

**Project Manual  
South River Fish Passage and  
Veterans Memorial Park  
Improvements Project**

**Town of Marshfield**  
Marshfield, Massachusetts

August 2, 2024

**FUSS &  
O'NEILL**

317 Iron Horse Way, Suite 204  
Providence, RI 02908

## **INTRODUCTORY INFORMATION**



FUSS & O'NEILL, INC.  
20180319.A23  
MARSHFIELD, MA

SOUTH RIVER FISH PASSAGE AND  
VETERANS MEMORIAL PARK  
IMPROVEMENTS PROJECT

STATE SEAL

CIVIL

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## **BID REQUIREMENTS**

SECTION 00 11 16 – INVITATION TO BID

The Town of Marshfield, the Awarding Authority, is seeking sealed bids for the South River Fish Passage and Veterans Memorial Park Improvements Project for the Town of Marshfield, Massachusetts in accordance with the project bid documents.

The Work includes, but is not limited to, removing an existing dam and constructing a nature-like riffle-pool fishway with associated water control elements and park safety improvements as indicated on the Contract Drawings.

Plans and Specifications may be obtained on or after 12:00 PM **Friday, August 2, 2024**, prevailing time; by transmitting an email request to Nils Wiberg, Fuss & O'Neill, Inc., at [nils.wiberg@fando.com](mailto:nils.wiberg@fando.com) or by calling (401) 533-5979. An email response with download link will be provided to the requester between 9:00 a.m. and 5:00 p.m. Mon – Fri. A hard copy of the Plans and Specifications will be available for viewing at the Marshfield Department of Public Works, 965 Plain Street, Marshfield, MA 02050.

**A mandatory pre-bid conference and walk-thru will be held at 11:00 a.m. on Friday, August 16, 2024 at Veterans Memorial Park at the intersection of Main Street and Plain Street.**

Proposals must be submitted on the prescribed forms, enclosed in a sealed envelope bearing on the outside the bidder's name and address and "**Bid Enclosed – South River Fish Passage and Veterans Memorial Park Improvements Project**" and addressed to the Town Administrator, Marshfield Town Hall, 870 Moraine Street, Marshfield, MA 02050.

**NOTE: One original and one (1) copy of each bid shall be submitted. No emailed or faxed proposals will be accepted.**

Sealed bids will be received by the Town Administrator, Town of Marshfield, Massachusetts, as Awarding Authority until **11:00 AM, Monday, September 16, 2024** at the Town Hall, 870 Moraine Street, Marshfield, Massachusetts for the **South River Fish Passage and Veterans Memorial Park Improvements Project**, in the Town of Marshfield. At that time, the bids will be opened and publicly read in the second floor selectman's conference room.

Each contractor must include with the bid a security in an amount not less than five (5) percent of the bid. No proposal may be withdrawn for ninety (90) calendar days after opening of the bids. The successful bidder will be required to furnish in triplicate a Labor and Materials Bond and a Performance Bond each equal to 100 percent of the contract price.

The Town of Marshfield reserves the right to accept or reject any or all bids, to waive any informality contained therein, and to award the contract as decided to be in the best interest of the Town. Conditional bids will not be accepted.

All submissions for this project are subject to the provisions of Massachusetts General Laws, Chapter 30, 39M. Prevailing wages apply.

The Town of Marshfield fully complies with federal, state, and local laws and directives governing equal opportunity, affirmative action and non-discrimination in all county activities and actively solicits bids/proposals from MBE/WBE businesses in accordance with Town policy.



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THE MINORITY/WOMEN BUSINESS ENTERPRISES PERCENTAGE RATE GOAL TO BE APPLIED TO THIS PROJECT WILL BE NOT LESS THAN 6.9% FOR WOMEN AND 15.3% FOR MINORITIES.

**Any proposal which includes for any item a bid that is abnormally low or high may be rejected as unbalanced** and will have other implications as outlined in the Construction Documents. The Town reserves the right to waive any or all bids if deemed to be in the public interest to do so. The Town also reserves the right to accept any proposal deemed best for the Town of Marshfield.

The Town also reserves the right to omit part or whole of any proposed work to be performed, as shown on the Contract Drawings, as may be required to maintain the total cost of work within available funds. Contract award will be contingent on approval of permits and funding approval.

END OF SECTION

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

### **ARTICLE 1 – DEFINED TERMS**

- 1.01** Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office* – The office from which the Bidding Documents are to be issued.
  - B. *Successful Bidder* – The lowest responsible Bidder submitting a response Bid to whom the Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

### **ARTICLE 2 – COPIES OF BIDDING DOCUMENTS**

- 2.01** Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the invitation to bid.
- 2.02** Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03** Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

### **ARTICLE 3 – QUALIFICATIONS OF BIDDERS**

- 3.01** To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit (a) written evidence establishing its qualifications including, but not limited to, financial data, previous experience, and present commitments, and (b) the following additional information:
- A. Evidence of Bidder's authority to do business in the state where the Project is located.
  - B. Bidder's state or other contractor license number, if applicable.
  - C. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."
  - D. See Section 00 45 13 – Qualifications of Bidder for information required to be submitted with Bid.
  - E. Other required information regarding qualifications
- 3.02** A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03** No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.04** Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.
- 3.05** The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

- 3.06** The low bidder shall be required to provide proof that its bid is based on paying workers the Massachusetts prevailing wages. Failure to provide such proof to the Owner's satisfaction may be cause for rejection of the bid.
- 3.07** It is understood and agreed that it shall be a material breach of any contract resulting from this bid for the Contractor to engage in any practice which shall violate any provision of Massachusetts General Laws, Chapter 151B, relative to discrimination in hiring, discharging, compensation, or terms conditions or privileges of employment because of race, color, religious creed, ancestry, handicap, national origin, sex, age, or sexual orientation.

**ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF BIDDING DOCUMENTS AND SITE; OWNER’S SAFETY PROGRAM; OTHER WORK AT THE SITE**

**4.01** *Site and Other Areas*

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

**4.02** *Existing Site Conditions*

- A. Subsurface and Physical Conditions
1. The Supplementary Conditions identify:
    - a. Those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the site.
    - b. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the site (except Underground Facilities).
  2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Hazardous Environmental Condition
1. The Supplementary Conditions identify any reports and drawings relating known to Owner relating to a Hazardous Environmental Condition identified at the Site.
  2. Copies of reports and drawings referenced will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 5.03 of the General Conditions has been identified and established in Paragraph 5.03 of the Supplementary Conditions. Bidder is responsible for any interpretation or

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

- D. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

#### **4.03** *Site Visit and Testing by Bidders*

- A. Bidders are encouraged to conduct a site visit during normal working hours, and shall not disturb any ongoing operations at the site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of site conditions.
- C. On request, and to the extent Owner has control over the site, and schedule permitting, the Owner will provide Bidder access to the site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner’s authority regarding the site.
- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the site to its former condition upon completion of such explorations, investigations, tests, and studies.

#### **4.04** *Owner’s Safety Program*

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

#### **4.05** *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

## ARTICLE 5 – BIDDER'S REPRESENTATIONS

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

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the site, conduct a thorough, alert visual examination of the site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the site and all drawings of physical conditions relating to existing surface or subsurface structures at the site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the site; information and observations obtained from visits to the site; the Bidding Documents; and the site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

## ARTICLE 6 – PRE-BID CONFERENCE

**6.01** A mandatory Pre-Bid Conference and walk-thru will be held at 11:00 a.m. on Friday, August 16, 2024, at the Veterans Park at the intersection of Main Street and Plain Street. The site walk-through will be conducted after an initial period to review the Work and address questions. Representatives of Owner and Engineer will be present to discuss the Project. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

## **ARTICLE 7 – INTERPRETATIONS AND ADDENDA**

**7.01** All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. To be given consideration, these must be received at least eight (8) business days prior to the date fixed for the opening of the bids. An addendum addressing all received questions will be distributed to all plan holders by noon on Tuesday, September 10, 2024. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

A. Communications concerning this Bid shall be addressed to:

Attn: Mr. Nils Wiberg  
Fuss and O'Neill, Inc.  
317 Iron Horse Way, Suite 204  
Providence, RI 02908

Email: nils.wiberg@fando.com

**7.02** Any and all interpretations, and supplemental instructions which, if issued, will be faxed or emailed to all perspective bidders (at the respective numbers/addresses furnished by the bidder for such purpose), not later than 48 hours prior to the date fixed for the opening of the bids (unless such addenda postpones the opening of bids). It is the responsibility of each Bidder before submitting a Bid to verify issuance of Addenda by the Engineer. Failure of bidder to receive any such addendum or interpretations shall not relieve any bidder from obligation under his bid as submitted. All addenda so issued shall become part of the Contract Document.

**7.03** Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents as deemed advisable by Owner or Engineer.

## **ARTICLE 8 – BID SECURITY**

**8.01** A Bid must be accompanied by Bid security made payable to the Town of Marshfield in an amount of five percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, letter of credit, or a surety bond. If a surety bond is enclosed, it shall be written on AIA Document A310, Bid Bond, unless otherwise provided in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the Power of Attorney.

**8.02** The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

**8.03** The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 90 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

## **ARTICLE 9 – CONTRACT TIMES**

**9.01** The number of days within which Milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

## **ARTICLE 10 – LIQUIDATED DAMAGES**

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

## **ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS**

- 11.01** The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those “or-equal” or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an “or-equal” or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each such request shall comply with the requirements of Paragraphs 7.05 and 7.06 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer’s decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.
- 11.02** All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

## **ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS**

- 12.01** A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 12.02** Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.
- 12.03** The apparent Successful Bidder, and any other Bidder so requested, shall within five (5) calendar days after Bid opening, submit to Owner Equal Employment Opportunity Forms as indicated in Article 7.1.E of the Bid Form.
- If requested by Owner, such forms shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 12.04** If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of

Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance by the Owner in writing.

#### **ARTICLE 13 – PREPARATION OF BID**

- 13.01** The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
- 13.02** A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.
- 13.03** A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.04** A Bid by an individual shall show the Bidder's name and official address.
- 13.05** A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.06** All names shall be printed in ink below the signatures.
- 13.07** The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08** Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09** The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.
- 13.10** All costs involved in preparing the Bid will be borne by the Bidder. The Town or any Department, Division, employee or section of the Town will not be liable for any costs associated with the formation of the Bid.

#### **ARTICLE 14 – SUBMITTAL OF BID**

- 14.01** With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.
- 14.02** A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid.
- 14.03** Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.
- 14.04** Faxed or emailed submissions will not be accepted. Late bids will not be accepted. Bids must be sealed and clearly marked with the words "**BID ENCLOSED – SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT**". It is the sole responsibility



of a Bidder to ensure that the bid arrives on time at the designated place. It is strongly encouraged recommended that bids are mailed or delivered in advance of the due date and time. Postmarks will not be considered. The Town shall not be responsible for proposals arriving late due to couriers, deliveries to wrong locations, express mailing service errors, etc. If, at the time that bids are due, Town Hall is closed due to uncontrolled events, bids will be accepted until Noon on the next full day that Town Hall is open. For the purposes of determining whether a bidder has met the deadline, the clock in the Town Administrator's office at Town Hall shall indicate the official time. No individual extensions of this deadline will be granted.

#### **ARTICLE 15 – MODIFICATION AND WITHDRAWAL OF BID**

- 15.01** A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 15.02** If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03** If within 24 hours after Bids are opened, any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

#### **ARTICLE 16 – OPENING OF BIDS**

- 16.01** Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and alternates, if any, will be made available to Bidders after the opening of Bids. Bidders may be present at the opening of the bids.

#### **ARTICLE 17 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

- 17.01** All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.
- 17.02** Bids may be held by the Town of Marshfield for a period not to exceed ninety (90) days from the opening of the bids for the purpose of reviewing the bids and investigating the qualifications of bidders prior to the awarding of the contract.

#### **ARTICLE 18 – EVALUATION OF BIDS AND AWARD OF CONTRACT**

- 18.01** Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 18.02** If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

**18.03** Evaluation of Bids

- A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- B. For the determination of the apparent low Bidder, Bids will be compared on the basis of the Contract Base Bid Price.

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

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

**18.06** The Town may consider proximity of the vendor's service as a factor in determining lowest price and reserves the right to award in whole or part to one or more vendors.

**18.07** The Town reserves the right to accept or reject any or all options, bids, or proposals; to waive any technicality in any bid, or part thereof, and to accept any bid deemed to be in the best interest of the Town of Marshfield.

**18.08** If the Contract is to be awarded, Owner will consider the funding available to the Owner, and will award the Contract to the lowest responsive, responsible bidder.

