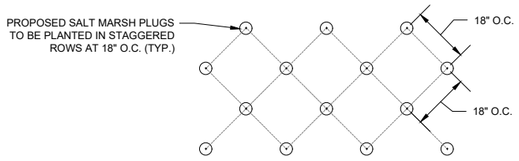


NOTES:

1. EXISTING SALT MARSH AREAS TO BE DELINEATED AND PROTECTED DURING CONSTRUCTION.
2. USE EXTREME CARE WHEN PLACING SALT MARSH ADJACENT TO EXISTING SALT MARSH AREAS.
3. MAXIMUM THICKNESS OF 4" OF CLEAN SAND NOURISHMENT FILL ALLOWED OVER EXISTING VEGETATION.
4. EXISTING VEGETATION SHALL EXTEND ABOVE PROPOSED SAND FILL AND SHALL NOT BE LAID FLAT AND BURIED.

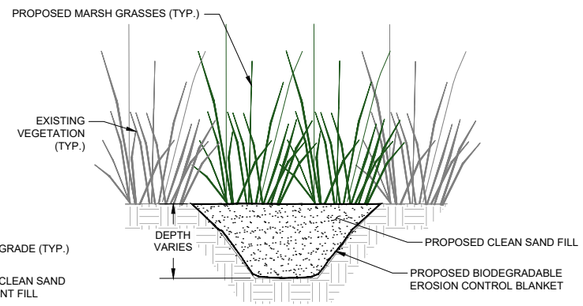
TIE-IN WITH EXISTING MARSH DETAIL

SCALE: N.T.S.



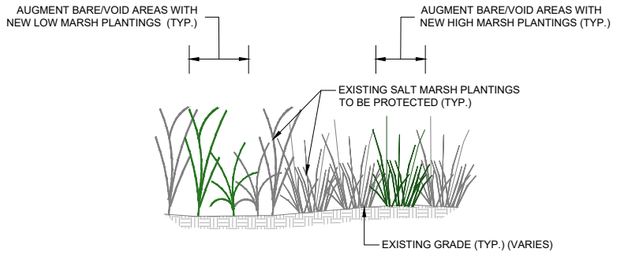
TYPICAL SALT MARSH PLANTING SPACING

SCALE: N.T.S.



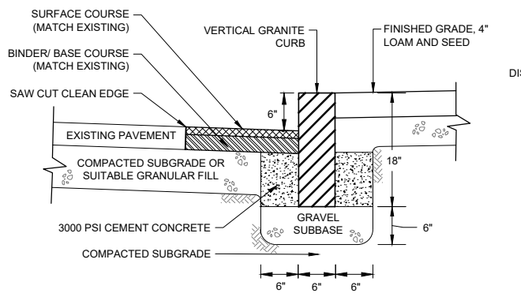
SALT MARSH VOID DETAIL

SCALE: N.T.S.



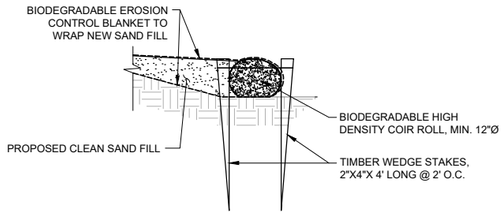
SALT MARSH PLANTING DETAIL

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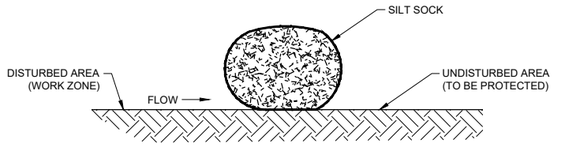
GRANITE CURB DETAIL

SCALE: N.T.S.



COIR ROLL ANCHORING DETAIL

SCALE: N.T.S.

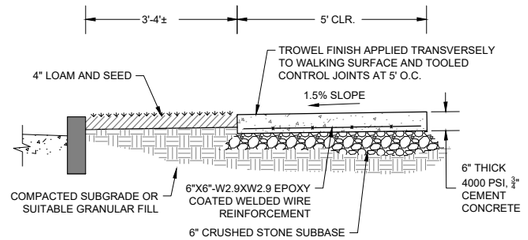


TEMPORARY EROSION CONTROL - SILT SOCK DETAIL

SCALE: N.T.S.

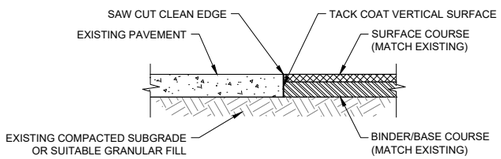
EROSION CONTROL NOTES:

1. EROSION CONTROLS SHALL BE INSPECTED DURING WORK AND MAINTAINED IN GOOD REPAIR.
2. EROSION CONTROLS SHALL REMAIN IN PROPER FUNCTIONING CONDITION UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED WITH VEGETATION OR OTHER MEANS.
3. SILT SOCKS OR COMPOST FILTER TUBES MAY BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.



TYPICAL WALKWAY AND GRASS AREA DETAIL

SCALE: 1" = 4'



PAVEMENT PATCHING DETAIL

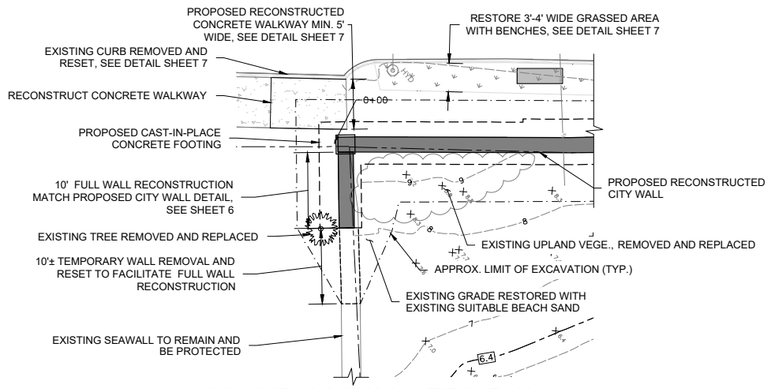
SCALE: N.T.S.





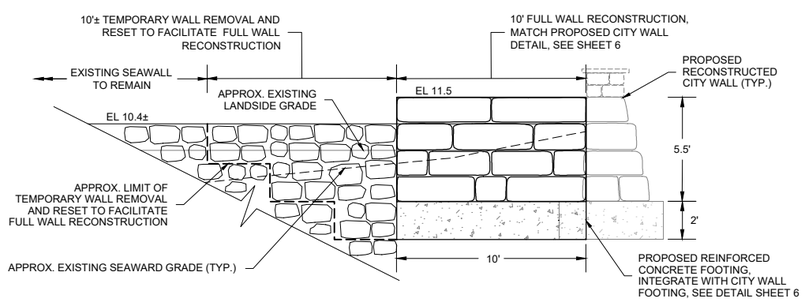


PERMITTING ONLY
NOT FOR CONSTRUCTION



44 COLUMBUS AVE WALL TIE-IN PLAN

SCALE: 1" = 20'

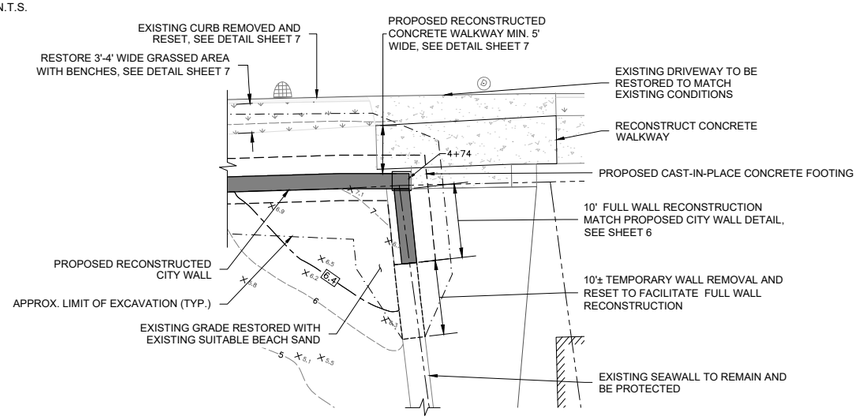


44 COLUMBUS AVE WALL TIE-IN DETAIL

SCALE: 1" = 8'

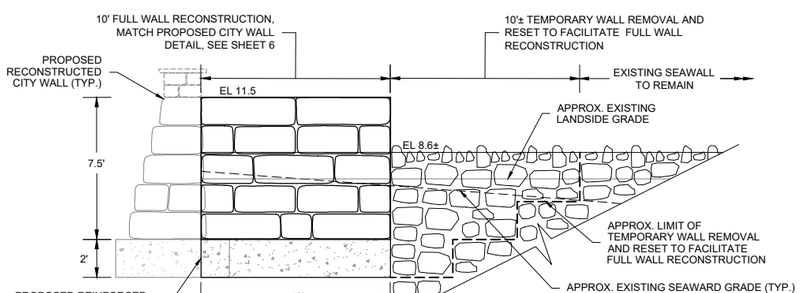
NOTE:

1. DEPTH OF EXISTING WALL UNKNOWN, PROVIDE SHORING/SUPPORT OF EXCAVATION AS NEEDED.



30 BAY VIEW AVE WALL TIE-IN PLAN

SCALE: 1" = 20'



30 BAY VIEW AVE WALL TIE-IN DETAIL

SCALE: 1" = 8'

NO.	ISSUE/DESCRIPTION	BY	DATE

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

COLUMBUS AVENUE SEAWALL RECONSTRUCTION
46 COLUMBUS AVENUE
SALEM, MASSACHUSETTS

PROPOSED DETAILS 2

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
CITY OF SALEM
98 WASHINGTON STREET, 2ND FLOOR
SALEM, MASSACHUSETTS

PROJ MGR: DAS	REVIEWED BY: DAS	CHECKED BY: ABB	DRAWING 7
DESIGNED BY: DAS	DRAWN BY: LFT	SCALE: AS SHOWN	
DATE: NOVEMBER 2024	PROJECT NO. 18.0171674.04/.08	REVISION NO. -	SHEET NO. 7 OF 7

© 2024 - GZA GeoEnvironmental, Inc. G:\ZA-d:\171600'S\18.0171674.04 SALEM COLUMBUS AVE WALL\FIGURES\CAD\DWGS\18.0171674.04 COLUMBUS AVE SEAWALL RECONSTRUCTION.DWG PROPOSED DETAILS 2-USACE NOVEMBER 1, 2024 1:14PM LUCAS TAYLOR

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS
AND
THE MASSACHUSETTS STATE HISTORIC PRESERVATION OFFICER
REGARDING
DEPARTMENT OF THE ARMY AUTHORIZATION
FOR
COLUMBUS AVE SEAWALL RECONSTRUCTION
CITY OF SALEM, MASSACHUSETTS

WHEREAS, the New England District, U.S. Army Corps of Engineers (Corps) is evaluating an application from the City of Salem, requesting a Department of the Army (DA) permit under Section 404 of the Clean Water Act (33 USC 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) authorizing the discharge of dredged or fill material into waters of the United States and authorizing the installation of structures in a Section 10 water, in connection with proposed seawall reconstruction and shoreline stabilization associated with coastal resiliency at 46 Columbus Avenue in Salem, Massachusetts; and

WHEREAS, the Corps' issuance of a DA permit is considered a federal undertaking subject to review under Section 106 of the National Historic Preservation Act (NHPA), as amended (54 USC 306108), which requires federal agencies take into account the effects of their undertakings on historic properties listed in or eligible for inclusion in the National Register of Historic Places (NRHP) and afford the Advisory Council on Historic Preservation (Council) a reasonable opportunity to comment; and