**ARTICLE 19 – BONDS AND INSURANCE**

**19.01** Performance Bond and Payment Bond must be by a certified check, letter of credit or performance bond for one hundred percent (100%) of the total base bid and all alternates included. When submitting a performance bond, bonds must be written on Performance Bond and Payment Bond forms provided within the Contract Documents, respectively. Both bonds shall be written in the amount of the Contract Sum.

**19.02** The successful bidder will be required to post a Certificate of Insurance, with the Town of Marshfield and others stated in the Supplementary Conditions named as additional insured, in an amount to be determined by the Town of Marshfield. Said policy will remain in effect through the completion of the work and the insurer shall provide at least 30 days advance notice of any non-renewal, termination, or cancellation.

**19.03** When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

**ARTICLE 20 – SIGNING OF AGREEMENT**

**20.01** When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

## **ARTICLE 21 – SALES AND USE TAXES**

- 21.01** Owner is exempt from Massachusetts state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Bid. Refer to Paragraph SC-7.10 of the Supplementary Conditions for additional information.

## **ARTICLE 22 – LAWS AND REGULATIONS:**

- 22.01** The Bidder's attention is directed to the fact that all applicable laws of the Commonwealth of Massachusetts, municipal ordinances and/or bylaws, and the rules, regulations, and issued permits/orders of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.
- 22.02** This contract is subject to Massachusetts General Law Chapter 30, Sections 39F, 39G, 39K through 39P inclusive, and 39R.
- 22.03** The bidder's attention is directed to the fact that all Laws and Regulations (as defined in the Standard General Terms and Conditions of this Project Manual) and other applicable federal and state laws, and municipal ordinances shall apply to the contract throughout, and they shall be deemed to be included in the contract the same as though herein written out in full.

## **ARTICLE 23 – PREVAILING WAGE RATES**

- 23.01** Attention of Bidders is called to the requirements concerning the payment of not less than the prevailing State wage and salary rates and the conditions of employment with respect to certain categories and classifications of employees. The rates of pay set forth in the Bidding Documents are the minimum to be paid during the life of the Contract. The Contractor shall provide to the Town proof of payment.
- 23.02** It is the responsibility of Bidders to inform themselves as to local labor conditions such as the length of work day and work week, overtime compensation, fringe benefits, holiday pay, employee classifications, and labor supply.

## **ARTICLE 24 – MANUFACTURER'S EXPERIENCE**

- 24.01** Wherever it may be written that an equipment manufacturer must have a specified period of experience with his product, equipment which does not meet the specified experience period can be considered if the equipment supplier or manufacturer is willing to provide a bond or cash deposit for the duration of the specified time period, which will guarantee replacement of that equipment in the event of failure.

## **ARTICLE 25 – MINORITY/WOMEN BUSINESS ENTERPRISE REQUIREMENTS:**

- 25.01** Bidders shall comply with all of the requirements of the Commonwealth of Massachusetts Disadvantaged Business Enterprise (DBE). All bidders must complete the applicable forms included in the Contract Documents.
- 25.02** Disadvantaged Business Enterprise (DBE) goals are applicable to the total dollars paid to the construction contract. The goals for this project are a minimum of 15.3 percent Minority Business Enterprise (MBE) participation and 6.9 percent Women Business Enterprise (WBE) participation by certified DBEs. The two low bidders shall submit completed DBE forms (EEO-9, EEO-11, EEO-12, EEO-13 included in the Contract Documents and the DBE Certification of United States

Citizenship form) by the close of business on the fifth calendar day after bid opening. Failure to comply with the requirements of this paragraph may be deemed to render a proposal non-responsive.

**25.03** All DBEs must be certified by the Commonwealth of Massachusetts Supplier Diversity Office (SDO).

**ARTICLE 26 – THIRD PARTY WORK:**

**26.01** The Contractor is responsible for maintaining a safe and secure worksite at all times, and for expeditiously repairing any damage done to abutting properties. If, in the opinion of the Owner, the Contractor is negligent in these duties the Owner shall have the right to employ a third party to remedy the problem.

**26.02** Situations which develop and require the services of and payment to a third party will be handled in the following manner:

- A. The Contractor will be given a reasonable period of time determined at the discretion of the Owner to remedy the situation without third party involvement. If the Contractor is unavailable the Owner will authorize work by a third party on the Contractor's behalf.
- B. Third party work authorized on the Contractor's behalf by the Owner shall be paid for by the Contractor within a reasonable time period (generally two weeks). If payment is not made within a reasonable time period the Owner will make payment and deduct the cost from the next pay requisition.
- C. In the case of inadequately secured worksites necessitating extra or increase police details or other public safety personnel, the following procedure will be followed. The Contractor (if available) will be notified that the worksite needs to be secured in order to prevent the need for weekend/night police coverage. If the area is not immediately secured as determined by the Owner or Engineer, a police, fire, or highway department detail will be used and the Contractor will be charged for the cost. It is understood that in many instances worksites cannot realistically be secured to a point where police or other safety personnel are not needed. In these instances, the Owner will continue to pay for the coverages.

**ARTICLE 27 – OVERLOADED TRUCKS**

**27.01** The Town will not accept any materials delivered to any project in motor vehicles or semi-trailer units that exceed the legal maximum gross weight allowed for the particular class, as specified in Section 19A of Chapter 90 of the General laws of Massachusetts.

**ARTICLE 28 – UNITED STATES FLAG VESSELS -CARGO PREFERENCE:**

**28.01** The Contractor is advised that the Commerce Department has promulgated a cargo preference regulation requiring fifty (50) percent of the gross tonnage of items which are purchased with funds advanced, loaned, or guaranteed by the Federal Government, and which may be shipped by ocean vessel, to be shipped on privately owned, United States flag commercial vessels to the extent such vessels are available at fair and reasonable rates for United States flag commercial vessels. This regulation was promulgated on October 25, 1977, and was published in the Federal Register on November 1, 1977 (42 FR 57126), to implement the Cargo Preference Act of 1954.

**END OF SECTION**

SECTION 00 41 00 - BID FORM

CONTRACT IDENTIFICATION:

South River Fish Passage and  
Veterans Memorial Park Improvements Project  
Marshfield, MA

ARTICLE 1 – BID RECIPIENT

1.1 This Bid shall be submitted to:

Town Administrator  
Marshfield Town Hall  
870 Moraine Street  
Marshfield, MA 02050

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

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.1 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of the Town of Marshfield.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.1 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

Addendum No.	Addendum Date
_____	_____
_____	_____

B. Bidder attended the mandatory Pre-Bid Conference, has examined the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.

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

- D. Bidder has carefully studied all:
  - 1. Reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface structures.
- E. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
- F. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
- G. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- H. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.
- I. Bidder will submit written evidence of its authority to do business in the state where the Project is located not later than the date of its execution of the Agreement.

#### ARTICLE 4 – FURTHER REPRESENTATIONS

##### 4.1 Bidder further represents that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding;
- D. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over the Town of Marshfield; and
- E. Bidder has complied with all laws of the Commonwealth of Massachusetts relating to taxes and is in good standing in the Commonwealth of Massachusetts.

#### ARTICLE 5 – BASIS OF BID

##### 5.1 Bidder will complete the Work in accordance with the Contract Documents for the following lump sum and unit bid prices:

- A. The Total Contract Base Bid Price shall include, but not be limited to, construction of a nature-like fishway and adjacent improvements depicted under Phase 1 of the South River

Fish Passage and Veterans Memorial Park Improvements Project, based on the following lump sum prices. The Total Contract Base Bid Price shall also include an allowance for police detail costs/fee reimbursements associated with Phase 1 of construction.

SOUTH RIVER FISH PASSAGE AND  
 VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT  
 CONTRACT BASE BID ITEMS

Item No.	CONTRACT ITEM AND UNIT PRICE (WORDS AND FIGURES)	Unit	Opinion of Quantity	Computed Total in Figures
1	PHASE 1 - MOBILIZATION at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ )	LS	1	\$ _____
2	PHASE 1 - GENERAL REQUIREMENTS at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ )	LS	1	\$ _____
3	PHASE 1 - DEMOBILIZATION at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ )	LS	1	\$ _____
4	PHASE 1 - SITE CLEARING AND DEMOLITION at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ )	LS	1	\$ _____
5	PHASE 1 - TEMPORARY TRAFFIC CONTROL AND PROTECTION OF PUBLIC at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ )	LS	1	\$ _____

Item No.	CONTRACT ITEM AND UNIT PRICE (WORDS AND FIGURES)	Unit	Opinion of Quantity	Computed Total in Figures
6	PHASE 1 - TEMPORARY EROSION AND SEDIMENTATION CONTROLS at the per Lump Sum Price of	LS	1	\$ _____
	_____ Dollars			
	and _____ Cents (\$ _____ )			
7	PHASE 1 - CONTROL OF WATER at the per Lump Sum Price of	LS	1	\$ _____
	_____ Dollars			
	and _____ Cents (\$ _____ )			
8	RIVER CHANNEL DREDGING at the per Cubic Yard Unit Price of	CY	550	\$ _____
	_____ Dollars			
	and _____ Cents (\$ _____ )			
9	NATURE-LIKE FISHWAY CONSTRUCTION at the per Lump Sum Price of	LS	1	\$ _____
	_____ Dollars			
	and _____ Cents (\$ _____ )			
10	STONE WALL CONSTRUCTION/RECONSTRUCTION at the per Square Foot Unit Price of	SF	800	\$ _____
	_____ Dollars			
	and _____ Cents (\$ _____ )			



Item No.	CONTRACT ITEM AND UNIT PRICE (WORDS AND FIGURES)	Unit	Opinion of Quantity	Computed Total in Figures
11	LAGOON INLET AND OUTLET WEIRS/WATER WHEEL OUTLET WEIR/ AND WATER CONTROL STRUCTURES at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
12	WATER WHEEL BYPASS SYSTEM at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
13	PHASE 1 - ELECTRIC SYSTEM IMPROVEMENTS at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
14	PHASE 1 - SITE RESTORATION at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
15	ALLOWANCE NO. 1 – PHASE 1 - POLICE DETAIL COST/FEE REIMBURSEMENT in the amount of \$5,000.00	ALL	1	\$ 5,000.00

**CONTRACT BASE BID PRICE**

For purposes of bid comparison, the Contract Base Bid Price shall be stated below as the direct sum of the Contract Base Bid Prices and Allowance listed above.

\$ \_\_\_\_\_ (Amount in Figures)

\_\_\_\_\_ (Amount in Words)

- B. The following Alternate Bid Prices, which include but are not limited to lagoon, access, and site safety improvements depicted under Phase 2 of the South River Fish Passage and Veterans Memorial Park Improvements Project, will be added to the project's total Contract Base Bid Price if authorized by the Project Owner. The Total Contract Alternative Bid Price shall also include an allowances for police detail costs/fee reimbursements and public utility relocation costs/fee reimbursements associated with Phase 2 of construction.