WHEREAS, the undertaking is defined as the DA permit that would authorize regulated activities associated with reconstruction of the existing seawall, beach nourishment, salt marsh enhancement, and installing a permanent flood barrier gate for shoreline stabilization; and

WHEREAS, the Corps, in consultation with the Massachusetts State Historic Preservation Officer (SHPO), defined the area of potential effects (APE) for the undertaking based upon the scope and nature of the federally regulated activities in waters of the U.S. and a Section 10 water, and the immediately adjacent uplands necessary to conduct the authorized work, the permit area, to include temporary staging areas, and the potential for indirect effects caused by the undertaking; and

WHEREAS, the Corps, in consultation with the SHPO, identified historic properties within the APE, the Salem Willows Historic District (SAL.HA), and contributing resources Columbus Avenue seawall and the granite ashlar landing (SAL.958); and

WHEREAS, a state-level review by the SHPO in 2022 resulted in a drafted Memorandum of Agreement (state-level MOA) with the Massachusetts Department of Environmental Protection, the Massachusetts Executive Office of Energy and Environmental Affairs, the City of Salem, and the Salem Historical Commission as a Concurring Party, and that state-level MOA was never fully executed; and

WHEREAS, the Corps is consulting with the SHPO pursuant 36 CFR Part 800 and 33 CFR Part 325, Appendix C, and the Corps determined that the undertaking would adversely affect historic properties, Columbus Avenue seawall and the granite ashlar landing, concurring with the SHPO's prior effect finding in 2022, and the Corps and the SHPO are reutilizing the appropriate mitigation stipulations within this Memorandum of Agreement (Agreement) and consulting with the appropriate interested parties; and

WHEREAS, the Corps consulted with the City of Salem to avoid or minimize adverse effects of the undertaking on the two historic properties listed above, and the adverse effect was unavoidable; and

WHEREAS, on December 5, 2024, information regarding the effects of the undertaking on historic properties was provided to Tribal Historic Preservation Officers (THPO) of the Narragansett Indian Tribe, the Mashpee Wampanoag Tribe, and the Wampanoag Tribe of Gay Head (Aquinnah), and the tribes did not comment; and

WHEREAS, the City of Salem, as applicant for the DA permit, has responsibilities under this Agreement and has therefore been invited by the Corps to sign this Agreement as an Invited Signatory in accordance with 36 CFR 800.6(c)(2); and

WHEREAS, the Salem Historical Commission consulted on the identification of, and effect to, historic properties and the Corps invited the consulting party to sign this Agreement as a Concurring Party; and

WHEREAS, the requirements for public involvement were completed pursuant 36 CFR 800.2(d), which included a public information session held by the Salem Historic Commission on June 1, 2022, as part of the MEPA review, that described the proposed project and the effect of the undertaking on historic properties; and

WHEREAS, in accordance with 36 CFR 800.6(a)(1), the Corps notified the Council on August 25, 2025, of the adverse effect to an historic property with the required specified documentation (36 CFR 800.11(e)), and the Council responded on August 27, 2025, and chose not to participate in the resolution of adverse effect pursuant 36 CFR 800.6(a)(1)(iii); and

NOW, THEREFORE, the Corps and the SHPO agree that the following stipulations are appropriate mitigation and take into account the effect of the undertaking on historic properties.

STIPULATIONS

The Corps shall ensure that the following measures are carried out in consultation with the SHPO:

I. MITIGATION

The City of Salem shall ensure that the following measures are carried out and shall provide proof of compliance with such measures to the SHPO and the Corps:

1. Photographic Documentation
   The City of Salem shall utilize the services of a Secretary of the Interior-qualified professional to photograph the existing historic seawall, prior to demolition. Photographs shall be taken from various vantage points to document the full length and detail of the wall. Photographs shall also be taken from vantage points that document the seawall's relation to the historic buildings across Columbus Avenue. Photographs shall be digital and be submitted to the Salem Historical Commission on a CD or USB flash memory drive before demolition of the wall begins. A sampling of digital photographs shall be submitted to the Corps. Submittal of photographic documentation completes this stipulation.

2. Demolition Notification
   The City of Salem shall notify the SHPO, Salem Historical Commission, and the Corps of the start date of demolition and date of completion. The SHPO will use the information to update MHC files. Final notification that demolition is complete completes this stipulation.

3. Design Review
   a. The City of Salem shall incorporate into the design of the new seawall a pillar and planter system that is similar in design to the historic seawall.
   b. The City of Salem shall submit final design plans to the Salem Historical Commission for review and approval.
      i. The Salem Historical Commission shall review the pillar and planter design described above. The Salem Historical Commission shall also review the final construction materials, including the stone type and size. The Salem Historical Commission will provide comments within 60 days of receipt of final plans and construction materials.
   c. Once the Salem Historical Commission approves the final design and materials, the City of Salem shall notify the Corps and the SHPO, in writing, that all mitigation stipulations are complete.

II. DURATION

This Agreement shall be null and void if its terms are not carried out within three (3) years from the date of its execution. Prior to such time, the Corps may consult with the

other signatories and invited signatories to reconsider the terms of the Agreement and amend it in accordance with Stipulation VI, below.

III. UNANTICIPATED DISCOVERIES

If previously unidentified historic properties are discovered or unanticipated effects on historic properties are found during the undertaking, the City of Salem shall notify the signatories of the discovery and cease all work at that location until the requirements of 36 CFR 800.13 and 33 CFR 325, Appendix C, have been satisfied. Unanticipated discoveries may alter the terms of this Agreement, which may result in amendments and/or termination of the Agreement.

IV. MONITORING AND REPORTING

Each year following the execution of this Agreement until the work is complete, the permit expires, or the permit is terminated, the City of Salem shall provide all signatories to this Agreement a summary letter report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received by the City of Salem in its efforts to carry out the responsibilities of this Agreement.

V. DISPUTE RESOLUTION

Should any signatory or invited signatory to this Agreement object at any time to any actions proposed or the manner in which the terms of this Agreement are implemented, the Corps shall consult with such party to resolve the objection. If the Corps determines that such objections cannot be resolved, the Corps will:

A. Forward all documentation relevant to the dispute, including the Corps' proposed resolution, to the Council. The Council shall provide the Corps with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the Corps shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the Council, signatories, invited signatories, and concurring parties, and provide them with a copy of this written response. The Corps will then proceed according to its final decision.

B. If the Council does not provide its advice regarding the dispute within the thirty (30) days, the Corps may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the Corps shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories, invited signatories, and concurring parties to the Agreement, and provide them and the Council with a copy of such written response.

C. The Corps' responsibility to carry out all other actions subject to the terms of this Agreement that are not the subject of the dispute remain unchanged.

VI. AMENDMENTS

This Agreement may be amended when such an amendment is agreed to in writing by all signatories and invited signatories. The amendment shall be effective on the date a copy signed by all of the signatories and invited signatories is filed with the Council.

VII. TERMINATION

If any signatory or invited signatory to this Agreement determines that its terms shall not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation VI, above. If within thirty (30) days an amendment cannot be reached, any signatory or invited signatory may terminate the Agreement upon written notification to the other signatories and invited signatories.

Once the Agreement is terminated, and prior to work continuing on the undertaking, the Corps must either (a) execute an Agreement pursuant to 36 CFR 800.6 or (b) request, take into account, and respond to the comments of the Council under 36 CFR 800.7. The Corps shall notify the signatories and invited signatories as to the course of action it shall pursue.

Execution of this Agreement by the Corps and the SHPO and implementation of its terms, is evidence that the Corps has taken into account the effects of the undertaking on historic properties, satisfied its obligations under Section 106 of the NHPA, and afforded the Council an opportunity to comment.

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS
AND
THE MASSACHUSETTS STATE HISTORIC PRESERVATION OFFICER
REGARDING
DEPARTMENT OF THE ARMY AUTHORIZATION
FOR
COLUMBUS AVE SEAWALL RECONSTRUCTION
CITY OF SALEM, MASSACHUSETTS

SIGNATORY:

U.S. ARMY CORPS OF ENGINEERS, NEW ENGLAND DISTRICT

Tammy R. Turley

Tammy R. Turley
Chief, Regulatory Division

February 24, 2026
Date

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS
AND
THE MASSACHUSETTS STATE HISTORIC PRESERVATION OFFICER
REGARDING
DEPARTMENT OF THE ARMY AUTHORIZATION
FOR
COLUMBUS AVE SEAWALL RECONSTRUCTION
CITY OF SALEM, MASSACHUSETTS

SIGNATORY:

MASSACHUSETTS STATE HISTORIC PRESERVATION OFFICER

Brona Simon — 2/10/26

Brona Simon
State Historic Preservation Officer
Massachusetts Historical Commission

Date

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS
AND
THE MASSACHUSETTS STATE HISTORIC PRESERVATION OFFICER
REGARDING
DEPARTMENT OF THE ARMY AUTHORIZATION
FOR
COLUMBUS AVE SEAWALL RECONSTRUCTION
CITY OF SALEM, MASSACHUSETTS

INVITED SIGNATORY:

CITY OF SALEM

Dominick Pangallo

1/7/2026

Dominick Pangallo
Mayor

Date

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS
AND
THE MASSACHUSETTS STATE HISTORIC PRESERVATION OFFICER
REGARDING
DEPARTMENT OF THE ARMY AUTHORIZATION
FOR
COLUMBUS AVE SEAWALL RECONSTRUCTION
CITY OF SALEM, MASSACHUSETTS

CONCURRING PARTY:

SALEM HISTORICAL COMMISSION

Vijay Joyce
Chair of the City of Salem Historical Commission

1/5/26
Date

ATTACHMENT D – RIGHT-OF-ENTRY'S

RIGHT OF ENTRY – WITHOUT PREJUDICE

Mr. Guy Ford
30 Bay View Avenue
Salem, MA 01970
Parcel ID: 44-0147-0

Permission is hereby given to the City of Salem, or its duly authorized agents, to enter upon my property in connection with the Columbus Avenue Seawall Reconstruction Project. Plans for this project are located in the City of Salem's Engineering Department at 98 Washington Street, 2nd Floor. A Right of Way Plan showing the impacts to my property is attached. The purpose of this Right of Entry is to allow for changes and to carry out the work on my property as outlined below.

1. Full Wall Reconstruction. Approximately 10 linear feet of full wall reconstruction to include full height demolition of approximately 10-feet of my private seawall and reconstruct my wall at the same elevation as the proposed Columbus Avenue wall for approximately 10-feet where it intersects the new wall.
2. Temporary Wall Removal and Reset. Approximately 10 linear feet of temporary wall removal and reset to match existing conditions and height to facilitate the full wall reconstruction.
3. Loaming and Seeding. Placement of loam and grass seed to any disturbed areas.
4. Protection or Replacement of Bushes and Trees. Removal and replacement of existing bushes and trees within work area adjacent to wall reconstruction. May also include temporary construction measures, such as temporary fencing, to be installed on adjacent properties.
5. Temporary Construction Access. Temporary construction equipment access on property to perform proposed work.
6. Driveway and Driveway Aprons. Reconstruction of existing driveway and driveway aprons. This activity may include the installation of driveway pavement to match existing driveway grade after proposed work is complete.
7. Temporary Bracing. Temporary installation of braces or support of excavation for the construction of walls, grading, etc., may be required.
8. Daily Cleanup. To ensure proper cleanup on a daily basis, the Contractor may need to enter onto private property.
9. Construction Activities. For the construction of walls, grading, drainage installation etc., the Contractor may need to enter onto private property.

This Right of Entry is made of my/our free will. I/we waive my/our Right(s) to an appraisal and compensation. This entry is to be made without prejudice to my rights in settlement of any claims for damages that may hereafter appear. This Right of Entry shall terminate upon final acceptance of the Project by the City of Salem and expiration of the Warranty period of the Contract for Construction. The City will seek a permanent easement from me on my property for future maintenance of my reconstructed wall.

Granted by:

Guy Ford _____ Date: 8/5/24
Owner(s) or Authorized Representative

Recommended by:

_____ Date: 8/5/24
Deborah L. Duhamel, P.E.
City Engineer

RIGHT OF ENTRY – WITHOUT PREJUDICE

Ms. Patricia Berking
44 Columbus Ave
Salem, MA 01970
Parcel ID: 44-0147-0

Permission is hereby given to the City of Salem, or its duly authorized agents, to enter upon my property in connection with the Columbus Avenue Seawall Reconstruction Project. Plans for this project are located in the City of Salem's Engineering Department at 98 Washington Street, 2nd Floor. A Right of Way Plan showing the impacts to my property is attached. The purpose of this Right of Entry is to allow for changes and to carry out the work on my property as outlined below.

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Granted by:

Patricia Berking Date: 8/2/24
Owner(s) or Authorized Representative

Recommended by:

Date: 8/5/24
Deborah L. Duhamel, P.E.
City Engineer

ATTACHMENT E – PREVAILING WAGE RATES

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

MAURA HEALEY
Governor
KIM DRISCOLL
Lt. Governor

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: Salem **City/Town:** SALEM

Contract Number:

Description of Work: Reconstruction of seawall on Columbus Ave.

Job Location: Columbus Ave., Salem, MA

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 updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.
- This annual update requirement is generally not applicable to 27F “rental of equipment” contracts. For such contracts, the prevailing wage rates issued by DLS shall remain in effect for the duration of the contract term. However, if the prevailing wage rate sheet issued does not contain wage rates for each year covered by the contract term, the Awarding Authority must request updated rate sheets from DLS and provide them to the contractor to ensure the correct rates are being paid throughout the duration of the contract. Additionally, if an Awarding Authority exercises an option to renew or extend the contract term, they must request updated rate sheets form DLS and provide them to the contractor.
- 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.

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$40.95	$16.17	$21.78	$0.00	$0.00	$78.90
	6/1/2026	$41.95	$16.17	$21.78	$0.00	$0.00	$79.90
	12/1/2026	$41.95	$16.17	$23.52	$0.00	$0.00	$81.64
	1/1/2027	$41.95	$16.77	$23.52	$0.00	$0.00	$82.24
(3 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.02	$16.17	$21.78	$0.00	$0.00	$78.97
	6/1/2026	$42.02	$16.17	$21.78	$0.00	$0.00	$79.97
	12/1/2026	$42.02	$16.17	$23.52	$0.00	$0.00	$81.71
	1/1/2027	$42.02	$16.77	$23.52	$0.00	$0.00	$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.14	$16.17	$21.78	$0.00	$0.00	$79.09
	6/1/2026	$42.14	$16.17	$21.78	$0.00	$0.00	$80.09
	12/1/2026	$42.14	$16.17	$23.52	$0.00	$0.00	$81.83
	1/1/2027	$42.14	$16.77	$23.52	$0.00	$0.00	$82.43
ADS/SUBMERSIBLE PILOT PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1) For apprentice rates see "Apprentice- PILE DRIVER"	1/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
AIR TRACK OPERATOR LABORERS LABORERS - ZONE 2 For apprentice rates see "Apprentice- LABORER"	12/1/2025	$41.22	$10.65	$9.75	$9.11	$0.00	$70.73
	6/1/2026	$42.66	$10.65	$9.75	$9.11	$0.00	$72.17
	12/1/2026	$44.10	$10.65	$9.75	$9.11	$0.00	$73.61
	6/1/2027	$45.55	$10.65	$9.75	$9.11	$0.00	$75.06
	12/1/2027	$47.00	$10.65	$9.75	$9.11	$0.00	$76.51
	6/1/2028	$48.50	$10.65	$9.75	$9.11	$0.00	$78.01
	12/1/2028	$50.00	$10.65	$9.75	$9.11	$0.00	$79.51
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	12/1/2025	$41.22	$10.65	$9.75	$9.21	$0.00	$70.83
	6/1/2026	$42.66	$10.65	$9.75	$9.21	$0.00	$72.27
	12/1/2026	$44.10	$10.65	$9.75	$9.21	$0.00	$73.71
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	12/1/2025	$44.80	$14.50	$4.30	$6.75	$0.00	$70.35
ASPHALT RAKER LABORERS LABORERS - ZONE 2 For apprentice rates see "Apprentice- LABORER"	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
ASPHALT RAKER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	$40.72	$10.65	$9.75	$9.21	$0.00	$70.33
	6/1/2026	$42.16	$10.65	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.60	$10.65	$9.75	$9.21	$0.00	$73.21

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE	12/1/2025	$58.68	$16.55	$13.35	$3.25	$0.00	$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.98	$16.55	$13.35	$3.25	$0.00	$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	$61.43	$16.55	$13.35	$3.25	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BACKHOE/FRONT-END LOADER	12/1/2025	$58.68	$16.55	$13.35	$3.25	$0.00	$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.98	$16.55	$13.35	$3.25	$0.00	$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	$61.43	$16.55	$13.35	$3.25	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BARCO-TYPE JUMPING TAMPER	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
LABORERS	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
LABORERS - ZONE 2	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER	12/1/2025	$41.22	$10.65	$9.75	$9.11	$0.00	$70.73
LABORERS	6/1/2026	$42.66	$10.65	$9.75	$9.11	$0.00	$72.17
LABORERS - ZONE 2	12/1/2026	$44.10	$10.65	$9.75	$9.11	$0.00	$73.61
	6/1/2027	$45.55	$10.65	$9.75	$9.11	$0.00	$75.06
	12/1/2027	$47.00	$10.65	$9.75	$9.11	$0.00	$76.51
	6/1/2028	$48.50	$10.65	$9.75	$9.11	$0.00	$78.01
	12/1/2028	$50.00	$10.65	$9.75	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY)	12/1/2025	$41.22	$10.65	$9.75	$9.21	$0.00	$70.83
LABORERS	6/1/2026	$42.66	$10.65	$9.75	$9.21	$0.00	$72.27
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$44.10	$10.65	$9.75	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
BOILER MAKER	1/1/2024	$48.12	$7.07	$14.60	$6.00	$0.00	$75.79
BOILERMAKERS LOCAL 29							
BOILERMAKERS LOCAL 29							

Apprentice: BOILER MAKER

Effective Date: 1/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57
2	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57
3	70.00	$33.68	$7.07	$10.03	$4.20	$0.00	$54.98
4	75.00	$36.09	$7.07	$10.74	$4.50	$0.00	$58.40
5	80.00	$38.50	$7.07	$11.45	$4.80	$0.00	$61.82
6	85.00	$40.90	$7.07	$12.18	$5.10	$0.00	$65.25

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: BOILER MAKER

Effective Date: 1/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
7	90.00	$43.31	$7.07	$12.88	$5.40	$0.00	$68.66
8	95.00	$45.71	$7.07	$13.62	$5.70	$0.00	$72.10

Apprentice to Journeyworker Ratio: 1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (LYNN)	2/1/2026	$67.95	$12.84	$15.57	$8.02	$0.00	$104.38
	8/1/2026	$70.15	$12.84	$15.57	$8.02	$0.00	$106.58
	2/1/2027	$71.55	$12.84	$15.57	$8.02	$0.00	$107.98

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.98	$12.84	$15.57	$8.02	$0.00	$70.41
2	60.00	$40.77	$12.84	$15.57	$8.02	$0.00	$77.20
3	70.00	$47.57	$12.84	$15.57	$8.02	$0.00	$84.00
4	80.00	$54.36	$12.84	$15.57	$8.02	$0.00	$90.79
5	90.00	$61.16	$12.84	$15.57	$8.02	$0.00	$97.59

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.08	$12.84	$15.57	$8.02	$0.00	$71.51
2	60.00	$42.09	$12.84	$15.57	$8.02	$0.00	$78.52
3	70.00	$49.11	$12.84	$15.57	$8.02	$0.00	$85.54
4	80.00	$56.12	$12.84	$15.57	$8.02	$0.00	$92.55
5	90.00	$63.14	$12.84	$15.57	$8.02	$0.00	$99.57

Apprentice to Journeyworker Ratio: 1:5

BULLDOZER/GRADER/SCRAPER OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CAISSON & UNDERPINNING BOTTOM MAN LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2025	$49.10	$10.65	$9.75	$9.80	$0.00	$79.30
	6/1/2026	$50.65	$10.65	$9.75	$9.80	$0.00	$80.85
	12/1/2026	$52.15	$10.65	$9.75	$9.80	$0.00	$82.35
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER LABORERS	12/1/2025	$47.95	$10.65	$9.75	$9.80	$0.00	$78.15
	6/1/2026	$49.50	$10.65	$9.75	$9.80	$0.00	$79.70

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.00	$10.65	$9.75	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN	12/1/2025	$48.28	$10.65	$9.75	$9.80	$0.00	$78.48
LABORERS	6/1/2026	$49.83	$10.65	$9.75	$9.80	$0.00	$80.03
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.33	$10.65	$9.75	$9.80	$0.00	$81.53
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
LABORERS	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
LABORERS - ZONE 2	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
CARPENTER	3/1/2026	$50.85	$11.08	$11.47	$8.50	$0.00	$81.90
CARPENTERS	9/1/2026	$52.10	$11.08	$11.47	$8.50	$0.00	$83.15
CARPENTERS -ZONE 2 (Eastern Massachusetts)	3/1/2027	$53.35	$11.08	$11.47	$8.50	$0.00	$84.40

Apprentice: CARPENTER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$22.88	$11.08	$0.00	$1.73	$0.00	$35.69
2	45.00	$22.88	$11.08	$0.00	$1.73	$0.00	$35.69
3	55.00	$27.97	$11.08	$0.00	$3.40	$0.00	$42.45
4	55.00	$27.97	$11.08	$0.00	$3.40	$0.00	$42.45
5	70.00	$35.60	$11.08	$11.41	$5.10	$0.00	$63.19
6	70.00	$35.60	$11.08	$11.41	$5.10	$0.00	$63.19
7	80.00	$40.68	$11.08	$11.44	$6.80	$0.00	$70.00
8	80.00	$40.68	$11.08	$11.44	$6.80	$0.00	$70.00

Apprentice: CARPENTER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$23.45	$11.08	$0.00	$1.73	$0.00	$36.26
2	45.00	$23.45	$11.08	$0.00	$1.73	$0.00	$36.26
3	55.00	$28.66	$11.08	$0.00	$3.40	$0.00	$43.14
4	55.00	$28.66	$11.08	$0.00	$3.40	$0.00	$43.14
5	70.00	$36.47	$11.08	$11.41	$5.10	$0.00	$64.06
6	70.00	$36.47	$11.08	$11.41	$5.10	$0.00	$64.06
7	80.00	$41.68	$11.08	$11.44	$6.80	$0.00	$71.00
8	80.00	$41.68	$11.08	$11.44	$6.80	$0.00	$71.00

Apprentice to Journeyworker Ratio: 1:5

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CARPENTER WOOD FRAME	10/1/2025	$27.37	$7.38	$4.47	$1.00	$0.00	$40.22
CARPENTERS	10/1/2026	$28.47	$7.38	$4.47	$1.00	$0.00	$41.32
CARPENTERS-ZONE 3 (Wood Frame)							
All Aspects of New Wood Frame Work							