**ALTERNATE BID PRICE ITEM 1**

<b>Contract Item No.</b>	<b>CONTRACT ITEM AND UNIT PRICE (WORDS AND FIGURES)</b>	<b>Unit</b>	<b>Opinion of Quantity</b>	<b>Computed Total in Figures</b>
ALT-1	PHASE 2 - ELECTRIC SYSTEM IMPROVEMENTS at the per Lump Sum Price of	LS	1	
	_____ Dollars			\$ _____
	and _____ Cents (\$ _____ )			

**ALTERNATE BID PRICE ITEM 2**

<b>Contract Item No.</b>	<b>CONTRACT ITEM AND UNIT PRICE (WORDS AND FIGURES)</b>	<b>Unit</b>	<b>Opinion of Quantity</b>	<b>Computed Total in Figures</b>
ALT-2.1	PHASE 2 - MOBILIZATION at the per Lump Sum Price of	LS	1	
	_____ Dollars			\$ _____
	and _____ Cents (\$ _____ )			
ALT-2.2	PHASE 2 – GENERAL REQUIREMENTS at the per Lump Sum Price of	LS	1	
	_____ Dollars			\$ _____
	and _____ Cents (\$ _____ )			

Contract Item No.	CONTRACT ITEM AND UNIT PRICE (WORDS AND FIGURES)	Unit	Opinion of Quantity	Computed Total in Figures
ALT-2.3	PHASE 2 - DEMOBILIZATION at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
ALT-2.4	PHASE 2 - SITE CLEARING AND DEMOLITION at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
ALT-2.5	PHASE 2 - TEMPORARY TRAFFIC CONTROL AND PROTECTION OF PUBLIC at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
ALT-2.6	PHASE 2 - TEMPORARY EROSION AND SEDIMENTATION CONTROLS at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
ALT-2.7	PHASE 2 - CONTROL OF WATER at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____

Contract Item No.	CONTRACT ITEM AND UNIT PRICE (WORDS AND FIGURES)	Unit	Opinion of Quantity	Computed Total in Figures
ALT-2.8	LAGOON SUPPLEMENTAL WATER SUPPLY SYSTEM at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
ALT-2.9	LAGOON DREDGING at the per Cubic Yard Unit Price of  _____ Dollars and _____ Cents (\$ _____ )	CY	250	\$ _____
ALT-2.10	CLAY LINER at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
ALT-2.11	LAGOON POOL OUTLET STRUCTURE at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
ALT-2.12	TIMBER PEDESTRIAN BRIDGES AND WALKWAYS at the per Lump Sum Price of  _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
ALT-2.13	STONE WALL CONSTRUCTION/RECONSTRUCTION at the per Square Foot Unit Price of  _____ Dollars and _____ Cents (\$ _____ )	SF	250	\$ _____

<b>Contract Item No.</b>	<b>CONTRACT ITEM AND UNIT PRICE (WORDS AND FIGURES)</b>	<b>Unit</b>	<b>Opinion of Quantity</b>	<b>Computed Total in Figures</b>
ALT-2.14	REPLACE MISSING STONE WALL STONES at the per Square Foot Unit Price of _____ Dollars and _____ Cents (\$ _____ )	SF	100	\$ _____
ALT-2.15	CHINK/REPOINT STONE WALL at the per Square Foot Unit Price of _____ Dollars and _____ Cents (\$ _____ )	SF	500	\$ _____
ALT-2.16	PHASE 2 - SITE RESTORATION at the per Lump Sum Price of _____ Dollars and _____ Cents (\$ _____ )	LS	1	\$ _____
ALT-2.17	ALLOWANCE NO. 2 – PHASE 2 POLICE DETAIL COST/FEE REIMBURSEMENT in the amount of \$5,000.00	ALL	1	\$ 5,000.00
ALT-2.18	ALLOWANCE NO. 3 – PUBLIC UTILITY RELOCATION COST/FEE REIMBURSEMENT in the amount of \$30,000.00	ALL	1	\$ 30,000.00

**TOTAL CONTRACT ALTERNATE 2 BID PRICE**

For purposes of bid comparison, the Contract Alternate Bid Price shall be stated below as the direct sum of the Alternate Bid Price 2.1 through 2.16 listed above.

\$ \_\_\_\_\_ (Amount in Figures)

\_\_\_\_\_ (Amount in Words)

**ARTICLE 6 – TIME OF COMPLETION**

6.1 Bidder agrees that the Work will be substantially complete within the below stated periods after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General

Conditions.

- A. Base Bid: 240 calendar days.
  - B. Alternate Bid Price Item 1: 60 additional calendar days.
  - C. Alternate Bid Price Item 2: 180 additional calendar days.
  - D. Substantial completion for the Project shall include, but not be limited to, construction of all bridge and water access structures and roadway, including removal of all temporary cofferdam(s) and flow bypass conveyances resulting in restoration of normal and unimpeded through the nature-like fishway and lagoon as indicated on the Drawings.
- 6.2 Bidder agrees that work will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 270 calendar days after the date when the Contract Times commence to run.
- A. Contract Time will be extended as noted above for each additional Alternate Bid Price Item authorized by the Owner.
  - B. Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the Contract Times.

#### ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.1 The following completed documents are attached to and made a condition of this Bid:
- A. Required Bid security in the form of Bid Bond (00 43 13)
  - B. Bid Certification (BC-1 through BC-3)
  - C. Legal Certifications (LC-1)
  - D. Qualifications of Bidder (00 45 13)
  - E. Equal Employment Opportunity Forms (certification forms EEO-5, -8 and -10 shall be submitted with the bid; certification forms EEO-9, -11, -12 and -13, with additional copies from respective subcontractors as warranted, shall be submitted by the lowest and second-lowest bidders within five calendar days of bid opening)

#### ARTICLE 8 – DEFINED TERMS

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

ARTICLE 9 – BID SUBMITTAL

9.1 This Bid submitted by:

If Bidder is:

AN INDIVIDUAL

Name (typed or printed): \_\_\_\_\_

By: \_\_\_\_\_  
(SEAL)

*(Individual's signature)*

Doing business as: \_\_\_\_\_

Business address: \_\_\_\_\_

Phone No.: \_\_\_\_\_ FAX No.: \_\_\_\_\_

A PARTNERSHIP

Partnership Name: \_\_\_\_\_  
(SEAL)

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

*(Signature of general partner -- attach evidence of authority to sign)*

Name (typed or printed): \_\_\_\_\_

Business address: \_\_\_\_\_

Phone No.: \_\_\_\_\_ FAX No.: \_\_\_\_\_

A CORPORATION

Corporation Name: \_\_\_\_\_  
(SEAL)

State of Incorporation: \_\_\_\_\_

Type (General Business, Professional, Service, Limited Liability): \_\_\_\_\_

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

*(Signature -- attach evidence of authority to sign)*

Name (typed or printed): \_\_\_\_\_

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

(CORPORATE SEAL)

Attest \_\_\_\_\_

*(Signature of Corporate Secretary)*

Business address: \_\_\_\_\_

Phone No.: \_\_\_\_\_ FAX No.: \_\_\_\_\_

Date of Qualification to do business is \_\_\_\_\_

A JOINT VENTURE

Joint Venturer Name: \_\_\_\_\_

(SEAL)

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

*(Signature of joint venture partner -- attach evidence of authority to sign)*

Name (typed or printed): \_\_\_\_\_

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

Business address: \_\_\_\_\_

Phone No.: \_\_\_\_\_ FAX No.: \_\_\_\_\_

Joint Venturer Name: \_\_\_\_\_

(SEAL)

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

*(Signature -- attach evidence of authority to sign)*

Name (typed or printed): \_\_\_\_\_

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

Business address: \_\_\_\_\_

Phone No.: \_\_\_\_\_ FAX No.: \_\_\_\_\_

Phone and FAX Number, and Address for receipt of official communications:

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



FUSS & O'NEILL, INC.  
20180319.A23  
MARSHFIELD, MA

SOUTH RIVER FISH PASSAGE AND  
VETERANS MEMORIAL PARK  
IMPROVEMENTS PROJECT

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

SUBMITTED on \_\_\_\_\_, 20\_\_\_\_.

State Contractor License No. \_\_\_\_\_

### BID BOND

<p><b>Bidder</b></p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>	<p><b>Surety</b></p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>
<p><b>Owner</b></p> <p>Name: Town of Marshfield</p> <p>Address <i>(principal place of business)</i>:          870 Moraine Street, Marshfield, Massachusetts          02050</p>	<p><b>Bid</b></p> <p>Project <i>(name and location)</i>:          South River Fish Passage and Veterans Memorial          Park Improvements Project – Marshfield, MA</p> <p>Bid Due Date: _____</p>
<p><b>Bond</b></p> <p>Penal Sum: _____</p> <p>Date of Bond: _____</p>	
<p>Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Bidder	Surety
_____	_____
<i>(Full formal name of Bidder)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____	By: _____
<i>(Signature)</i>	<i>(Signature) (Attach Power of Attorney)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____	Attest: _____
<i>(Signature)</i>	<i>(Signature)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i></p>	

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
  - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
  - 3.2. All Bids are rejected by Owner, or
  - 3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

**SOUTH RIVER FISH PASSAGE AND VETERANS  
MEMORIAL PARK IMPROVEMENTS PROJECT  
TOWN OF MARSHFIELD**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is at the Veterans Memorial Park at the intersection of Main Street (Route 3A) and Plain Street (Route 139) the Town of Marshfield, County of Plymouth, Commonwealth of Massachusetts.

TO THE PARTY OF THE FIRST PART

The undersigned, as bidder, declares that the only persons or parties interested in this Proposal as principals are those named herein; that this Proposal is made without collusion with any other person, firm, or corporation; that he/she has carefully examined the location of the proposed work, the proposed form of contract, the Standard Specifications (and amendments thereto) and plans therein referred to and the Supplementary Conditions hereto annexed; and he/she proposed and agrees, if this Proposal is accepted, that he/she will contract with the Party of the First Part, in the form of the contract referred to herein and to be annexed hereto, to provide all necessary machinery, tools, equipment, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that he/she will take in full payment therefor the following unit prices, to wit:

The foregoing prices shall include the furnishing of all materials (except as otherwise herein specified), the performing of all the labor requisite or proper, the providing of all necessary machinery, tools, apparatus, and other means of construction, the doing of all the above-mentioned work in the manner set forth, described and shown in the specifications and on the drawings for the work, and in the form of contract, and the substantial completion within 240 calendar days of the date upon which the Contract Times are stated to commence on the issued Notice to Proceed.

**SOUTH RIVER FISH PASSAGE AND VETERANS  
MEMORIAL PARK IMPROVEMENTS PROJECT  
TOWN OF MARSHFIELD**

If this proposal shall be accepted and the undersigned shall fail to contract as aforesaid and to give a performance and payment bond in the sum to be determined as aforesaid with surety satisfactory to the Party of the First Part within ten (10) calendar days from the date of the mailing of notice from the Party of the First Part to him/her, according to the address herewith given, that the contract is ready for signature, the Party of the First Part may, at its option, determine that the Bidder has abandoned the Contract, and thereupon this proposal, and the acceptance thereof shall be null and void, and the proposal guaranty submitted covering this proposal shall become the property of the PARTY OF THE FIRST PART; otherwise, the said proposal guaranty shall be returned to the undersigned.

I / WE hereby acknowledge receipt of Addenda through and including Addendum No. \_\_\_\_\_.

Full name and address of individual, firm, partnership, or corporation submitting this bid:

\_\_\_\_\_  
(Print Company Name)

\_\_\_\_\_  
(Print Company Address)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
(Print Name and Title)

Phone # \_\_\_\_\_ Fax \_\_\_\_\_

E-mail Address: \_\_\_\_\_

**SOUTH RIVER FISH PASSAGE AND VETERANS  
MEMORIAL PARK IMPROVEMENTS PROJECT  
TOWN OF MARSHFIELD**

**NOTICE:** Person having proper legal authority shall sign Bid in black ink, and the person's title should be given, such as "owner" in the case of an individual, "partner" in the case of a general partnership, "president", "treasurer", or "clerk" in the case of a corporation.

If the bidder is an individual or individuals doing business as a firm, please provide full name and address of each individual:

_____	_____
Owner or Partner	Address
_____	_____

If the bidder is a corporation, provide the state in which incorporated: \_\_\_\_\_

and the names and business addresses of the following officers:

(Print)

_____	_____
President	Business Address

_____	_____
Treasurer	Business Address

_____	_____
Clerk	Business Address

State here if the bid proposal is submitted by joint venturers: \_\_\_\_\_

\_\_\_\_\_

If any of the joint venturers are a corporation, a copy of the vote of the corporation authorizing the joint venture should be attached hereto.

The proposed surety on the bond to be given is:

Name \_\_\_\_\_

Home Office Address \_\_\_\_\_

Massachusetts Address (if different) \_\_\_\_\_

**CERTIFICATIONS REQUIRED BY LAW  
FOR PUBLIC CONSTRUCTION CONTRACTS**

**You must COMPLETE and SIGN the following certifications. You must also print, at the bottom of this page, the name of the contractor for whom these certifications are submitted.**

**TAX COMPLIANCE**

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A(b), I, the undersigned, authorized signatory for the below named contractor, do hereby certify under the pains and penalties of perjury that said contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

**NON-COLLUSION**

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 subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

**PUBLIC CONTRACTOR DEBARMENT**

The undersigned certifies under penalty of perjury that the below named contractor is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

**OSHA TRAINING**

Pursuant to G.L. c. 30, §39S, the Contractor hereby certifies under penalties of perjury as follows:

- (1) Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work;
- (2) 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 they shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and
- (3) All employees to be employed in the work subject to this contract 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.

**COMPLETE AND SIGN BELOW:**

\_\_\_\_\_  
Authorized Person's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name & Title of Signatory

\_\_\_\_\_  
Name of Contractor

Sworn to before me this  
\_\_\_\_\_ day of \_\_\_\_\_ .

Notary Public

My commission expires:

SECTION 00 45 13 - QUALIFICATIONS of BIDDER FORM

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

Each Bidder is required to submit information that exemplifies their qualifications, and their listed subcontractor's qualifications, to successfully implement the scope of work required by the Contract Documents.