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$16.42	$7.38	$0.00	$0.00	$0.00	$23.80
2	60.00	$16.42	$7.38	$0.00	$0.00	$0.00	$23.80
3	65.00	$17.79	$7.38	$0.00	$1.00	$0.00	$26.17
4	70.00	$19.16	$7.38	$0.00	$1.00	$0.00	$27.54
5	75.00	$20.53	$7.38	$3.80	$1.00	$0.00	$32.71
6	80.00	$21.90	$7.38	$3.80	$1.00	$0.00	$34.08
7	85.00	$23.26	$7.38	$3.80	$1.00	$0.00	$35.44
8	90.00	$24.63	$7.38	$3.80	$1.00	$0.00	$36.81

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$17.08	$7.38	$0.00	$0.00	$0.00	$24.46
2	60.00	$17.08	$7.38	$0.00	$0.00	$0.00	$24.46
3	65.00	$18.51	$7.38	$0.00	$1.00	$0.00	$26.89
4	70.00	$19.93	$7.38	$0.00	$1.00	$0.00	$28.31
5	75.00	$21.35	$7.38	$3.80	$1.00	$0.00	$33.53
6	80.00	$22.78	$7.38	$3.80	$1.00	$0.00	$34.96
7	85.00	$24.20	$7.38	$3.80	$1.00	$0.00	$36.38
8	90.00	$25.62	$7.38	$3.80	$1.00	$0.00	$37.80

Apprentice to Journeyworker Ratio: 1:5

CEMENT MASONRY/PLASTERING	1/1/2026	$53.24	$13.35	$16.43	$7.78	$1.80	$92.60
PLASTERERS AND CEMENT MASONS LOCAL 534	7/1/2026	$54.49	$13.35	$16.43	$7.78	$1.80	$93.85
Plasterers and Cement Masons - Zone 1	1/1/2027	$55.94	$13.35	$16.43	$7.78	$1.80	$95.30
	7/1/2027	$57.29	$13.35	$16.43	$7.78	$1.80	$96.65
	1/1/2028	$58.64	$13.35	$16.43	$7.78	$1.80	$98.00

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.62	$13.35	$16.43	$0.00	$0.00	$56.40
2	60.00	$31.94	$13.35	$16.43	$7.78	$1.80	$71.30
3	65.00	$34.61	$13.35	$16.43	$7.78	$1.80	$73.97
4	70.00	$37.27	$13.35	$16.43	$7.78	$1.80	$76.63

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
5	75.00	$39.93	$13.35	$16.43	$7.78	$1.80	$79.29
6	80.00	$42.59	$13.35	$16.43	$7.78	$1.80	$81.95
7	90.00	$47.92	$13.35	$16.43	$0.00	$0.00	$77.70

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$27.25	$13.35	$16.43	$0.00	$0.00	$57.03
2	60.00	$32.69	$13.35	$16.43	$7.78	$1.80	$72.05
3	65.00	$35.42	$13.35	$16.43	$7.78	$1.80	$74.78
4	70.00	$38.14	$13.35	$16.43	$7.78	$1.80	$77.50
5	75.00	$40.87	$13.35	$16.43	$7.78	$1.80	$80.23
6	80.00	$43.59	$13.35	$16.43	$7.78	$1.80	$82.95
7	90.00	$49.04	$13.35	$0.00	$7.78	$0.00	$70.17

Apprentice to Journeyworker Ratio: 1:5

CHAIN SAW OPERATOR LABORERS LABORERS - ZONE 2	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.88	$16.55	$13.35	$3.25	$0.00	$93.03
	6/1/2026	$61.21	$16.55	$13.35	$3.25	$0.00	$94.36
	12/1/2026	$62.69	$16.55	$13.35	$3.25	$0.00	$95.84
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$37.37	$16.55	$13.35	$3.25	$0.00	$70.52
	6/1/2026	$38.23	$16.55	$13.35	$3.25	$0.00	$71.38
	12/1/2026	$39.18	$16.55	$13.35	$3.25	$0.00	$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DELEADER (BRIDGE) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: DELEADER (BRIDGE)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

DEMO: ADZEMAN LABORERS LABORERS - ZONE 2	12/1/2025	$48.00	$10.65	$9.75	$9.65	$0.00	$78.05
	6/1/2026	$49.55	$10.65	$9.75	$9.65	$0.00	$79.60
	12/7/2026	$51.05	$10.65	$9.75	$9.65	$0.00	$81.10
	6/7/2027	$52.65	$10.65	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.25	$10.65	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.93	$10.65	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.60	$10.65	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS LABORERS - ZONE 2	12/1/2025	$49.00	$10.65	$9.75	$9.65	$0.00	$79.05
	6/1/2026	$50.55	$10.65	$9.75	$9.65	$0.00	$80.60
	12/7/2026	$52.05	$10.65	$9.75	$9.65	$0.00	$82.10
	6/7/2027	$53.65	$10.65	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.25	$10.65	$9.75	$9.65	$0.00	$85.30
	6/5/2028	$56.93	$10.65	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.60	$10.65	$9.75	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BURNERS LABORERS LABORERS - ZONE 2	12/1/2025	$48.75	$10.65	$9.75	$9.65	$0.00	$78.80
	6/1/2026	$50.30	$10.65	$9.75	$9.65	$0.00	$80.35
	12/7/2026	$51.80	$10.65	$9.75	$9.65	$0.00	$81.85
	6/7/2027	$53.40	$10.65	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$55.00	$10.65	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.68	$10.65	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.35	$10.65	$9.75	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: CONCRETE CUTTER/SAWYER LABORERS LABORERS - ZONE 2	12/1/2025	$49.00	$10.65	$9.75	$9.65	$0.00	$79.05
	6/1/2026	$50.55	$10.65	$9.75	$9.65	$0.00	$80.60
	12/7/2026	$52.05	$10.65	$9.75	$9.65	$0.00	$82.10
	6/7/2027	$53.65	$10.65	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.25	$10.65	$9.75	$9.65	$0.00	$85.30
	6/5/2028	$56.93	$10.65	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.60	$10.65	$9.75	$9.65	$0.00	$88.65

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"							
DEMO: JACKHAMMER OPERATOR LABORERS LABORERS - ZONE 2	12/1/2025	$48.75	$10.65	$9.75	$9.65	$0.00	$78.80
	6/1/2026	$50.30	$10.65	$9.75	$9.65	$0.00	$80.35
	12/7/2026	$51.80	$10.65	$9.75	$9.65	$0.00	$81.85
	6/7/2027	$53.40	$10.65	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$55.00	$10.65	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.68	$10.65	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.35	$10.65	$9.75	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: WRECKING LABORER LABORERS LABORERS - ZONE 2	12/1/2025	$48.00	$10.65	$9.75	$9.65	$0.00	$78.05
	6/1/2026	$49.55	$10.65	$9.75	$9.65	$0.00	$79.60
	12/7/2026	$51.05	$10.65	$9.75	$9.65	$0.00	$81.10
	6/7/2027	$52.65	$10.65	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.25	$10.65	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.93	$10.65	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.60	$10.65	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DIRECTIONAL DRILL MACHINE OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$78.11	$10.08	$11.62	$10.04	$0.00	$109.85
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A $69.83, 3A $91.79,4A $102.14 Total Rate							
DIVER TENDER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A $54.20, 3A $73.93,4A $82.05 Total Rate							
DIVER TENDER (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$83.69	$10.08	$11.62	$12.67	$0.00	$118.06
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888 DRAWBRIDGE - SEIU LOCAL 888	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53
ELECTRICIAN ELECTRICIANS LOCAL 103 ELECTRICIANS LOCAL 103	3/1/2026	$66.86	$13.00	$14.64	$9.00	$0.00	$103.50
	9/1/2026	$68.78	$13.00	$14.69	$9.00	$0.00	$105.47
	3/1/2027	$69.97	$13.00	$14.73	$9.00	$0.00	$106.70

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	9/1/2027	$71.88	$13.00	$14.79	$9.00	$0.00	$108.67
	3/1/2028	$73.08	$13.00	$14.82	$9.00	$0.00	$109.90

Apprentice: ELECTRICIAN

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$26.74	$13.00	$0.80	$0.00	$0.00	$40.54
2	40.00	$26.74	$13.00	$0.80	$0.00	$0.00	$40.54
3	45.00	$30.09	$13.00	$13.53	$4.05	$0.00	$60.67
4	45.00	$30.09	$13.00	$13.53	$4.05	$0.00	$60.67
5	50.00	$33.43	$13.00	$13.63	$4.50	$0.00	$64.56
6	55.00	$36.77	$13.00	$13.73	$4.95	$0.00	$68.45
7	60.00	$40.12	$13.00	$13.83	$5.40	$0.00	$72.35
8	65.00	$43.46	$13.00	$13.93	$5.85	$0.00	$76.24
9	70.00	$46.80	$13.00	$14.03	$6.30	$0.00	$80.13
10	75.00	$50.15	$13.00	$14.13	$6.75	$0.00	$84.03

Apprentice: ELECTRICIAN

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$27.51	$13.00	$0.83	$0.00	$0.00	$41.34
2	40.00	$27.51	$13.00	$0.83	$0.00	$0.00	$41.34
3	45.00	$30.95	$13.00	$13.56	$4.05	$0.00	$61.56
4	45.00	$30.95	$13.00	$13.56	$4.05	$0.00	$61.56
5	50.00	$34.39	$13.00	$13.66	$4.50	$0.00	$65.55
6	55.00	$37.83	$13.00	$13.76	$4.95	$0.00	$69.54
7	60.00	$41.27	$13.00	$13.87	$5.40	$0.00	$73.54
8	65.00	$44.71	$13.00	$13.97	$5.85	$0.00	$77.53
9	70.00	$48.15	$13.00	$14.07	$6.30	$0.00	$81.52
10	75.00	$51.59	$13.00	$14.18	$6.75	$0.00	$85.52

Apprentice Notes

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Apprentice to Journeyworker Ratio: 2:3

ELEVATOR CONSTRUCTOR	1/1/2026	$77.26	$16.38	$11.06	$10.70	$0.00	$115.40
ELEVATOR CONSTRUCTORS LOCAL 4							
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	$80.55	$16.48	$11.16	$11.00	$0.00	$119.19

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$38.63	$0.00	$0.00	$0.00	$0.00	$38.63
2	55.00	$42.49	$16.38	$11.06	$10.70	$0.00	$80.63
3	65.00	$50.22	$16.38	$11.06	$10.70	$0.00	$88.36
4	70.00	$54.08	$16.38	$11.06	$10.70	$0.00	$92.22
5	80.00	$61.81	$16.38	$11.06	$10.70	$0.00	$99.95

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$40.28	$0.00	$0.00	$0.00	$0.00	$40.28
2	55.00	$44.30	$16.48	$11.16	$11.00	$0.00	$82.94
3	65.00	$52.36	$16.48	$11.16	$11.00	$0.00	$91.00
4	70.00	$56.39	$16.48	$11.16	$11.00	$0.00	$95.03
5	80.00	$64.44	$16.48	$11.16	$11.00	$0.00	$103.08