Indicate if Bidder is a state-registered Minority or Woman-owned Business Enterprise (Y/N): \_\_\_\_

Previous Experience Involving Nature-Like Fishway Construction  
(Prime Contractor)

Provide written descriptions of at least five (5) and no more than ten (10) previous successful projects within the past ten (10) years requiring construction of a nature-like fishway in a riverine environment of a similar scale and dollar value to that entailed in the proposed work under this contract. Project descriptions are requested to include other documentation of completed work on additional pages as necessary.

1. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
  
2. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
  
3. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_



4. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
5. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
6. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
7. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_

8. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
9. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
10. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_

Previous Experience Involving Stone Masonry Construction  
(Prime or Sub-Contractor)

Provide written descriptions of at least three (3) and no more than ten (10) previous successful projects within the past five (5) years requiring historic stone masonry restoration of a similar scale and dollar value to that entailed in the proposed work under this contract. Project descriptions are requested to include other documentation of completed work on additional pages as necessary.

1. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_

2. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
  
3. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
  
4. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
  
5. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
  
6. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_
  
7. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_

Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_

Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_

8. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_

9. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_

10. Project Name: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Brief Scope of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Approximate Dollar Value: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_  
Owner's Telephone: \_\_\_\_\_

MBE Subcontractors (Attach additional pages as necessary)

1. Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_  
Work Efforts by Subcontractor for this Bid: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Value of Subcontractor's Work for this Bid: \_\_\_\_\_

2. Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_  
Work Efforts by Subcontractor for this Bid: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Value of Subcontractor's Work for this Bid: \_\_\_\_\_

3. Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_  
Work Efforts by Subcontractor for this Bid: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Value of Subcontractor's Work for this Bid: \_\_\_\_\_

WBE Subcontractors (Attach additional pages as necessary)

1. Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_  
Work Efforts by Subcontractor for this Bid: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Value of Subcontractor's Work for this Bid: \_\_\_\_\_

2. Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_  
Work Efforts by Subcontractor for this Bid: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Value of Subcontractor's Work for this Bid: \_\_\_\_\_

3. Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_  
Work Efforts by Subcontractor for this Bid: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Value of Subcontractor's Work for this Bid: \_\_\_\_\_

FUSS & O'NEILL, INC.  
20180319.A23  
MARSHFIELD, MA

SOUTH RIVER FISH PASSAGE AND  
VETERANS MEMORIAL PARK  
IMPROVEMENTS PROJECT

Value of Subcontractor's Work for this Bid: \_\_\_\_\_

Bank Reference:

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Phone: \_\_\_\_\_

END OF SECTION

THE COMMONWEALTH OF MASSACHUSETTS

SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION  
AND AFFIRMATIVE ACTION PROGRAM

I. Definitions

For purposes of this contract,

“Minority” means a person who meets one or more of the following definitions:

- (a) American Indian or Native American means: all persons having origins in any of the original peoples of North America and who are recognized as an Indian by a tribe or tribal organization.
- (b) Asian means: All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian sub-continent, or the Pacific Islands, including, but not limited to China, Japan, Korea, Samoa, India, and the Philippine Islands.
- (c) Black means: All persons having origins in any of the Black racial groups of Africa, including, but not limited to, African-Americans, and all persons having origins in any of the original peoples of the Cape Verdean Islands.
- (d) Eskimo or Aleut means: All persons having origins in any of the peoples of Northern Canada, Greenland, Alaska, and Eastern Siberia.
- (e) Hispanic means: All persons having their origins in any of the Spanish-speaking peoples of Mexico, Puerto Rico, Cuba, Central or South America, or the Caribbean Islands.

“State construction contract” means a contract for the construction, reconstruction, installation, demolition, maintenance or repair of a building or capital facility, or a contract for the construction, reconstruction, alteration, remodeling or repair of a public work undertaken by a department, agency, board, or commission of the commonwealth.

“State assisted construction contract” means a contract for the construction, reconstruction, installation, demolition, maintenance or repair of a building or capital facility undertaken by a political subdivision of the commonwealth, or two or more political subdivisions thereof, an authority, or other instrumentality and whose costs of the contract are paid for, reimbursed, grant funded, or otherwise supported, in whole or in part, by the commonwealth.

II. Equal Opportunity, Non-Discrimination and Affirmative Action

During the performance of this Contract, the Contractor and all subcontractors (hereinafter collectively referred to as “the Contractor”) for a state construction contract or a state assisted construction contract, for him/herself, his/her assignees and successors in interest, agree to comply with all applicable equal employment opportunity, non-discrimination and affirmative action requirements, including but not limited to the following:

In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability, shall not discriminate in the selection or retention of subcontractors, and shall not discriminate in the procurement of materials and rentals of equipment.

The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising, layoff or termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship or on-the-job training opportunity. The Contractor shall comply with the provisions of chapter 151B of the Massachusetts General Laws, as amended, and all other applicable anti-discrimination and equal opportunity laws, all of

THE COMMONWEALTH OF MASSACHUSETTS

SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION  
AND AFFIRMATIVE ACTION PROGRAM

which are herein incorporated by reference and made a part of this Contract.

The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission Against Discrimination setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter 151B).

In connection with the performance of work under this contract, the Contractor shall undertake, in good faith, affirmative action measures to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability. Such affirmative action measures shall entail positive and aggressive measures to ensure non-discrimination and to promote equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, apprenticeship and on-the-job training programs. A list of positive and aggressive measures shall include, but not be limited to, advertising employment opportunities in minority and other community news media; notifying minority, women and other community-based organizations of employment opportunities; validating all job specifications, selection requirements, and tests; maintaining a file of names and addresses of each worker referred to the Contractor and what action was taken concerning such worker; and notifying the administering agency in writing when a union with whom the Contractor has a collective bargaining agreement has failed to refer a minority or woman worker. These and other affirmative action measures shall include all actions required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability. One purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future Commonwealth public construction projects.

III. Minority and Women Workforce Participation

Pursuant to his/her obligations under the preceding section, the Contractor shall strive to achieve on this project the labor participation goals contained herein. Said participation goals shall apply in each job category on this project including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers and those classes of work enumerated in Section 44F of Chapter 149 of the Massachusetts General Laws. The participation goals for this project shall be 15.3% for minorities and 6.9% for women. The participation goals, as set forth herein, shall not be construed as quotas or set-asides; rather, such participation goals will be used to measure the progress of the Commonwealth's equal opportunity, non-discrimination and affirmative action program. Additionally, the participation goals contained herein should not be seen or treated as a floor or as a ceiling for the employment of particular individuals or group of individuals.

IV. Liaison Committee

At the discretion of the Town of Marshfield, there may be established for the life of the contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering the contract for the construction project, hereinafter called the administering agency, a representative from the Office of Affirmative action, and such other representatives as may be designated by the administering agency.

The Contractor (or his/her agent, if any, designated by him/her as the on-site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.



THE COMMONWEALTH OF MASSACHUSETTS

SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION  
AND AFFIRMATIVE ACTION PROGRAM

V. Reports and Records

The Contractor shall prepare projected workforce tables on a quarterly basis when required by the administering agency. These shall be broken down into projections, by week, of workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and also, when updated, to the administering agency and the Liaison Committee when required.

The Contractor shall prepare weekly reports in a form approved by the administering agency, unless information required is required to be reported electronically by the administering agency, the number of hours worked in each trade by each employee, identified as woman, minority, or non-minority. Copies of these shall be provided at the end of each such week to the administering agency and the Liaison Committee.

Records of employment referral orders, prepared by the Contractor, shall be made available to the administering agency on request.

The Contractor will provide all information and reports required by the administering agency on instructions issued by the administering agency and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the administering agency to effect the employment of personnel. This provision shall apply only to information pertinent to the Commonwealth's supplementary non-discrimination, equal opportunity and access and opportunity contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the administering agency and shall set forth what efforts he has made to obtain the information.

VI. Access to Work Site

A designee of the administering agency and a designee of the Liaison Committee shall each have a right to access the work site.

VII. Solicitations for Subcontracts, and for the Procurement of Materials and Equipment

In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this contract relative to non-discrimination and equal opportunity.

VIII. Sanctions

Whenever the administering agency believes the General or Prime Contractor or any subcontractor may not be operating in compliance with the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter 151B), the administering agency may refer the matter to the Massachusetts Commission Against Discrimination ("Commission") for investigation.

Following the referral of a matter by the administering agency to the Massachusetts Commission Against Discrimination, and while the matter is pending before the MCAD, the administering agency may withhold payments from contractors and subcontractors when it has documentation that the contractor or subcontractor has violated the Fair Employment Practices Law with respect to its activities on the Project, or if the administering agency determines that the contractor has materially failed to comply with its obligations and the requirements of this Section. The amount withheld shall not exceed a withhold of payment to the

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AND AFFIRMATIVE ACTION PROGRAM

General or Prime Contractor of 1/100 or 1% of the contract award price or \$5,000, whichever sum is greater, or, if a subcontractor is in non-compliance, a withhold by the administering agency from the General Contractor, to be assessed by the General Contractor as a charge against the subcontractor, of 1/100 or 1% of the subcontractor price, or \$1,000 whichever sum is greater, for each violation of the applicable law or contract requirements. The total withheld from any one General or Prime Contractor or subcontractor on a Project shall not exceed \$20,000 overall. No withhold of payments or investigation by the Commission or its agent shall be initiated without the administering agency providing prior notice to the Contractor.

If, after investigation, the Massachusetts Commission Against Discrimination finds that a General or Prime Contractor or subcontractor, in commission of a state construction contract or state-assisted construction contract, violated the provisions of the Fair Employment Practices Law, the administering agency may convert the amount withheld as set forth above into a permanent sanction, as a permanent deduct from payments to the General or Prime Contractor or subcontractor, which sanction will be in addition to any such sanctions, fines or penalties imposed by the Massachusetts Commission Against Discrimination:

No sanction enumerated under this Section shall be imposed by the administering agency except after notice to the General or Prime Contractor or subcontractor and an adjudicatory proceeding, as that term is used, under Massachusetts General Laws Chapter 30A, has been conducted.

IX. Severability

The provisions of this section are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions.

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X. Contractor's Certification

A bidder for a state construction contract or state assisted construction contract will not be eligible for award of the contract unless such bidder has submitted to the administering agency the following certification, which will be incorporated into the resulting contract:

CONTRACTOR'S CERTIFICATION

\_\_\_\_\_ certifies that they:

(Contractor Name)

1. Will not discriminate in their employment practices;
2. Intend to use the following listed construction trades in the work under the contract  
\_\_\_\_\_  
\_\_\_\_\_; and
3. Will make good faith efforts to comply with the minority employee and women employee workforce participation ratio goals and specific affirmative action steps contained herein; and
4. Are in compliance with all applicable federal and state laws, rules, and regulations governing fair labor and employment practices; and
5. Will provide the provisions of the "Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program" to each and every subcontractor employed on the Project and will incorporate the terms of this Section into all subcontracts and work orders entered into on the Project.
6. Agree to comply with all provisions contained herein.

\_\_\_\_\_  
(Signature of authorized representative of Contractor)

\_\_\_\_\_  
Date

\_\_\_\_\_  
(Printed name of authorized representative of Contractor)

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AND AFFIRMATIVE ACTION PROGRAM

XI. Subcontractor Requirements

Prior to the award of any subcontract for a state construction contract or a state assisted construction contract, regardless of tier, the Prime or General Contractor shall provide all prospective subcontractors with a complete copy of this Section entitled "Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program" and will incorporate the provisions of this Section by reference into any and all contracts or work orders for all subcontractors providing work on the Project. In order to ensure that the said subcontractor's certification becomes a part of all subcontracts under the prime contract, the Prime or General Contractor shall certify in writing to the administering agency that it has complied with the requirements as set forth in the proceeding paragraph.

EQUAL EMPLOYMENT OPPORTUNITY FORMS

(Forms A and C must be filled out and submitted with Bid)

A. **Contractor's Certification**

Name of Project: \_\_\_\_\_

A contractor will not be eligible for award of a contract unless such contractor has submitted the following certification which is deemed a part of the resulting contract.

**CONTRACTOR'S CERTIFICATION**

\_\_\_\_\_ Certifies that it

1. Intends to use the following listed construction trades in the work under the contract: \_\_\_\_\_

\_\_\_\_\_; and

2. Will comply with the minority manpower ratio and specific affirmative action steps contained herein; and
3. Will obtain from each of its subcontractors and submit to the contracting or administering agency prior to the award of any subcontractor under this contract the subcontractor certification required by these bid conditions.