Apprentice to Journeyworker Ratio: 1:1

ELEVATOR CONSTRUCTOR HELPER ELEVATOR CONSTRUCTORS LOCAL 4 ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2026	$54.08	$16.38	$11.06	$10.07	$0.00	$91.59
	1/1/2027	$56.39	$16.48	$11.16	$11.00	$0.00	$95.03
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"							
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	$40.72	$10.65	$9.75	$9.21	$0.00	$70.33
	6/1/2026	$42.16	$10.65	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.60	$10.65	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	11/1/2025	$53.56	$16.05	$13.25	$3.25	$0.00	$86.11
	5/1/2026	$55.00	$16.05	$13.25	$3.25	$0.00	$87.55
	11/1/2026	$56.29	$16.05	$13.25	$3.25	$0.00	$88.84
	5/1/2027	$57.72	$16.05	$13.25	$3.25	$0.00	$90.27
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	11/1/2025	$55.17	$16.05	$13.25	$3.25	$0.00	$87.72
	5/1/2026	$56.62	$16.05	$13.25	$3.25	$0.00	$89.17
	11/1/2026	$57.92	$16.05	$13.25	$3.25	$0.00	$90.47
	5/1/2027	$59.37	$16.05	$13.25	$3.25	$0.00	$91.92
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	11/1/2025	$26.03	$16.05	$13.25	$3.25	$0.00	$58.58
	5/1/2026	$26.88	$16.05	$13.25	$3.25	$0.00	$59.43
	11/1/2026	$27.64	$16.05	$13.25	$3.25	$0.00	$60.19
	5/1/2027	$28.49	$16.05	$13.25	$3.25	$0.00	$61.04

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIRE ALARM INSTALLER	3/1/2026	$66.86	$13.00	$14.64	$9.00	$0.00	$103.50
ELECTRICIANS LOCAL 103	9/1/2026	$68.78	$13.00	$14.69	$9.00	$0.00	$105.47
ELECTRICIANS LOCAL 103	3/1/2027	$69.97	$13.00	$14.73	$9.00	$0.00	$106.70
	9/1/2027	$71.88	$13.00	$14.79	$9.00	$0.00	$108.67
	3/1/2028	$73.08	$13.00	$14.82	$9.00	$0.00	$109.90
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	3/1/2026	$53.49	$13.00	$14.23	$7.20	$0.00	$87.92
/ COMMISSIONING	9/1/2026	$55.02	$13.00	$14.28	$7.20	$0.00	$89.50
ELECTRICIANS LOCAL 103	3/1/2027	$55.98	$13.00	$14.31	$7.20	$0.00	$90.49
ELECTRICIANS LOCAL 103	9/1/2027	$57.50	$13.00	$14.36	$7.20	$0.00	$92.06
	3/1/2028	$58.46	$13.00	$14.38	$7.20	$0.00	$93.04
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"							
FIREMAN (ASST. ENGINEER)	12/1/2025	$47.09	$16.55	$13.35	$3.25	$0.00	$80.24
OPERATING ENGINEERS LOCAL 4	6/1/2026	$48.15	$16.55	$13.35	$3.25	$0.00	$81.30
OPERATING ENGINEERS LOCAL 4	12/1/2026	$49.33	$16.55	$13.35	$3.25	$0.00	$82.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FLAGGER & SIGNALER (HEAVY & HIGHWAY)	12/1/2025	$28.09	$10.65	$9.75	$9.21	$0.00	$57.70
LABORERS	6/1/2026	$29.21	$10.65	$9.75	$9.21	$0.00	$58.82
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$29.21	$10.65	$9.75	$9.21	$0.00	$58.82
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
FLOORCOVERER	3/1/2026	$59.24	$10.33	$11.47	$8.80	$0.00	$89.84
FLOORCOVERERS LOCAL 2168	9/1/2026	$60.74	$10.33	$11.47	$8.80	$0.00	$91.34
FLOORCOVERERS LOCAL 2168 ZONE I	3/1/2027	$62.24	$10.33	$11.47	$8.80	$0.00	$92.84

Apprentice: FLOORCOVERER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$26.66	$10.33	$0.00	$1.76	$0.00	$38.75
2	45.00	$26.66	$10.33	$0.00	$1.76	$0.00	$38.75
3	55.00	$32.58	$10.33	$0.00	$3.52	$0.00	$46.43
4	55.00	$32.58	$10.33	$0.00	$3.52	$0.00	$46.43
5	70.00	$41.47	$10.33	$11.47	$5.28	$0.00	$68.55
6	70.00	$41.47	$10.33	$11.47	$5.28	$0.00	$68.55
7	80.00	$47.39	$10.33	$11.47	$7.04	$0.00	$76.23
8	80.00	$47.39	$10.33	$11.47	$7.04	$0.00	$76.23

Apprentice: FLOORCOVERER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: FLOORCOVERER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$27.33	$10.33	$0.00	$1.76	$0.00	$39.42
2	45.00	$27.33	$10.33	$0.00	$1.76	$0.00	$39.42
3	55.00	$33.41	$10.33	$0.00	$3.52	$0.00	$47.26
4	55.00	$33.41	$10.33	$0.00	$3.52	$0.00	$47.26
5	70.00	$42.52	$10.33	$11.47	$5.28	$0.00	$69.60
6	70.00	$42.52	$10.33	$11.47	$5.28	$0.00	$69.60
7	80.00	$48.59	$10.33	$11.47	$7.04	$0.00	$77.43
8	80.00	$48.59	$10.33	$11.47	$7.04	$0.00	$77.43

Apprentice Notes

Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

FORK LIFT/CHERRY PICKER	12/1/2025	$58.68	$16.55	$13.35	$3.25	$0.00	$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.98	$16.55	$13.35	$3.25	$0.00	$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	$61.43	$16.55	$13.35	$3.25	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
GENERATOR/LIGHTING PLANT/HEATERS	12/1/2025	$37.37	$16.55	$13.35	$3.25	$0.00	$70.52
OPERATING ENGINEERS LOCAL 4	6/1/2026	$38.23	$16.55	$13.35	$3.25	$0.00	$71.38
OPERATING ENGINEERS LOCAL 4	12/1/2026	$39.18	$16.55	$13.35	$3.25	$0.00	$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	1/1/2026	$49.06	$10.35	$12.00	$12.60	$0.00	$84.01
GLAZIERS LOCAL 35							
GLAZIERS LOCAL 35 (ZONE 2)							

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.53	$10.35	$0.00	$0.00	$0.00	$34.88
2	55.00	$26.98	$10.35	$0.00	$6.88	$0.00	$44.21
3	60.00	$29.44	$10.35	$0.00	$7.50	$0.00	$47.29
4	65.00	$31.89	$10.35	$0.00	$8.13	$0.00	$50.37
5	70.00	$34.34	$10.35	$12.00	$8.75	$0.00	$65.44
6	75.00	$36.80	$10.35	$12.00	$9.38	$0.00	$68.53
7	80.00	$39.25	$10.35	$12.00	$10.00	$0.00	$71.60
8	90.00	$44.15	$10.35	$12.00	$11.25	$0.00	$77.75

Apprentice to Journeyworker Ratio: 1:1

HOISTING ENGINEER/CRANES/GRADALLS	12/1/2025	$58.68	$16.55	$13.35	$3.25	$0.00	$91.83

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.98	$16.55	$13.35	$3.25	$0.00	$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	$61.43	$16.55	$13.35	$3.25	$0.00	$94.58

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$32.88	$0.00	$0.00	$0.00	$0.00	$32.88
2	60.00	$35.87	$16.05	$13.25	$3.25	$0.00	$68.42
3	65.00	$38.86	$16.05	$13.25	$3.25	$0.00	$71.41
4	70.00	$41.85	$16.05	$13.25	$3.25	$0.00	$74.40
5	75.00	$44.84	$16.05	$13.25	$3.25	$0.00	$77.39
6	80.00	$47.82	$16.05	$13.25	$3.25	$0.00	$80.37
7	85.00	$50.81	$16.05	$13.25	$3.25	$0.00	$83.36
8	90.00	$53.80	$16.05	$13.25	$3.25	$0.00	$86.35

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$32.99	$0.00	$0.00	$0.00	$0.00	$32.99
2	60.00	$35.99	$16.55	$13.35	$3.25	$0.00	$69.14
3	65.00	$38.99	$16.55	$13.35	$3.25	$0.00	$72.14
4	70.00	$41.99	$16.55	$13.35	$3.25	$0.00	$75.14
5	75.00	$44.99	$16.55	$13.35	$3.25	$0.00	$78.14
6	80.00	$47.98	$16.55	$13.35	$3.25	$0.00	$81.13
7	85.00	$50.98	$16.55	$13.35	$3.25	$0.00	$84.13
8	90.00	$53.98	$16.55	$13.35	$3.25	$0.00	$87.13

Apprentice to Journeyworker Ratio: 1:6

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 SHEETMETAL WORKERS LOCAL 17 - A	2/1/2026	$62.93	$14.91	$18.74	$9.53	$2.98	$109.09
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103 ELECTRICIANS LOCAL 103	3/1/2026	$66.86	$13.00	$14.64	$9.00	$0.00	$103.50
	9/1/2026	$68.78	$13.00	$14.69	$9.00	$0.00	$105.47
	3/1/2027	$69.97	$13.00	$14.73	$9.00	$0.00	$106.70
	9/1/2027	$71.88	$13.00	$14.79	$9.00	$0.00	$108.67
	3/1/2028	$73.08	$13.00	$14.82	$9.00	$0.00	$109.90
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 SHEETMETAL WORKERS LOCAL 17 - A	2/1/2026	$62.93	$14.91	$18.74	$9.53	$2.98	$109.09
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER)	3/1/2026	$70.58	$13.95	$14.00	$9.55	$0.00	$108.08

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PIPEFITTERS LOCAL 537 PIPEFITTERS LOCAL 537							
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC PIPEFITTERS LOCAL 537 PIPEFITTERS LOCAL 537	3/1/2026	$70.58	$13.95	$14.00	$9.55	$0.00	$108.08
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HYDRAULIC DRILLS LABORERS LABORERS - ZONE 2	12/1/2025	$41.22	$10.65	$9.75	$9.11	$0.00	$70.73
	6/1/2026	$42.66	$10.65	$9.75	$9.11	$0.00	$72.17
	12/1/2026	$44.10	$10.65	$9.75	$9.11	$0.00	$73.61
	6/1/2027	$45.55	$10.65	$9.75	$9.11	$0.00	$75.06
	12/1/2027	$47.00	$10.65	$9.75	$9.11	$0.00	$76.51
	6/1/2028	$48.50	$10.65	$9.75	$9.11	$0.00	$78.01
	12/1/2028	$50.00	$10.65	$9.75	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	$41.22	$10.65	$9.75	$9.21	$0.00	$70.83
	6/1/2026	$42.66	$10.65	$9.75	$9.21	$0.00	$72.27
	12/1/2026	$44.10	$10.65	$9.75	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	9/1/2025	$60.34	$14.75	$9.52	$10.09	$0.00	$94.70
	9/1/2026	$63.76	$14.75	$9.52	$10.09	$0.00	$98.12

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$30.17	$14.75	$9.27	$5.05	$0.00	$59.24
2	60.00	$36.20	$14.75	$9.32	$6.05	$0.00	$66.32
3	70.00	$42.24	$14.75	$9.37	$7.06	$0.00	$73.42
4	80.00	$48.27	$14.75	$9.42	$8.07	$0.00	$80.51

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$31.88	$14.75	$9.27	$5.05	$0.00	$60.95
2	60.00	$38.26	$14.75	$9.32	$6.05	$0.00	$68.38
3	70.00	$44.63	$14.75	$9.37	$7.06	$0.00	$75.81
4	80.00	$51.01	$14.75	$9.42	$8.07	$0.00	$83.25

Apprentice to Journeyworker Ratio: 1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 7	9/16/2025	$57.87	$9.05	$12.75	$14.50	$0.00	$94.17

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
IRONWORKERS LOCAL 7 (BOSTON AREA)							

Apprentice: IRONWORKER/WELDER

Effective Date: 9/16/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$34.72	$9.05	$12.75	$4.50	$0.00	$61.02
2	75.00	$43.40	$9.05	$12.75	$4.50	$0.00	$69.70
3	85.00	$49.19	$9.05	$12.75	$4.50	$0.00	$75.49
4	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Apprentice to Journeyworker Ratio: 1:4

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS LABORERS - ZONE 2	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS LABORERS - ZONE 2	12/1/2025	$40.47	$10.65	$9.75	$9.11	$0.00	$69.98
	6/1/2026	$41.91	$10.65	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.35	$10.65	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.80	$10.65	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.25	$10.65	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.75	$10.65	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.25	$10.65	$9.75	$9.11	$0.00	$78.76

Apprentice: LABORER

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.03	$10.15	$9.50	$9.11	$0.00	$53.79
2	70.00	$29.20	$10.15	$9.50	$9.11	$0.00	$57.96
3	80.00	$33.38	$10.15	$9.50	$9.11	$0.00	$62.14
4	90.00	$37.55	$10.15	$9.50	$9.11	$0.00	$66.31

Apprentice: LABORER

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.15	$10.65	$9.75	$9.11	$0.00	$54.66

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: LABORER

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	70.00	$29.34	$10.65	$9.75	$9.11	$0.00	$58.85
3	80.00	$33.53	$10.65	$9.75	$9.11	$0.00	$63.04
4	90.00	$37.72	$10.65	$9.75	$9.11	$0.00	$67.23

Apprentice to Journeyworker Ratio: 1:5

LABORER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	$40.47	$10.65	$9.75	$9.21	$0.00	$70.08
	6/1/2026	$41.91	$10.65	$9.75	$9.21	$0.00	$71.52
	12/1/2026	$43.35	$10.65	$9.75	$9.21	$0.00	$72.96

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.03	$10.15	$9.50	$9.21	$0.00	$53.89
2	70.00	$29.20	$10.15	$9.50	$9.21	$0.00	$58.06
3	80.00	$33.38	$10.15	$9.50	$9.21	$0.00	$62.24
4	90.00	$37.55	$10.15	$9.50	$9.21	$0.00	$66.41

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.15	$10.65	$9.75	$9.21	$0.00	$54.76
2	70.00	$29.34	$10.65	$9.75	$9.21	$0.00	$58.95
3	80.00	$33.53	$10.65	$9.75	$9.21	$0.00	$63.14
4	90.00	$37.72	$10.65	$9.75	$9.10	$0.00	$67.22

Apprentice to Journeyworker Ratio: 1:5

LABORER: CARPENTER TENDER LABORERS LABORERS - ZONE 2	12/1/2025	$40.47	$10.65	$9.75	$9.11	$0.00	$69.98
	6/1/2026	$41.91	$10.65	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.35	$10.65	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.80	$10.65	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.25	$10.65	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.75	$10.65	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.25	$10.65	$9.75	$9.11	$0.00	$78.76

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS LABORERS - ZONE 2	12/1/2025	$40.47	$10.65	$9.75	$9.11	$0.00	$69.98
	6/1/2026	$41.91	$10.65	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.35	$10.65	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.80	$10.65	$9.75	$9.11	$0.00	$74.31

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2027	$46.25	$10.65	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.75	$10.65	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.25	$10.65	$9.75	$9.11	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS LABORERS - ZONE 2	12/1/2025	$40.56	$10.65	$9.75	$9.65	$0.00	$70.61
	6/1/2026	$42.00	$10.65	$9.75	$9.65	$0.00	$72.05
	12/7/2026	$43.44	$10.65	$9.75	$9.65	$0.00	$73.49
	6/7/2027	$44.89	$10.65	$9.75	$9.65	$0.00	$74.94
	12/6/2027	$46.34	$10.65	$9.75	$9.65	$0.00	$76.39
	6/5/2028	$47.84	$10.65	$9.75	$9.65	$0.00	$77.89
	12/4/2028	$49.34	$10.65	$9.75	$9.65	$0.00	$79.39
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER LABORERS LABORERS - ZONE 2	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	$40.72	$10.65	$9.75	$9.21	$0.00	$70.33
	6/1/2026	$42.16	$10.65	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.60	$10.65	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
LABORER: MULTI-TRADE TENDER LABORERS LABORERS - ZONE 2	12/1/2025	$40.47	$10.65	$9.75	$9.11	$0.00	$69.98
	6/1/2026	$41.91	$10.65	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.35	$10.65	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.80	$10.65	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.25	$10.65	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.75	$10.65	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.25	$10.65	$9.75	$9.11	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: TREE REMOVER LABORERS LABORERS - ZONE 2	12/1/2025	$40.47	$10.65	$9.75	$9.11	$0.00	$69.98
	6/1/2026	$41.91	$10.65	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.35	$10.65	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.80	$10.65	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.25	$10.65	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.75	$10.65	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.25	$10.65	$9.75	$9.11	$0.00	$78.76
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"							
LASER BEAM OPERATOR LABORERS LABORERS - ZONE 2	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
LASER BEAM OPERATOR (HEAVY & HIGHWAY)	12/1/2025	$40.72	$10.65	$9.75	$9.21	$0.00	$70.33
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$42.16	$10.65	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.60	$10.65	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
MARBLE & TILE FINISHERS	2/1/2026	$52.08	$12.84	$15.57	$5.78	$0.00	$86.27
BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	$53.84	$12.84	$15.57	$5.78	$0.00	$88.03
	2/1/2027	$54.96	$12.84	$15.57	$5.78	$0.00	$89.15

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.04	$12.84	$15.57	$5.78	$0.00	$60.23
2	60.00	$31.25	$12.84	$15.57	$5.78	$0.00	$65.44
3	70.00	$36.46	$12.84	$15.57	$5.78	$0.00	$70.65
4	80.00	$41.66	$12.84	$15.57	$5.78	$0.00	$75.85
5	90.00	$46.87	$12.84	$15.57	$5.78	$0.00	$81.06

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.92	$12.84	$15.57	$5.78	$0.00	$61.11
2	60.00	$32.30	$12.84	$15.57	$5.78	$0.00	$66.49
3	70.00	$37.69	$12.84	$15.57	$5.78	$0.00	$71.88
4	80.00	$43.07	$12.84	$15.57	$5.78	$0.00	$77.26
5	90.00	$48.46	$12.84	$15.57	$5.78	$0.00	$82.65

Apprentice to Journeyworker Ratio: 1:5

MARBLE MASONS,TILELAYERS & TERRAZZO MECH	2/1/2026	$67.97	$12.84	$15.57	$7.99	$0.00	$104.37
BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	$70.17	$12.84	$15.57	$7.99	$0.00	$106.57
	2/1/2027	$71.57	$12.84	$15.57	$7.99	$0.00	$107.97

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.99	$12.84	$15.57	$7.99	$0.00	$70.39
2	60.00	$40.78	$12.84	$15.57	$7.99	$0.00	$77.18

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH							
Effective Date: 2/1/2026							
Step / Percent		**Apprentice Base Wage**	**Health**	**Pension**	**Annuity**	**Supplemental Unemployment**	**Total Rate**
3 / 70.00		$47.58	$12.84	$15.57	$7.99	$0.00	$83.98
4 / 80.00		$54.38	$12.84	$15.57	$7.99	$0.00	$90.78
5 / 90.00		$61.17	$12.84	$15.57	$7.99	$0.00	$97.57

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH							
Effective Date: 8/1/2026							
Step / Percent		**Apprentice Base Wage**	**Health**	**Pension**	**Annuity**	**Supplemental Unemployment**	**Total Rate**
1 / 50.00		$35.09	$12.84	$15.57	$7.99	$0.00	$71.49
2 / 60.00		$42.10	$12.84	$15.57	$7.99	$0.00	$78.50
3 / 70.00		$49.12	$12.84	$15.57	$7.99	$0.00	$85.52
4 / 80.00		$56.14	$12.84	$15.57	$7.99	$0.00	$92.54
5 / 90.00		$63.15	$12.84	$15.57	$7.99	$0.00	$99.55
Apprentice to Journeyworker Ratio: 1:5							
MECH. SWEEPER OPERATOR (ON CONST. SITES)	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
MECHANICS MAINTENANCE	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
MILLWRIGHT (Zone 1)	1/5/2026	$52.47	$10.58	$11.47	$10.25	$0.00	$84.77
MILLWRIGHTS LOCAL 1121							
MILLWRIGHTS LOCAL 1121 - Zone 1							

Apprentice: MILLWRIGHT (Zone 1)							
Effective Date: 1/5/2026							
Step / Percent		**Apprentice Base Wage**	**Health**	**Pension**	**Annuity**	**Supplemental Unemployment**	**Total Rate**
1 / 55.00		$28.86	$10.58	$0.00	$5.64	$0.00	$45.08
2 / 65.00		$34.11	$10.58	$0.00	$6.66	$0.00	$51.35
3 / 75.00		$39.35	$10.58	$11.47	$7.69	$0.00	$69.09
4 / 85.00		$44.60	$10.58	$11.47	$8.71	$0.00	$75.36

Apprentice Notes

Step 1&2 Appr. indentured after 1/6/2020 receive no pension,

Apprentice to Journeyworker Ratio: 1:4

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
MORTAR MIXER LABORERS LABORERS - ZONE 2	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$25.08	$16.55	$13.35	$3.25	$0.00	$58.23
	6/1/2026	$25.67	$16.55	$13.35	$3.25	$0.00	$58.82
	12/1/2026	$26.34	$16.55	$13.35	$3.25	$0.00	$59.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$31.05	$16.55	$13.35	$3.25	$0.00	$64.20
	6/1/2026	$31.77	$16.55	$13.35	$3.25	$0.00	$64.92
	12/1/2026	$32.57	$16.55	$13.35	$3.25	$0.00	$65.72
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$59.56	$10.35	$12.00	$12.50	$0.00	$94.41

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$50.46	$10.35	$12.00	$12.60	$0.00	$85.41

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$25.23	$10.35	$0.00	$0.00	$0.00	$35.58
2	55.00	$27.75	$10.35	$0.00	$6.93	$0.00	$45.03
3	60.00	$30.28	$10.35	$0.00	$7.56	$0.00	$48.19
4	65.00	$32.80	$10.35	$0.00	$8.19	$0.00	$51.34
5	70.00	$35.32	$10.35	$12.00	$8.82	$0.00	$66.49
6	75.00	$37.85	$10.35	$12.00	$9.45	$0.00	$69.65
7	80.00	$40.37	$10.35	$12.00	$10.08	$0.00	$72.80
8	90.00	$45.41	$10.35	$12.00	$11.34	$0.00	$79.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$48.52	$10.35	$12.00	$12.60	$0.00	$83.47

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.26	$10.35	$0.00	$0.00	$0.00	$34.61
2	55.00	$26.69	$10.35	$0.00	$6.93	$0.00	$43.97
3	60.00	$29.11	$10.35	$0.00	$7.56	$0.00	$47.02
4	65.00	$31.54	$10.35	$0.00	$8.19	$0.00	$50.08
5	70.00	$33.96	$10.35	$12.00	$8.82	$0.00	$65.13
6	75.00	$36.39	$10.35	$12.00	$9.45	$0.00	$68.19
7	80.00	$38.82	$10.35	$12.00	$10.08	$0.00	$71.25
8	90.00	$43.67	$10.35	$12.00	$11.34	$0.00	$77.36