\_\_\_\_\_  
(Signature of authorized representative of contractor)

B. **Subcontractor's Certification**

Name of Project: \_\_\_\_\_

Prior to the award of any subcontract, regardless of tier, the prospective subcontractor must execute and submit to the Prime Contractor the following certification, which will be deemed a part of the resulting subcontract:

SUBCONTRACTOR'S CERTIFICATION

\_\_\_\_\_ Certifies that it:

1. Intends to use the following listed construction trades in the work under the subcontract: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ ; and
2. Will comply with the minority manpower ratio and specific affirmative action steps contained herein; and
3. Will obtain from each of the subcontractors prior to the award of any subcontract under this subcontract the subcontractor certification required by these bid conditions

\_\_\_\_\_  
(Signature of authorized representative of contractor)

In order to ensure that the said subcontractor's certification becomes a part of all subcontractors under the prime contract, no subcontract shall be executed until an authorized representative of the Town agency (or agencies) administering this project has determined, in writing, that the said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval shall be void.

**C. Bidder's Certification**

Name of Project: \_\_\_\_\_

The undersigned bidder hereby certifies he/she will comply with the Minority/Women workforce percentage ratio and specific affirmative action steps contained in the EEO/AA provisions of this Contract including compliance with the Minority/Women Business Enterprise as required under these contract provisions. The contractor receiving the award of the contract shall be required to obtain from each of its subcontractors a copy of the bidder's certification and submit it to the contracting agency prior to the award of such subcontract, regardless of tier, that it will comply with the Minority/Women workforce ratio and specific affirmative action steps contained in these EEO/AA contract provisions.

\_\_\_\_\_  
Signature of Bidder

\_\_\_\_\_  
Name of Firm

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date





PARTICIPATION BY WOMEN BUSINESS ENTERPRISES  
LETTER OF INTENT

PROJECT NUMBER \_\_\_\_\_

PROJECT LOCATION \_\_\_\_\_

FROM \_\_\_\_\_  
(Women Business Enterprise)

TO \_\_\_\_\_  
(Name of Prime Contractor)

1. My company's Women Business Certification is substantiated by:
  - \_\_\_\_ (A) Department Listing
  - \_\_\_\_ (B) SOMBA Listing
  - \_\_\_\_ (C) Attached Certification Application
2. The ownership and control is still at least 52%.

If any information of the kind supplied on the Certification Application changes, my company shall immediately give written notification of the changes to the Department and to you.

If you are awarded the contract, my company intends to enter into an agreement with your firm to perform the activity describe don the following sheet for the prices indicated.

Item Number (If Applicable)	Description of Activity with notation such as "Labor Only," "Material Only," "Complete"	Unit		
		Quantity	Price	Amount
			Total Amount	\$

DATE \_\_\_\_\_  
(Name of Women Business Enterprise)

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

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





MAURA HEALEY  
Governor

KIM DRISCOLL  
Lt. Governor

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

Prevailing Wage Rates

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

LAUREN JONES  
Secretary

MICHAEL FLANAGAN  
Director

**Awarding Authority:** Board of Selectmen  
**Contract Number:** 2025-02 **City/Town:** MARSHFIELD  
**Description of Work:** Work includes removal of existing dam and constructing a nature like riffle pool fishway with associated water control elements and Park safety improvements.  
**Job Location:** Intersection of Route 3A Main St and Route 139

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Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The 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 from 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.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$39.95	\$15.07	\$18.67	\$0.00	\$73.69
	12/01/2024	\$39.95	\$15.07	\$20.17	\$0.00	\$75.19
	01/01/2025	\$39.95	\$15.57	\$20.17	\$0.00	\$75.69
	06/01/2025	\$40.95	\$15.57	\$20.17	\$0.00	\$76.69
	12/01/2025	\$40.95	\$15.57	\$21.78	\$0.00	\$78.30
	01/01/2026	\$40.95	\$16.17	\$21.78	\$0.00	\$78.90
	06/01/2026	\$41.95	\$16.17	\$21.78	\$0.00	\$79.90
	12/01/2026	\$41.95	\$16.17	\$23.52	\$0.00	\$81.64
	01/01/2027	\$41.95	\$16.77	\$23.52	\$0.00	\$82.24
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.02	\$15.07	\$18.67	\$0.00	\$73.76
	12/01/2024	\$40.02	\$15.07	\$20.17	\$0.00	\$75.26
	01/01/2025	\$40.02	\$15.57	\$20.17	\$0.00	\$75.76
	06/01/2025	\$41.02	\$15.57	\$20.17	\$0.00	\$76.76
	12/01/2025	\$41.02	\$15.57	\$21.78	\$0.00	\$78.37
	01/01/2026	\$41.02	\$16.17	\$21.78	\$0.00	\$78.97
	06/01/2026	\$42.02	\$16.17	\$21.78	\$0.00	\$79.97
	12/01/2026	\$42.02	\$16.17	\$23.52	\$0.00	\$81.71
	01/01/2027	\$42.02	\$16.77	\$23.52	\$0.00	\$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.14	\$15.07	\$18.67	\$0.00	\$73.88
	12/01/2024	\$40.14	\$15.07	\$20.17	\$0.00	\$75.38
	01/01/2025	\$40.14	\$15.57	\$20.17	\$0.00	\$75.88
	06/01/2025	\$41.14	\$15.57	\$20.17	\$0.00	\$76.88
	12/01/2025	\$41.14	\$15.57	\$21.78	\$0.00	\$78.49
	01/01/2026	\$41.14	\$16.17	\$21.78	\$0.00	\$79.09
	06/01/2026	\$42.14	\$16.17	\$21.78	\$0.00	\$80.09
	12/01/2026	\$42.14	\$16.17	\$23.52	\$0.00	\$81.83
	01/01/2027	\$42.14	\$16.77	\$23.52	\$0.00	\$82.43
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.61	\$9.65	\$17.14	\$0.00	\$65.40
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$39.28	\$9.65	\$17.80	\$0.00	\$66.73
	12/01/2024	\$40.61	\$9.65	\$17.80	\$0.00	\$68.06
	06/01/2025	\$42.00	\$9.65	\$17.80	\$0.00	\$69.45
	12/01/2025	\$43.38	\$9.65	\$17.80	\$0.00	\$70.83
	06/01/2026	\$44.82	\$9.65	\$17.80	\$0.00	\$72.27
	12/01/2026	\$46.26	\$9.65	\$17.80	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	06/01/2024	\$41.80	\$14.50	\$11.05	\$0.00	\$67.35
	12/01/2024	\$42.80	\$14.50	\$11.05	\$0.00	\$68.35
	06/01/2025	\$43.80	\$14.50	\$11.05	\$0.00	\$69.35
	12/01/2025	\$44.80	\$14.50	\$11.05	\$0.00	\$70.35

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.61	\$9.65	\$17.14	\$0.00	\$65.40
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$39.28	\$9.65	\$17.80	\$0.00	\$66.73
	12/01/2024	\$40.61	\$9.65	\$17.80	\$0.00	\$68.06
	06/01/2025	\$42.00	\$9.65	\$17.80	\$0.00	\$69.45
	12/01/2025	\$43.38	\$9.65	\$17.80	\$0.00	\$70.83
	06/01/2026	\$44.82	\$9.65	\$17.80	\$0.00	\$72.27
	12/01/2026	\$46.26	\$9.65	\$17.80	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2024	\$48.12	\$7.07	\$20.60	\$0.00	\$75.79

**Classification**

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

**Apprentice - BOILERMAKER - Local 29**

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

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

**Notes:**

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

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	08/01/2024	\$64.50	\$11.49	\$23.59	\$0.00	\$99.58
BRICKLAYERS LOCAL 3 (QUINCY)	02/01/2025	\$65.80	\$11.49	\$23.59	\$0.00	\$100.88
	08/01/2025	\$67.95	\$11.49	\$23.59	\$0.00	\$103.03
	02/01/2026	\$69.30	\$11.49	\$23.59	\$0.00	\$104.38
	08/01/2026	\$71.50	\$11.49	\$23.59	\$0.00	\$106.58
	02/01/2027	\$72.90	\$11.49	\$23.59	\$0.00	\$107.98

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

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.25	\$11.49	\$23.59	\$0.00	\$67.33
2	60	\$38.70	\$11.49	\$23.59	\$0.00	\$73.78
3	70	\$45.15	\$11.49	\$23.59	\$0.00	\$80.23
4	80	\$51.60	\$11.49	\$23.59	\$0.00	\$86.68
5	90	\$58.05	\$11.49	\$23.59	\$0.00	\$93.13

**Notes:**

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

BULLDOZER/GRADER/SCRAPER OPERATING ENGINEERS LOCAL 4	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$46.63	\$9.65	\$18.22	\$0.00	\$74.50
	12/01/2024	\$48.10	\$9.65	\$18.22	\$0.00	\$75.97
	06/01/2025	\$49.60	\$9.65	\$18.22	\$0.00	\$77.47
	12/01/2025	\$51.10	\$9.65	\$18.22	\$0.00	\$78.97
	06/01/2026	\$52.65	\$9.65	\$18.22	\$0.00	\$80.52
	12/01/2026	\$54.15	\$9.65	\$18.22	\$0.00	\$82.02
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$45.48	\$9.65	\$18.22	\$0.00	\$73.35
	12/01/2024	\$46.95	\$9.65	\$18.22	\$0.00	\$74.82
	06/01/2025	\$48.45	\$9.65	\$18.22	\$0.00	\$76.32
	12/01/2025	\$49.95	\$9.65	\$18.22	\$0.00	\$77.82
	06/01/2026	\$51.50	\$9.65	\$18.22	\$0.00	\$79.37
	12/01/2026	\$53.00	\$9.65	\$18.22	\$0.00	\$80.87
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2024	\$47.12	\$9.83	\$19.97	\$0.00	\$76.92
	09/01/2024	\$48.37	\$9.83	\$19.97	\$0.00	\$78.17
	03/01/2025	\$49.62	\$9.83	\$19.97	\$0.00	\$79.42
	09/01/2025	\$50.87	\$9.83	\$19.97	\$0.00	\$80.67
	03/01/2026	\$52.12	\$9.83	\$19.97	\$0.00	\$81.92
	09/01/2026	\$53.37	\$9.83	\$19.97	\$0.00	\$83.17
	03/01/2027	\$54.62	\$9.83	\$19.97	\$0.00	\$84.42



**Classification**

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

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

**Effective Date - 03/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.20	\$9.83	\$1.73	\$0.00	\$32.76
2	45	\$21.20	\$9.83	\$1.73	\$0.00	\$32.76
3	55	\$25.92	\$9.83	\$3.40	\$0.00	\$39.15
4	55	\$25.92	\$9.83	\$3.40	\$0.00	\$39.15
5	70	\$32.98	\$9.83	\$16.51	\$0.00	\$59.32
6	70	\$32.98	\$9.83	\$16.51	\$0.00	\$59.32
7	80	\$37.70	\$9.83	\$18.24	\$0.00	\$65.77
8	80	\$37.70	\$9.83	\$18.24	\$0.00	\$65.77

**Effective Date - 09/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.77	\$9.83	\$1.73	\$0.00	\$33.33
2	45	\$21.77	\$9.83	\$1.73	\$0.00	\$33.33
3	55	\$26.60	\$9.83	\$3.40	\$0.00	\$39.83
4	55	\$26.60	\$9.83	\$3.40	\$0.00	\$39.83
5	70	\$33.86	\$9.83	\$16.51	\$0.00	\$60.20
6	70	\$33.86	\$9.83	\$16.51	\$0.00	\$60.20
7	80	\$38.70	\$9.83	\$18.24	\$0.00	\$66.77
8	80	\$38.70	\$9.83	\$18.24	\$0.00	\$66.77

**Notes:**

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

CARPENTER WOOD FRAME	10/01/2023	\$25.55	\$7.02	\$4.80	\$0.00	\$37.37
CARPENTERS-ZONE 3 (Wood Frame)	10/01/2024	\$26.65	\$7.02	\$4.80	\$0.00	\$38.47
	10/01/2025	\$27.75	\$7.02	\$4.80	\$0.00	\$39.57
	10/01/2026	\$28.85	\$7.02	\$4.80	\$0.00	\$40.67

All Aspects of New Wood Frame Work



<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
CHAIN SAW OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$57.15	\$15.30	\$16.40	\$0.00	\$88.85
	12/01/2024	\$58.63	\$15.30	\$16.40	\$0.00	\$90.33
	06/01/2025	\$59.96	\$15.30	\$16.40	\$0.00	\$91.66
	12/01/2025	\$61.43	\$15.30	\$16.40	\$0.00	\$93.13
	06/01/2026	\$62.76	\$15.30	\$16.40	\$0.00	\$94.46
	12/01/2026	\$64.24	\$15.30	\$16.40	\$0.00	\$95.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2023	\$47.87	\$11.75	\$16.86	\$0.00	\$76.48