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$49.06	$10.35	$12.00	$12.60	$0.00	$84.01

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.53	$10.35	$0.00	$0.00	$0.00	$34.88
2	55.00	$26.98	$10.35	$0.00	$6.93	$0.00	$44.26
3	60.00	$29.44	$10.35	$0.00	$7.56	$0.00	$47.35

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: PAINTER / TAPER (BRUSH, NEW) *							
Effective Date: 1/1/2026							
Step / Percent		**Apprentice Base Wage**					
4 / 65.00		$31.89	$10.35	$0.00	$8.19	$0.00	$50.43
5 / 70.00		$34.34	$10.35	$12.00	$8.82	$0.00	$65.51
6 / 75.00		$36.80	$10.35	$12.00	$9.45	$0.00	$68.60
7 / 80.00		$39.25	$10.35	$12.00	$10.08	$0.00	$71.68
8 / 90.00		$44.15	$10.35	$12.00	$11.34	$0.00	$77.84
Apprentice to Journeyworker Ratio: 1:1							
PAINTER / TAPER (BRUSH, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$47.12	$10.35	$12.00	$12.60	$0.00	$82.07
Apprentice: PAINTER / TAPER (BRUSH, REPAINT)							
Effective Date: 1/1/2026							
Step / Percent		**Apprentice Base Wage**					
1 / 50.00		$23.56	$10.35	$0.00	$0.00	$0.00	$33.91
2 / 55.00		$25.92	$10.35	$0.00	$6.93	$0.00	$43.20
3 / 60.00		$28.27	$10.35	$0.00	$7.56	$0.00	$46.18
4 / 65.00		$30.63	$10.35	$0.00	$8.19	$0.00	$49.17
5 / 70.00		$32.98	$10.35	$12.00	$8.82	$0.00	$64.15
6 / 75.00		$35.34	$10.35	$12.00	$9.45	$0.00	$67.14
7 / 80.00		$37.70	$10.35	$12.00	$10.08	$0.00	$70.13
8 / 90.00		$42.41	$10.35	$12.00	$11.34	$0.00	$76.10
Apprentice to Journeyworker Ratio: 1:1							
PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	$40.47	$10.65	$9.75	$9.21	$0.00	$70.08
	6/1/2026	$41.91	$10.65	$9.75	$9.21	$0.00	$71.52
	12/1/2026	$43.35	$10.65	$9.75	$9.21	$0.00	$72.96
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$40.78	$16.17	$21.78	$0.00	$0.00	$78.73
	6/1/2026	$41.78	$16.17	$21.78	$0.00	$0.00	$79.73
	12/1/2026	$41.78	$16.17	$23.52	$0.00	$0.00	$81.47
	1/1/2027	$41.78	$16.77	$23.52	$0.00	$0.00	$82.07
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16
For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: PILE DRIVER

Effective Date: 8/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$25.11	$10.08	$0.00	$2.53	$0.00	$37.72
2	55.00	$30.68	$10.08	$0.00	$5.07	$0.00	$45.83
3	70.00	$39.05	$10.08	$11.62	$7.60	$0.00	$68.35
4	80.00	$44.63	$10.08	$11.62	$10.14	$0.00	$76.47

Apprentice to Journeyworker Ratio: 1:5

PIPEFITTER & STEAMFITTER PIPEFITTERS LOCAL 537 PIPEFITTERS LOCAL 537	3/1/2026	$70.58	$13.95	$14.00	$9.55	$0.00	$108.08

Apprentice: PIPEFITTER & STEAMFITTER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$28.23	$13.95	$0.30	$9.55	$0.00	$52.03
2	45.00	$31.76	$13.95	$14.00	$9.55	$0.00	$69.26
3	60.00	$42.35	$13.95	$14.00	$9.55	$0.00	$79.85
4	70.00	$49.41	$13.95	$14.00	$9.55	$0.00	$86.91
5	80.00	$56.46	$13.95	$14.00	$9.55	$0.00	$93.96

Apprentice to Journeyworker Ratio: 1:3

PIPELAYER LABORERS LABORERS - ZONE 2	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
PIPELAYER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	$40.72	$10.65	$9.75	$9.21	$0.00	$70.33
	6/1/2026	$42.16	$10.65	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.60	$10.65	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
PLUMBERS & GASFITTERS PLUMBERS & GASFITTERS LOCAL 12 PLUMBERS & GASFITTERS LOCAL 12	3/2/2026	$73.89	$14.32	$12.61	$8.00	$0.00	$108.82
	8/31/2026	$76.04	$14.32	$12.61	$8.00	$0.00	$110.97
	3/1/2027	$78.19	$14.32	$12.61	$8.00	$0.00	$113.12
	8/30/2027	$80.34	$14.32	$12.61	$8.00	$0.00	$115.27
	2/28/2028	$82.54	$14.32	$12.61	$8.00	$0.00	$117.47
	9/4/2028	$84.74	$14.32	$12.61	$8.00	$0.00	$119.67
	3/5/2029	$86.94	$14.32	$12.61	$8.00	$0.00	$121.87

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	9/3/2029	$89.14	$14.32	$12.61	$8.00	$0.00	$124.07
	3/4/2030	$91.09	$14.32	$12.61	$8.00	$0.00	$126.02

Apprentice: PLUMBERS & GASFITTERS

Effective Date: 3/2/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	$25.86	$14.32	$4.61	$2.80	$0.00	$47.59
2	40.00	$29.56	$14.32	$5.22	$3.20	$0.00	$52.30
3	55.00	$40.64	$14.32	$7.07	$4.40	$0.00	$66.43
4	65.00	$48.03	$14.32	$8.30	$5.20	$0.00	$75.85
5	75.00	$55.42	$14.32	$9.53	$6.00	$0.00	$85.27

Apprentice: PLUMBERS & GASFITTERS

Effective Date: 8/31/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	$26.61	$14.32	$4.61	$2.80	$0.00	$48.34
2	40.00	$30.42	$14.32	$5.22	$3.20	$0.00	$53.16
3	55.00	$41.82	$14.32	$7.07	$5.20	$0.00	$68.41
4	65.00	$49.43	$14.32	$8.30	$5.20	$0.00	$77.25
5	75.00	$57.03	$14.32	$9.53	$6.00	$0.00	$86.88

Apprentice to Journeyworker Ratio: 1:2

PNEUMATIC CONTROLS (TEMP.) PIPEFITTERS LOCAL 537 PIPEFITTERS LOCAL 537	3/1/2026	$70.58	$13.95	$14.00	$9.55	$0.00	$108.08

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

PNEUMATIC DRILL/TOOL OPERATOR LABORERS LABORERS - ZONE 2	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	$40.72	$10.65	$9.75	$9.21	$0.00	$70.33
	6/1/2026	$42.16	$10.65	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.60	$10.65	$9.75	$9.21	$0.00	$73.21

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

POWDERMAN & BLASTER LABORERS LABORERS - ZONE 2	12/1/2025	$41.47	$10.65	$9.75	$9.11	$0.00	$70.98
	6/1/2026	$42.91	$10.65	$9.75	$9.11	$0.00	$72.42
	12/1/2026	$44.35	$10.65	$9.75	$9.11	$0.00	$73.86
	6/1/2027	$45.80	$10.65	$9.75	$9.11	$0.00	$75.31
	12/1/2027	$47.25	$10.65	$9.75	$9.11	$0.00	$76.76

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/1/2028	$48.75	$10.65	$9.75	$9.11	$0.00	$78.26
	12/1/2028	$50.25	$10.65	$9.75	$9.11	$0.00	$79.76
For apprentice rates see "Apprentice- LABORER"							
POWDERMAN & BLASTER (HEAVY & HIGHWAY)	12/1/2025	$41.47	$10.65	$9.75	$9.21	$0.00	$71.08
LABORERS	6/1/2026	$42.91	$10.65	$9.75	$9.21	$0.00	$72.52
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$44.35	$10.65	$9.75	$9.21	$0.00	$73.96
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
POWER SHOVEL/DERRICK/TRENCHING MACHINE	12/1/2025	$58.68	$16.55	$13.35	$3.25	$0.00	$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.98	$16.55	$13.35	$3.25	$0.00	$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	$61.43	$16.55	$13.35	$3.25	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (CONCRETE)	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (DEWATERING, OTHER)	12/1/2025	$37.37	$16.55	$13.35	$3.25	$0.00	$70.52
OPERATING ENGINEERS LOCAL 4	6/1/2026	$38.23	$16.55	$13.35	$3.25	$0.00	$71.38
OPERATING ENGINEERS LOCAL 4	12/1/2026	$39.18	$16.55	$13.35	$3.25	$0.00	$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
READY-MIX CONCRETE DRIVER	5/1/2025	$30.00	$12.00	$7.00	$0.00	$0.00	$49.00
TEAMSTERS 42 - J.G. MacLeallan (Wakefield)	5/1/2026	$30.50	$12.00	$7.00	$0.00	$0.00	$49.50
TEAMSTERS 42 - J.G. MacLeallan (Wakefield)							
RECLAIMERS	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
RIDE-ON MOTORIZED BUGGY OPERATOR	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
LABORERS	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
LABORERS - ZONE 2	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
ROLLER/SPREADER/MULCHING MACHINE	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)	2/1/2026	$53.53	$14.53	$12.67	$9.03	$0.00	$89.76
ROOFERS LOCAL 33							
ROOFERS LOCAL 33							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.77	$14.53	$6.52	$9.03	$0.00	$56.85
2	60.00	$32.12	$14.53	$12.67	$9.03	$0.00	$68.35
3	65.00	$34.79	$14.53	$12.67	$9.03	$0.00	$71.02
4	75.00	$40.15	$14.53	$12.67	$9.03	$0.00	$76.38
5	85.00	$45.50	$14.53	$12.67	$9.03	$0.00	$81.73

Apprentice Notes

** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1

Apprentice to Journeyworker Ratio: 1:5

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33 ROOFERS LOCAL 33	2/1/2026	$53.78	$14.53	$12.67	$9.03	$0.00	$90.01
For apprentice rates see "Apprentice- ROOFER"							
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 SHEETMETAL WORKERS LOCAL 17 - A	2/1/2026	$62.93	$14.91	$18.74	$9.53	$2.98	$109.09

Apprentice: SHEETMETAL WORKER

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	42.00	$26.43	$14.91	$6.19	$0.00	$0.00	$47.53
2	42.00	$26.43	$14.91	$6.19	$0.00	$0.00	$47.53
3	47.00	$29.58	$14.91	$10.93	$1.25	$1.62	$58.29
4	47.00	$29.58	$14.91	$10.93	$1.25	$1.62	$58.29
5	52.00	$32.72	$14.91	$11.66	$1.50	$1.74	$62.53
6	52.00	$32.72	$14.91	$11.66	$1.75	$1.75	$62.79
7	60.00	$37.76	$14.91	$12.84	$2.00	$1.93	$69.44
8	65.00	$40.90	$14.91	$13.58	$2.25	$2.04	$73.68
9	75.00	$47.20	$14.91	$15.06	$2.75	$2.28	$82.20
10	85.00	$53.49	$14.91	$16.53	$2.75	$2.49	$90.17

Apprentice to Journeyworker Ratio: 1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.24	$16.17	$21.78	$0.00	$0.00	$79.19
	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10	1/1/2026	$41.53	$16.17	$21.78	$0.00	$0.00	$79.48
	6/1/2026	$42.53	$16.17	$21.78	$0.00	$0.00	$80.48