**Apprentice - ELECTRICIAN - Local 223**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.15	\$11.75	\$0.57	\$0.00	\$31.47
2	45	\$21.54	\$11.75	\$0.65	\$0.00	\$33.94
3	50	\$23.94	\$11.75	\$0.72	\$0.00	\$36.41
4	55	\$26.33	\$11.75	\$0.79	\$0.00	\$45.87
5	60	\$28.72	\$11.75	\$0.83	\$0.00	\$48.78
6	65	\$31.12	\$11.75	\$0.85	\$0.00	\$51.52
7	70	\$33.51	\$11.75	\$0.93	\$0.00	\$54.64
8	75	\$35.90	\$11.75	\$0.90	\$0.00	\$57.55

**Notes:**

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

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

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

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

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

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

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

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$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	05/01/2024	\$50.79	\$15.00	\$16.40	\$0.00	\$82.19
	11/01/2024	\$52.08	\$15.00	\$16.40	\$0.00	\$83.48
	05/01/2025	\$53.52	\$15.00	\$16.40	\$0.00	\$84.92
	11/01/2025	\$54.81	\$15.00	\$16.40	\$0.00	\$86.21
	05/01/2026	\$56.25	\$15.00	\$16.40	\$0.00	\$87.65
	11/01/2026	\$57.54	\$15.00	\$16.40	\$0.00	\$88.94
	05/01/2027	\$58.97	\$15.00	\$16.40	\$0.00	\$90.37

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 4	05/01/2024	\$52.37	\$15.00	\$16.40	\$0.00	\$83.77
	11/01/2024	\$53.67	\$15.00	\$16.40	\$0.00	\$85.07
	05/01/2025	\$55.12	\$15.00	\$16.40	\$0.00	\$86.52
	11/01/2025	\$56.42	\$15.00	\$16.40	\$0.00	\$87.82
	05/01/2026	\$57.87	\$15.00	\$16.40	\$0.00	\$89.27
	11/01/2026	\$59.17	\$15.00	\$16.40	\$0.00	\$90.57
	05/01/2027	\$60.62	\$15.00	\$16.40	\$0.00	\$92.02

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2024	\$24.91	\$15.00	\$16.40	\$0.00	\$56.31
	11/01/2024	\$25.67	\$15.00	\$16.40	\$0.00	\$57.07
	05/01/2025	\$26.52	\$15.00	\$16.40	\$0.00	\$57.92
	11/01/2025	\$27.28	\$15.00	\$16.40	\$0.00	\$58.68
	05/01/2026	\$28.13	\$15.00	\$16.40	\$0.00	\$59.53
	11/01/2026	\$28.89	\$15.00	\$16.40	\$0.00	\$60.29
	05/01/2027	\$29.74	\$15.00	\$16.40	\$0.00	\$61.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE <i>/ COMMISSIONING ELECTRICIANS LOCAL 223</i>	09/01/2020	\$36.86	\$10.90	\$12.45	\$0.00	\$60.21
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$45.23	\$15.30	\$16.40	\$0.00	\$76.93
	12/01/2024	\$46.41	\$15.30	\$16.40	\$0.00	\$78.11
	06/01/2025	\$47.47	\$15.30	\$16.40	\$0.00	\$79.17
	12/01/2025	\$48.64	\$15.30	\$16.40	\$0.00	\$80.34
	06/01/2026	\$49.70	\$15.30	\$16.40	\$0.00	\$81.40
	12/01/2026	\$50.88	\$15.30	\$16.40	\$0.00	\$82.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$27.01	\$9.65	\$17.80	\$0.00	\$54.46
	12/01/2024	\$27.01	\$9.65	\$17.80	\$0.00	\$54.46
	06/01/2025	\$28.09	\$9.65	\$17.80	\$0.00	\$55.54
	12/01/2025	\$28.09	\$9.65	\$17.80	\$0.00	\$55.54
	06/01/2026	\$29.21	\$9.65	\$17.80	\$0.00	\$56.66
	12/01/2026	\$29.21	\$9.65	\$17.80	\$0.00	\$56.66
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2024	\$54.73	\$8.83	\$20.27	\$0.00	\$83.83
	09/01/2024	\$56.23	\$8.83	\$20.27	\$0.00	\$85.33
	03/01/2025	\$57.73	\$8.83	\$20.27	\$0.00	\$86.83
	09/01/2025	\$59.23	\$8.83	\$20.27	\$0.00	\$88.33
	03/01/2026	\$60.73	\$8.83	\$20.27	\$0.00	\$89.83
	09/01/2026	\$62.23	\$8.83	\$20.27	\$0.00	\$91.33
	03/01/2027	\$63.73	\$8.83	\$20.27	\$0.00	\$92.83

**Classification**

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

**Apprentice - FLOORCOVERER - Local 2168 Zone I**

**Effective Date - 03/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$24.63	\$8.83	\$1.76	\$0.00	\$35.22
2	45	\$24.63	\$8.83	\$1.76	\$0.00	\$35.22
3	55	\$30.10	\$8.83	\$3.52	\$0.00	\$42.45
4	55	\$30.10	\$8.83	\$3.52	\$0.00	\$42.45
5	70	\$38.31	\$8.83	\$16.75	\$0.00	\$63.89
6	70	\$38.31	\$8.83	\$16.75	\$0.00	\$63.89
7	80	\$43.78	\$8.83	\$18.51	\$0.00	\$71.12
8	80	\$43.78	\$8.83	\$18.51	\$0.00	\$71.12

**Effective Date - 09/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$25.30	\$8.83	\$1.76	\$0.00	\$35.89
2	45	\$25.30	\$8.83	\$1.76	\$0.00	\$35.89
3	55	\$30.93	\$8.83	\$3.52	\$0.00	\$43.28
4	55	\$30.93	\$8.83	\$3.52	\$0.00	\$43.28
5	70	\$39.36	\$8.83	\$16.75	\$0.00	\$64.94
6	70	\$39.36	\$8.83	\$16.75	\$0.00	\$64.94
7	80	\$44.98	\$8.83	\$18.51	\$0.00	\$72.32
8	80	\$44.98	\$8.83	\$18.51	\$0.00	\$72.32

**Notes:** Steps are 750 hrs.

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

FORK LIFT/CHERRY PICKER OPERATING ENGINEERS LOCAL 4	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATOR/LIGHTING PLANT/HEATERS OPERATING ENGINEERS LOCAL 4	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) GLAZIERS LOCAL 35 (ZONE 2)	07/01/2024	\$46.76	\$9.95	\$23.95	\$0.00	\$80.66
	01/01/2025	\$47.96	\$9.95	\$23.95	\$0.00	\$81.86



**Classification**

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

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

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$9.95	\$0.00	\$0.00	\$33.33
2	55	\$25.72	\$9.95	\$6.66	\$0.00	\$42.33
3	60	\$28.06	\$9.95	\$7.26	\$0.00	\$45.27
4	65	\$30.39	\$9.95	\$7.87	\$0.00	\$48.21
5	70	\$32.73	\$9.95	\$20.32	\$0.00	\$63.00
6	75	\$35.07	\$9.95	\$20.93	\$0.00	\$65.95
7	80	\$37.41	\$9.95	\$21.53	\$0.00	\$68.89
8	90	\$42.08	\$9.95	\$22.74	\$0.00	\$74.77

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.98	\$9.95	\$0.00	\$0.00	\$33.93
2	55	\$26.38	\$9.95	\$6.66	\$0.00	\$42.99
3	60	\$28.78	\$9.95	\$7.26	\$0.00	\$45.99
4	65	\$31.17	\$9.95	\$7.87	\$0.00	\$48.99
5	70	\$33.57	\$9.95	\$20.32	\$0.00	\$63.84
6	75	\$35.97	\$9.95	\$20.93	\$0.00	\$66.85
7	80	\$38.37	\$9.95	\$21.53	\$0.00	\$69.85
8	90	\$43.16	\$9.95	\$22.74	\$0.00	\$75.85

**Notes:**

Steps are 750 hrs.

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

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
OPERATING ENGINEERS LOCAL 4	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68

**Classification**

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

**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date - 06/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$30.82	\$15.30	\$0.00	\$0.00	\$46.12
2	60	\$33.62	\$15.30	\$16.40	\$0.00	\$65.32
3	65	\$36.42	\$15.30	\$16.40	\$0.00	\$68.12
4	70	\$39.22	\$15.30	\$16.40	\$0.00	\$70.92
5	75	\$42.02	\$15.30	\$16.40	\$0.00	\$73.72
6	80	\$44.82	\$15.30	\$16.40	\$0.00	\$76.52
7	85	\$47.63	\$15.30	\$16.40	\$0.00	\$79.33
8	90	\$50.43	\$15.30	\$16.40	\$0.00	\$82.13

**Effective Date - 12/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$31.61	\$0.00	\$0.00	\$0.00	\$31.61
2	60	\$34.49	\$15.30	\$16.40	\$0.00	\$66.19
3	65	\$37.36	\$15.30	\$16.40	\$0.00	\$69.06
4	70	\$40.24	\$15.30	\$16.40	\$0.00	\$71.94
5	75	\$43.11	\$15.30	\$16.40	\$0.00	\$74.81
6	80	\$45.98	\$15.30	\$16.40	\$0.00	\$77.68
7	85	\$48.86	\$15.30	\$16.40	\$0.00	\$80.56
8	90	\$51.73	\$15.30	\$16.40	\$0.00	\$83.43

**Notes:**

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

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 223	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22
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For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING - WATER) PLUMBERS & PIPEFITTERS LOCAL 51	08/28/2023	\$51.99	\$10.15	\$19.95	\$0.00	\$82.09
	08/26/2024	\$54.74	\$10.15	\$19.95	\$0.00	\$84.84
	08/25/2025	\$57.49	\$10.15	\$19.95	\$0.00	\$87.59

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC MECHANIC <i>PLUMBERS &amp; PIPEFITTERS LOCAL 51</i>	08/28/2023	\$51.99	\$10.15	\$19.95	\$0.00	\$82.09
	08/26/2024	\$54.74	\$10.15	\$19.95	\$0.00	\$84.84
	08/25/2025	\$57.49	\$10.15	\$19.95	\$0.00	\$87.59

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

HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.61	\$9.65	\$17.14	\$0.00	\$65.40
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For apprentice rates see "Apprentice- LABORER"

HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$39.28	\$9.65	\$17.80	\$0.00	\$66.73
	12/01/2024	\$40.61	\$9.65	\$17.80	\$0.00	\$68.06
	06/01/2025	\$42.00	\$9.65	\$17.80	\$0.00	\$69.45
	12/01/2025	\$43.38	\$9.65	\$17.80	\$0.00	\$70.83
	06/01/2026	\$44.82	\$9.65	\$17.80	\$0.00	\$72.27
	12/01/2026	\$46.26	\$9.65	\$17.80	\$0.00	\$73.71

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

INSULATOR (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2023	\$53.50	\$14.75	\$19.61	\$0.00	\$87.86
	09/01/2024	\$56.92	\$14.75	\$19.61	\$0.00	\$91.28
	09/01/2025	\$60.34	\$14.75	\$19.61	\$0.00	\$94.70
	09/01/2026	\$63.76	\$14.75	\$19.61	\$0.00	\$98.12

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

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.75	\$14.75	\$14.32	\$0.00	\$55.82
2	60	\$32.10	\$14.75	\$15.37	\$0.00	\$62.22
3	70	\$37.45	\$14.75	\$16.43	\$0.00	\$68.63
4	80	\$42.80	\$14.75	\$17.49	\$0.00	\$75.04

**Effective Date - 09/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.46	\$14.75	\$14.32	\$0.00	\$57.53
2	60	\$34.15	\$14.75	\$15.37	\$0.00	\$64.27
3	70	\$39.84	\$14.75	\$16.43	\$0.00	\$71.02
4	80	\$45.54	\$14.75	\$17.49	\$0.00	\$77.78

**Notes:**

Steps are 1 year

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

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

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

**Apprentice - IRONWORKER - Local 7 Boston**

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

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

**Notes:**

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

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
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For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS - ZONE 2	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
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**Apprentice - LABORER - Zone 2**

**Effective Date - 12/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.72	\$9.65	\$16.89	\$0.00	\$49.26
2	70	\$26.50	\$9.65	\$16.89	\$0.00	\$53.04
3	80	\$30.29	\$9.65	\$16.89	\$0.00	\$56.83
4	90	\$34.07	\$9.65	\$16.89	\$0.00	\$60.61