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2026	$42.53	$16.17	$23.52	$0.00	$0.00	$82.22
	1/1/2027	$42.53	$16.77	$23.52	$0.00	$0.00	$82.82
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 550 SPRINKLER FITTERS LOCAL 550 - (Section B) Zone 2	1/1/2026	$64.85	$13.45	$7.45	$18.25	$0.00	$104.00

Apprentice: SPRINKLER FITTER

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	0.00	$22.70	$13.45	$13.84	$0.00	$0.00	$49.99
2	0.00	$25.94	$13.45	$14.75	$0.00	$0.00	$54.14
3	0.00	$29.18	$13.45	$15.67	$0.00	$0.00	$58.30
4	0.00	$32.43	$13.45	$16.57	$0.00	$0.00	$62.45
5	0.00	$35.67	$13.45	$17.49	$0.00	$0.00	$66.61
6	0.00	$38.91	$13.45	$18.40	$0.00	$0.00	$70.76
7	0.00	$42.15	$13.45	$19.32	$0.00	$0.00	$74.92
8	0.00	$45.40	$13.45	$20.22	$0.00	$0.00	$79.07
9	0.00	$48.64	$13.45	$21.15	$0.00	$0.00	$83.24
10	0.00	$51.88	$13.45	$22.05	$0.00	$0.00	$87.38

Apprentice Notes

Apprentice entered prior 9/30/10:

Apprentice to Journeyworker Ratio: 1:3

STEAM BOILER OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TELECOMMUNICATION TECHNICIAN TELECOMMUNICATION TECHNICIAN ELECTRICIANS LOCAL 103 ELECTRICIANS LOCAL 103	3/1/2026	$53.49	$13.00	$14.23	$7.20	$0.00	$87.92
	9/1/2026	$55.02	$13.00	$14.28	$7.20	$0.00	$89.50
	3/1/2027	$55.98	$13.00	$14.31	$7.20	$0.00	$90.49
	9/1/2027	$57.50	$13.00	$14.36	$7.20	$0.00	$92.06
	3/1/2028	$58.46	$13.00	$14.38	$7.20	$0.00	$93.04
For apprentice rates and ratios see "Apprentice- ELECTRICIAN"							

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$24.07	$13.00	$0.72	$0.00	$0.00	$37.79
2	45.00	$24.07	$13.00	$0.72	$0.00	$0.00	$37.79
3	50.00	$26.75	$13.00	$13.43	$3.60	$0.00	$56.78
4	50.00	$26.75	$13.00	$13.43	$3.60	$0.00	$56.78
5	55.00	$29.42	$13.00	$13.51	$3.96	$0.00	$59.89
6	60.00	$32.09	$13.00	$13.59	$4.32	$0.00	$63.00
7	65.00	$34.77	$13.00	$13.67	$4.68	$0.00	$66.12
8	70.00	$37.44	$13.00	$13.75	$5.04	$0.00	$69.23
9	75.00	$40.12	$13.00	$13.83	$5.40	$0.00	$72.35
10	80.00	$42.79	$13.00	$13.91	$5.76	$0.00	$75.46

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$24.76	$13.00	$0.74	$0.00	$0.00	$38.50
2	45.00	$24.76	$13.00	$0.74	$0.00	$0.00	$38.50
3	50.00	$27.51	$13.00	$13.46	$3.60	$0.00	$57.57
4	50.00	$27.51	$13.00	$13.46	$3.60	$0.00	$57.57
5	55.00	$30.26	$13.00	$13.54	$3.96	$0.00	$60.76
6	60.00	$33.01	$13.00	$13.62	$4.32	$0.00	$63.95
7	65.00	$35.76	$13.00	$13.70	$4.68	$0.00	$67.14
8	70.00	$38.51	$13.00	$13.79	$5.04	$0.00	$70.34
9	75.00	$41.27	$13.00	$13.87	$5.40	$0.00	$73.54
10	80.00	$44.02	$13.00	$13.96	$5.76	$0.00	$76.74

Apprentice to Journeyworker Ratio: 1:1

TERRAZZO FINISHERS	2/1/2026	$66.89	$12.84	$15.57	$8.02	$0.00	$103.32
BRICKLAYERS LOCAL 3	8/1/2026	$69.09	$12.84	$15.57	$8.02	$0.00	$105.52
BRICKLAYERS LOCAL 3 - MARBLE & TILE	2/1/2027	$70.49	$12.84	$15.57	$8.02	$0.00	$106.92

Apprentice: TERRAZZO FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.45	$12.84	$15.57	$8.02	$0.00	$69.88
2	60.00	$40.13	$12.84	$15.57	$8.02	$0.00	$76.56
3	70.00	$46.82	$12.84	$15.57	$8.02	$0.00	$83.25
4	80.00	$53.51	$12.84	$15.57	$8.02	$0.00	$89.94
5	90.00	$60.20	$12.84	$15.57	$8.02	$0.00	$96.63

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: TERRAZZO FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.55	$12.84	$15.57	$8.02	$0.00	$70.98
2	60.00	$41.45	$12.84	$15.57	$8.02	$0.00	$77.88
3	70.00	$48.36	$12.84	$15.57	$8.02	$0.00	$84.79
4	80.00	$55.27	$12.84	$15.57	$8.02	$0.00	$91.70
5	90.00	$62.18	$12.84	$15.57	$8.02	$0.00	$98.61

Apprentice to Journeyworker Ratio: 1:5

TEST BORING DRILLER	12/1/2025	$51.95	$10.65	$9.75	$9.80	$0.00	$82.15
LABORERS	6/1/2026	$53.50	$10.65	$9.75	$9.80	$0.00	$83.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	$55.00	$10.65	$9.75	$9.80	$0.00	$85.20
For apprentice rates see "Apprentice- LABORER"							
TEST BORING DRILLER HELPER	12/1/2025	$48.07	$10.65	$9.75	$9.80	$0.00	$78.27
LABORERS	6/1/2026	$49.62	$10.65	$9.75	$9.80	$0.00	$79.82
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.12	$10.65	$9.75	$9.80	$0.00	$81.32
For apprentice rates see "Apprentice- LABORER"							
TEST BORING LABORER	12/1/2025	$47.95	$10.65	$9.75	$9.80	$0.00	$78.15
LABORERS	6/1/2026	$49.50	$10.65	$9.75	$9.80	$0.00	$79.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.00	$10.65	$9.75	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
TRACTORS/PORTABLE STEAM GENERATORS	12/1/2025	$58.02	$16.55	$13.35	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.30	$16.55	$13.35	$3.25	$0.00	$92.45
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.74	$16.55	$13.35	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TRAILERS FOR EARTH MOVING EQUIPMENT	1/1/2026	$41.82	$16.17	$21.78	$0.00	$0.00	$79.77
TEAMSTERS JOINT COUNCIL NO. 10	6/1/2026	$42.82	$16.17	$21.78	$0.00	$0.00	$80.77
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2026	$42.82	$16.17	$23.52	$0.00	$0.00	$82.51
	1/1/2027	$42.82	$16.77	$23.52	$0.00	$0.00	$83.11
TUNNEL WORK - COMPRESSED AIR	12/1/2025	$60.18	$10.65	$9.75	$10.25	$0.00	$90.83
LABORERS	6/1/2026	$61.73	$10.65	$9.75	$10.25	$0.00	$92.38
LABORERS (COMPRESSED AIR)	12/1/2026	$63.23	$10.65	$9.75	$10.25	$0.00	$93.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)	12/1/2025	$62.18	$10.65	$9.75	$10.25	$0.00	$92.83
LABORERS	6/1/2026	$63.73	$10.65	$9.75	$10.25	$0.00	$94.38
LABORERS (COMPRESSED AIR)	12/1/2026	$65.23	$10.65	$9.75	$10.25	$0.00	$95.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR	12/1/2025	$52.25	$10.65	$9.75	$10.25	$0.00	$82.90

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS	6/1/2026	$53.80	$10.65	$9.75	$10.25	$0.00	$84.45
LABORERS (FREE AIR TUNNEL)	12/1/2026	$55.30	$10.65	$9.75	$10.25	$0.00	$85.95
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE)	12/1/2025	$54.25	$10.65	$9.75	$10.25	$0.00	$84.90
LABORERS	6/1/2026	$55.80	$10.65	$9.75	$10.25	$0.00	$86.45
LABORERS (FREE AIR TUNNEL)	12/1/2026	$57.30	$10.65	$9.75	$10.25	$0.00	$87.95
For apprentice rates see "Apprentice- LABORER"							
VAC-HAUL	1/1/2026	$41.24	$16.17	$21.78	$0.00	$0.00	$79.19
TEAMSTERS JOINT COUNCIL NO. 10	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
WAGON DRILL OPERATOR	12/1/2025	$40.72	$10.65	$9.75	$9.11	$0.00	$70.23
LABORERS	6/1/2026	$42.16	$10.65	$9.75	$9.11	$0.00	$71.67
LABORERS - ZONE 2	12/1/2026	$43.60	$10.65	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$45.05	$10.65	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.50	$10.65	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$48.00	$10.65	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.50	$10.65	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
WAGON DRILL OPERATOR (HEAVY & HIGHWAY)	12/1/2025	$40.72	$10.65	$9.75	$9.21	$0.00	$70.33
LABORERS	6/1/2026	$42.16	$10.65	$9.75	$9.21	$0.00	$71.77
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$43.60	$10.65	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
WASTE WATER PUMP OPERATOR	12/1/2025	$58.68	$16.55	$13.35	$3.25	$0.00	$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.98	$16.55	$13.35	$3.25	$0.00	$93.13
OPERATING ENGINEERS LOCAL 4	12/1/2026	$61.43	$16.55	$13.35	$3.25	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
WATER METER INSTALLER	3/2/2026	$73.89	$14.32	$12.61	$8.00	$0.00	$108.82
PLUMBERS & GASFITTERS LOCAL 12	8/31/2026	$76.04	$14.32	$12.61	$8.00	$0.00	$110.97
PLUMBERS & GASFITTERS LOCAL 12	3/1/2027	$78.19	$14.32	$12.61	$8.00	$0.00	$113.12
	8/30/2027	$80.34	$14.32	$12.61	$8.00	$0.00	$115.27
	2/2/2028	$82.54	$14.32	$12.61	$8.00	$0.00	$117.47
	9/4/2028	$84.74	$14.32	$12.61	$8.00	$0.00	$119.67
	3/5/2029	$86.94	$14.32	$12.61	$8.00	$0.00	$121.87
	9/3/2029	$89.14	$14.32	$12.61	$8.00	$0.00	$124.07
	3/4/2030	$91.09	$14.32	$12.61	$8.00	$0.00	$126.02
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"							

Additional Apprentice Information

All apprentices must be registered with the Division of Apprenticeship Training(DAS) in accordance with M.G.L.c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L.c. 149, §§ 26-27D.

Apprentice ratios are established by DAS pursuant to M.G.L.c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements(CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate.

Parties having questions regarding what ratio to use should contact DAS.

ATTACHMENT F – REQUIRED CERTIFICATIONS

ATTACHMENT F
Required Certifications

1. NON-COLLUSION:

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

2. 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.

3. CORPORATE BIDDER *(if applicable):*

I, _____ certify that I am the _____ of the corporation named as Bidder in the Bid included herein, that _____, who signed said Bid on behalf of the Bidder was then _____ of said corporation, that I know his signature, that his signature thereon is genuine and that said Bid was duly signed, sealed and executed for and in behalf of said corporation by authority of its governing body.

(Corporate Seal)

_____
(Secretary-Clerk)

_____
(Signature of authorized individual submitting proposal)

_____
(Printed Name)

_____
(Name of Proposer)

_____
(Federal Tax Identification or Social Security Number)

_____
(Date)