**Notes:**

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

LABORER (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	06/01/2024	\$38.53	\$9.65	\$17.80	\$0.00	\$65.98
	12/01/2024	\$39.86	\$9.65	\$17.80	\$0.00	\$67.31
	06/01/2025	\$41.25	\$9.65	\$17.80	\$0.00	\$68.70
	12/01/2025	\$42.63	\$9.65	\$17.80	\$0.00	\$70.08
	06/01/2026	\$44.07	\$9.65	\$17.80	\$0.00	\$71.52
	12/01/2026	\$45.51	\$9.65	\$17.80	\$0.00	\$72.96

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

**Effective Date - 06/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.12	\$9.65	\$17.80	\$0.00	\$50.57
2	70	\$26.97	\$9.65	\$17.80	\$0.00	\$54.42
3	80	\$30.82	\$9.65	\$17.80	\$0.00	\$58.27
4	90	\$34.68	\$9.65	\$17.80	\$0.00	\$62.13

**Effective Date - 12/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.92	\$9.65	\$17.80	\$0.00	\$51.37
2	70	\$27.90	\$9.65	\$17.80	\$0.00	\$55.35
3	80	\$31.89	\$9.65	\$17.80	\$0.00	\$59.34
4	90	\$35.87	\$9.65	\$17.80	\$0.00	\$63.32

**Notes:**

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

LABORER: CARPENTER TENDER LABORERS - ZONE 2	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
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For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 2	12/01/2023	\$38.36	\$9.40	\$16.89	\$0.00	\$64.65
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For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 2	12/01/2023	\$37.95	\$9.65	\$17.20	\$0.00	\$64.80
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For apprentice rates see "Apprentice- LABORER"

LABORER: MASON TENDER LABORERS - ZONE 2	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
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For apprentice rates see "Apprentice- LABORER"

LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21

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

LABORER: MULTI-TRADE TENDER LABORERS - ZONE 2	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
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For apprentice rates see "Apprentice- LABORER"

LABORER: TREE REMOVER LABORERS - ZONE 2	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
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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 - ZONE 2	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
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For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21

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

MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	08/01/2024	\$49.32	\$11.49	\$21.62	\$0.00	\$82.43
	02/01/2025	\$50.36	\$11.49	\$21.62	\$0.00	\$83.47
	08/01/2025	\$52.08	\$11.49	\$21.62	\$0.00	\$85.19
	02/01/2026	\$53.16	\$11.49	\$21.62	\$0.00	\$86.27
	08/01/2026	\$54.92	\$11.49	\$21.62	\$0.00	\$88.03
	02/01/2027	\$56.04	\$11.49	\$21.62	\$0.00	\$89.15

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

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.66	\$11.49	\$21.62	\$0.00	\$57.77
2	60	\$29.59	\$11.49	\$21.62	\$0.00	\$62.70
3	70	\$34.52	\$11.49	\$21.62	\$0.00	\$67.63
4	80	\$39.46	\$11.49	\$21.62	\$0.00	\$72.57
5	90	\$44.39	\$11.49	\$21.62	\$0.00	\$77.50

Notes:

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

MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	08/01/2024	\$64.52	\$11.49	\$23.56	\$0.00	\$99.57
	02/01/2025	\$65.82	\$11.49	\$23.56	\$0.00	\$100.87
	08/01/2025	\$67.97	\$11.49	\$23.56	\$0.00	\$103.02
	02/01/2026	\$69.32	\$11.49	\$23.56	\$0.00	\$104.37
	08/01/2026	\$71.52	\$11.49	\$23.56	\$0.00	\$106.57
	02/01/2027	\$72.92	\$11.49	\$23.56	\$0.00	\$107.97

**Classification**

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

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

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.26	\$11.49	\$23.56	\$0.00	\$67.31
2	60	\$38.71	\$11.49	\$23.56	\$0.00	\$73.76
3	70	\$45.16	\$11.49	\$23.56	\$0.00	\$80.21
4	80	\$51.62	\$11.49	\$23.56	\$0.00	\$86.67
5	90	\$58.07	\$11.49	\$23.56	\$0.00	\$93.12

**Notes:**

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

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	01/01/2024	\$42.76	\$10.08	\$21.47	\$0.00	\$74.31
	01/06/2025	\$45.09	\$10.08	\$21.47	\$0.00	\$76.64
	01/05/2026	\$47.42	\$10.08	\$21.47	\$0.00	\$78.97

**Apprentice - MILLWRIGHT - Local 1121 Zone 2**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.52	\$10.08	\$5.50	\$0.00	\$39.10
2	65	\$27.79	\$10.08	\$6.50	\$0.00	\$44.37
3	75	\$32.07	\$10.08	\$18.97	\$0.00	\$61.12
4	85	\$36.35	\$10.08	\$19.97	\$0.00	\$66.40

**Effective Date - 01/06/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$24.80	\$10.08	\$5.50	\$0.00	\$40.38
2	65	\$29.31	\$10.08	\$6.50	\$0.00	\$45.89
3	75	\$33.82	\$10.08	\$18.97	\$0.00	\$62.87
4	85	\$38.33	\$10.08	\$19.97	\$0.00	\$68.38

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

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

<b>MORTAR MIXER</b> <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
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For apprentice rates see "Apprentice- LABORER"

<b>OILER (OTHER THAN TRUCK CRANES,GRADALLS)</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$24.71	\$15.30	\$16.40	\$0.00	\$56.41
	12/01/2024	\$25.37	\$15.30	\$16.40	\$0.00	\$57.07
	06/01/2025	\$25.97	\$15.30	\$16.40	\$0.00	\$57.67
	12/01/2025	\$26.63	\$15.30	\$16.40	\$0.00	\$58.33
	06/01/2026	\$27.22	\$15.30	\$16.40	\$0.00	\$58.92
	12/01/2026	\$27.89	\$15.30	\$16.40	\$0.00	\$59.59

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>OILER (TRUCK CRANES, GRADALLS)</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$30.28	\$15.30	\$16.40	\$0.00	\$61.98
	12/01/2024	\$31.08	\$15.30	\$16.40	\$0.00	\$62.78
	06/01/2025	\$31.80	\$15.30	\$16.40	\$0.00	\$63.50
	12/01/2025	\$32.60	\$15.30	\$16.40	\$0.00	\$64.30
	06/01/2026	\$33.32	\$15.30	\$16.40	\$0.00	\$65.02
	12/01/2026	\$34.12	\$15.30	\$16.40	\$0.00	\$65.82

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>OTHER POWER DRIVEN EQUIPMENT - CLASS II</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>PAINTER (BRIDGES/TANKS)</b> <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36



**Classification**

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

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

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$9.95	\$0.00	\$0.00	\$38.58
2	55	\$31.49	\$9.95	\$6.66	\$0.00	\$48.10
3	60	\$34.36	\$9.95	\$7.26	\$0.00	\$51.57
4	65	\$37.22	\$9.95	\$7.87	\$0.00	\$55.04
5	70	\$40.08	\$9.95	\$20.32	\$0.00	\$70.35
6	75	\$42.95	\$9.95	\$20.93	\$0.00	\$73.83
7	80	\$45.81	\$9.95	\$21.53	\$0.00	\$77.29
8	90	\$51.53	\$9.95	\$22.74	\$0.00	\$84.22

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$29.23	\$9.95	\$0.00	\$0.00	\$39.18
2	55	\$32.15	\$9.95	\$6.66	\$0.00	\$48.76
3	60	\$35.08	\$9.95	\$7.26	\$0.00	\$52.29
4	65	\$38.00	\$9.95	\$7.87	\$0.00	\$55.82
5	70	\$40.92	\$9.95	\$20.32	\$0.00	\$71.19
6	75	\$43.85	\$9.95	\$20.93	\$0.00	\$74.73
7	80	\$46.77	\$9.95	\$21.53	\$0.00	\$78.25
8	90	\$52.61	\$9.95	\$22.74	\$0.00	\$85.30

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, NEW) *	07/01/2024	\$48.16	\$9.95	\$23.95	\$0.00	\$82.06
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2025	\$49.36	\$9.95	\$23.95	\$0.00	\$83.26

**Classification**

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

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

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.08	\$9.95	\$0.00	\$0.00	\$34.03
2	55	\$26.49	\$9.95	\$6.66	\$0.00	\$43.10
3	60	\$28.90	\$9.95	\$7.26	\$0.00	\$46.11
4	65	\$31.30	\$9.95	\$7.87	\$0.00	\$49.12
5	70	\$33.71	\$9.95	\$20.32	\$0.00	\$63.98
6	75	\$36.12	\$9.95	\$20.93	\$0.00	\$67.00
7	80	\$38.53	\$9.95	\$21.53	\$0.00	\$70.01
8	90	\$43.34	\$9.95	\$22.74	\$0.00	\$76.03

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.68	\$9.95	\$0.00	\$0.00	\$34.63
2	55	\$27.15	\$9.95	\$6.66	\$0.00	\$43.76
3	60	\$29.62	\$9.95	\$7.26	\$0.00	\$46.83
4	65	\$32.08	\$9.95	\$7.87	\$0.00	\$49.90
5	70	\$34.55	\$9.95	\$20.32	\$0.00	\$64.82
6	75	\$37.02	\$9.95	\$20.93	\$0.00	\$67.90
7	80	\$39.49	\$9.95	\$21.53	\$0.00	\$70.97
8	90	\$44.42	\$9.95	\$22.74	\$0.00	\$77.11

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, REPAINT)	07/01/2024	\$46.22	\$9.95	\$23.95	\$0.00	\$80.12
PAINTERS LOCAL 35 - ZONE 2	01/01/2025	\$47.42	\$9.95	\$23.95	\$0.00	\$81.32

**Classification**

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

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

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.11	\$9.95	\$0.00	\$0.00	\$33.06
2	55	\$25.42	\$9.95	\$6.66	\$0.00	\$42.03
3	60	\$27.73	\$9.95	\$7.26	\$0.00	\$44.94
4	65	\$30.04	\$9.95	\$7.87	\$0.00	\$47.86
5	70	\$32.35	\$9.95	\$20.32	\$0.00	\$62.62
6	75	\$34.67	\$9.95	\$20.93	\$0.00	\$65.55
7	80	\$36.98	\$9.95	\$21.53	\$0.00	\$68.46
8	90	\$41.60	\$9.95	\$22.74	\$0.00	\$74.29

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.71	\$9.95	\$0.00	\$0.00	\$33.66
2	55	\$26.08	\$9.95	\$6.66	\$0.00	\$42.69
3	60	\$28.45	\$9.95	\$7.26	\$0.00	\$45.66
4	65	\$30.82	\$9.95	\$7.87	\$0.00	\$48.64
5	70	\$33.19	\$9.95	\$20.32	\$0.00	\$63.46
6	75	\$35.57	\$9.95	\$20.93	\$0.00	\$66.45
7	80	\$37.94	\$9.95	\$21.53	\$0.00	\$69.42
8	90	\$42.68	\$9.95	\$22.74	\$0.00	\$75.37

**Notes:**

Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, NEW) *	07/01/2024	\$46.76	\$9.95	\$23.95	\$0.00	\$80.66
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2025	\$47.96	\$9.95	\$23.95	\$0.00	\$81.86

**Classification**

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

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

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$9.95	\$0.00	\$0.00	\$33.33
2	55	\$25.72	\$9.95	\$6.66	\$0.00	\$42.33
3	60	\$28.06	\$9.95	\$7.26	\$0.00	\$45.27
4	65	\$30.39	\$9.95	\$7.87	\$0.00	\$48.21
5	70	\$32.73	\$9.95	\$20.32	\$0.00	\$63.00
6	75	\$35.07	\$9.95	\$20.93	\$0.00	\$65.95
7	80	\$37.41	\$9.95	\$21.53	\$0.00	\$68.89
8	90	\$42.08	\$9.95	\$22.74	\$0.00	\$74.77

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.98	\$9.95	\$0.00	\$0.00	\$33.93
2	55	\$26.38	\$9.95	\$6.66	\$0.00	\$42.99
3	60	\$28.78	\$9.95	\$7.26	\$0.00	\$45.99
4	65	\$31.17	\$9.95	\$7.87	\$0.00	\$48.99
5	70	\$33.57	\$9.95	\$20.32	\$0.00	\$63.84
6	75	\$35.97	\$9.95	\$20.93	\$0.00	\$66.85
7	80	\$38.37	\$9.95	\$21.53	\$0.00	\$69.85
8	90	\$43.16	\$9.95	\$22.74	\$0.00	\$75.85

**Notes:**

Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, REPAINT)	07/01/2024	\$44.82	\$9.95	\$23.95	\$0.00	\$78.72
PAINTERS LOCAL 35 - ZONE 2	01/01/2025	\$46.02	\$9.95	\$23.95	\$0.00	\$79.92

**Classification**

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

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

**Effective Date - 07/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.41	\$9.95	\$0.00	\$0.00	\$32.36
2	55	\$24.65	\$9.95	\$6.66	\$0.00	\$41.26
3	60	\$26.89	\$9.95	\$7.26	\$0.00	\$44.10
4	65	\$29.13	\$9.95	\$7.87	\$0.00	\$46.95
5	70	\$31.37	\$9.95	\$20.32	\$0.00	\$61.64
6	75	\$33.62	\$9.95	\$20.93	\$0.00	\$64.50
7	80	\$35.86	\$9.95	\$21.53	\$0.00	\$67.34
8	90	\$40.34	\$9.95	\$22.74	\$0.00	\$73.03

**Effective Date - 01/01/2025**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.01	\$9.95	\$0.00	\$0.00	\$32.96
2	55	\$25.31	\$9.95	\$6.66	\$0.00	\$41.92
3	60	\$27.61	\$9.95	\$7.26	\$0.00	\$44.82
4	65	\$29.91	\$9.95	\$7.87	\$0.00	\$47.73
5	70	\$32.21	\$9.95	\$20.32	\$0.00	\$62.48
6	75	\$34.52	\$9.95	\$20.93	\$0.00	\$65.40
7	80	\$36.82	\$9.95	\$21.53	\$0.00	\$68.30
8	90	\$41.42	\$9.95	\$22.74	\$0.00	\$74.11

**Notes:**

Steps are 750 hrs.

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

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	06/01/2024	\$38.53	\$9.65	\$17.80	\$0.00	\$65.98
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2024	\$39.86	\$9.65	\$17.80	\$0.00	\$67.31
	06/01/2025	\$41.25	\$9.65	\$17.80	\$0.00	\$68.70
	12/01/2025	\$42.63	\$9.65	\$17.80	\$0.00	\$70.08
	06/01/2026	\$44.07	\$9.65	\$17.80	\$0.00	\$71.52
	12/01/2026	\$45.51	\$9.65	\$17.80	\$0.00	\$72.96

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

PANEL & PICKUP TRUCKS DRIVER	06/01/2024	\$39.78	\$15.07	\$18.67	\$0.00	\$73.52
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2024	\$39.78	\$15.07	\$20.17	\$0.00	\$75.02
	01/01/2025	\$39.78	\$15.57	\$20.17	\$0.00	\$75.52
	06/01/2025	\$40.78	\$15.57	\$20.17	\$0.00	\$76.52
	12/01/2025	\$40.78	\$15.57	\$21.78	\$0.00	\$78.13
	01/01/2026	\$40.78	\$16.17	\$21.78	\$0.00	\$78.73
	06/01/2026	\$41.78	\$16.17	\$21.78	\$0.00	\$79.73
	12/01/2026	\$41.78	\$16.17	\$23.52	\$0.00	\$81.47
	01/01/2027	\$41.78	\$16.77	\$23.52	\$0.00	\$82.07

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59

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

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

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

**Notes:**

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

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

PIPELAYER <i>LABORERS - ZONE 2</i> For apprentice rates see "Apprentice- LABORER"	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PLUMBER & PIPEFITTER <i>PLUMBERS &amp; PIPEFITTERS LOCAL 51</i>	08/28/2023	\$51.99	\$10.15	\$19.95	\$0.00	\$82.09
	08/26/2024	\$54.74	\$10.15	\$19.95	\$0.00	\$84.84
	08/25/2025	\$57.49	\$10.15	\$19.95	\$0.00	\$87.59

**Apprentice - PLUMBER/PIPEFITTER - Local 51**

**Effective Date - 08/28/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.80	\$10.15	\$2.50	\$0.00	\$33.45
2	50	\$26.00	\$10.15	\$2.50	\$0.00	\$38.65
3	60	\$31.19	\$10.15	\$8.80	\$0.00	\$50.14
4	70	\$36.39	\$10.15	\$14.08	\$0.00	\$60.62
5	80	\$41.59	\$10.15	\$17.60	\$0.00	\$69.34

**Effective Date - 08/26/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$21.90	\$10.15	\$2.50	\$0.00	\$34.55
2	50	\$27.37	\$10.15	\$2.50	\$0.00	\$40.02
3	60	\$32.84	\$10.15	\$8.80	\$0.00	\$51.79
4	70	\$38.32	\$10.15	\$14.08	\$0.00	\$62.55
5	80	\$43.79	\$10.15	\$17.60	\$0.00	\$71.54

**Notes:**  
Steps 2000hrs. Prior 9/1/05; 40/40/45/50/55/60/65/75/80/85

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

PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS &amp; PIPEFITTERS LOCAL 51</i>	08/28/2023	\$51.99	\$10.15	\$19.95	\$0.00	\$82.09
	08/26/2024	\$54.74	\$10.15	\$19.95	\$0.00	\$84.84
	08/25/2025	\$57.49	\$10.15	\$19.95	\$0.00	\$87.59
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.86	\$9.65	\$17.14	\$0.00	\$65.65
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$39.53	\$9.40	\$17.55	\$0.00	\$66.48
	12/01/2024	\$40.86	\$9.40	\$17.55	\$0.00	\$67.81
	06/01/2025	\$42.25	\$9.40	\$17.55	\$0.00	\$69.20
	12/01/2025	\$43.63	\$9.40	\$17.55	\$0.00	\$70.58
	06/01/2026	\$45.07	\$9.40	\$17.55	\$0.00	\$72.02
	12/01/2026	\$46.51	\$9.40	\$17.55	\$0.00	\$73.46
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 653 - Southeastern Concrete (Weymouth)</i>	08/01/2023	\$25.00	\$13.91	\$6.90	\$0.00	\$45.81
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) <i>ROOFERS LOCAL 33</i>	08/01/2024	\$51.53	\$12.78	\$21.45	\$0.00	\$85.76
	02/01/2025	\$52.78	\$12.78	\$21.45	\$0.00	\$87.01
	08/01/2025	\$54.28	\$12.78	\$21.45	\$0.00	\$88.51
	02/01/2026	\$55.53	\$12.78	\$21.45	\$0.00	\$89.76



**Classification**

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

**Apprentice - ROOFER - Local 33**

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.77	\$12.78	\$6.21	\$0.00	\$44.76
2	60	\$30.92	\$12.78	\$21.45	\$0.00	\$65.15
3	65	\$33.49	\$12.78	\$21.45	\$0.00	\$67.72
4	75	\$38.65	\$12.78	\$21.45	\$0.00	\$72.88
5	85	\$43.80	\$12.78	\$21.45	\$0.00	\$78.03

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

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

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	08/01/2024	\$51.78	\$12.78	\$21.45	\$0.00	\$86.01
	02/01/2025	\$53.03	\$12.78	\$21.45	\$0.00	\$87.26
	08/01/2025	\$54.53	\$12.78	\$21.45	\$0.00	\$88.76
	02/01/2026	\$55.78	\$12.78	\$21.45	\$0.00	\$90.01

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59

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

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$24.77	\$14.59	\$6.13	\$0.00	\$45.49
2	42	\$24.77	\$14.59	\$6.13	\$0.00	\$45.49
3	47	\$27.72	\$14.59	\$12.11	\$1.63	\$56.05
4	47	\$27.72	\$14.59	\$12.11	\$1.63	\$56.05
5	52	\$30.66	\$14.59	\$13.09	\$1.75	\$60.09
6	52	\$30.66	\$14.59	\$13.34	\$1.76	\$60.35
7	60	\$35.38	\$14.59	\$14.75	\$1.94	\$66.66
8	65	\$38.33	\$14.59	\$15.73	\$2.06	\$70.71
9	75	\$44.23	\$14.59	\$17.69	\$2.30	\$78.81
10	85	\$50.12	\$14.59	\$19.15	\$2.52	\$86.38

**Notes:**  
 Steps are 6 mos.

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

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.24	\$15.07	\$18.67	\$0.00	\$73.98
	12/01/2024	\$40.24	\$15.07	\$20.17	\$0.00	\$75.48
	01/01/2025	\$40.24	\$15.57	\$20.17	\$0.00	\$75.98
	06/01/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$76.98
	12/01/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$78.59
	01/01/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$79.19
	06/01/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$80.19
	12/01/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$81.93
	01/01/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$82.53
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.53	\$15.07	\$18.67	\$0.00	\$74.27
	12/01/2024	\$40.53	\$15.07	\$20.17	\$0.00	\$75.77
	01/01/2025	\$40.53	\$15.57	\$20.17	\$0.00	\$76.27
	06/01/2025	\$41.53	\$15.57	\$20.17	\$0.00	\$77.27
	12/01/2025	\$41.53	\$15.57	\$21.78	\$0.00	\$78.88
	01/01/2026	\$41.53	\$16.17	\$21.78	\$0.00	\$79.48
	06/01/2026	\$42.53	\$16.17	\$21.78	\$0.00	\$80.48
	12/01/2026	\$42.53	\$16.17	\$23.52	\$0.00	\$82.22
	01/01/2027	\$42.53	\$16.77	\$23.52	\$0.00	\$82.82
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2024	\$69.04	\$11.51	\$23.30	\$0.00	\$103.85
	10/01/2024	\$70.84	\$11.51	\$23.30	\$0.00	\$105.65
	03/01/2025	\$72.64	\$11.51	\$23.30	\$0.00	\$107.45

**Classification**

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

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

**Effective Date - 03/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$24.16	\$11.51	\$12.90	\$0.00	\$48.57
2	40	\$27.62	\$11.51	\$13.70	\$0.00	\$52.83
3	45	\$31.07	\$11.51	\$14.50	\$0.00	\$57.08
4	50	\$34.52	\$11.51	\$15.30	\$0.00	\$61.33
5	55	\$37.97	\$11.51	\$16.10	\$0.00	\$65.58
6	60	\$41.42	\$11.51	\$16.90	\$0.00	\$69.83
7	65	\$44.88	\$11.51	\$17.70	\$0.00	\$74.09
8	70	\$48.33	\$11.51	\$18.50	\$0.00	\$78.34
9	75	\$51.78	\$11.51	\$19.30	\$0.00	\$82.59
10	80	\$55.23	\$11.51	\$20.10	\$0.00	\$86.84

**Effective Date - 10/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$24.79	\$11.51	\$12.90	\$0.00	\$49.20
2	40	\$28.34	\$11.51	\$13.70	\$0.00	\$53.55
3	45	\$31.88	\$11.51	\$14.50	\$0.00	\$57.89
4	50	\$35.42	\$11.51	\$15.30	\$0.00	\$62.23
5	55	\$38.96	\$11.51	\$16.10	\$0.00	\$66.57
6	60	\$42.50	\$11.51	\$16.90	\$0.00	\$70.91
7	65	\$46.05	\$11.51	\$17.70	\$0.00	\$75.26
8	70	\$49.59	\$11.51	\$18.50	\$0.00	\$79.60
9	75	\$53.13	\$11.51	\$19.30	\$0.00	\$83.94
10	80	\$56.67	\$11.51	\$20.10	\$0.00	\$88.28

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

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

STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELECOMMUNICATION TECHNICIAN	09/01/2023	\$39.40	\$11.50	\$13.91	\$0.00	\$64.81
<i>ELECTRICIANS LOCAL 223</i>	09/01/2024	\$40.69	\$11.75	\$14.53	\$0.00	\$66.97

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 223**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

**Notes:** See Electrician Apprentice Wages

Telecom Apprentice Wages shall be the same as the Electrician Apprentice Wages

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

TERRAZZO FINISHERS	08/01/2024	\$63.44	\$11.49	\$23.59	\$0.00	\$98.52
<i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2025	\$64.74	\$11.49	\$23.59	\$0.00	\$99.82
	08/01/2025	\$66.89	\$11.49	\$23.59	\$0.00	\$101.97
	02/01/2026	\$68.24	\$11.49	\$23.59	\$0.00	\$103.32
	08/01/2026	\$70.44	\$11.49	\$23.59	\$0.00	\$105.52
	02/01/2027	\$71.84	\$11.49	\$23.59	\$0.00	\$106.92

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

**Effective Date - 08/01/2024**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.72	\$11.49	\$23.59	\$0.00	\$66.80
2	60	\$38.06	\$11.49	\$23.59	\$0.00	\$73.14
3	70	\$44.41	\$11.49	\$23.59	\$0.00	\$79.49
4	80	\$50.75	\$11.49	\$23.59	\$0.00	\$85.83
5	90	\$57.10	\$11.49	\$23.59	\$0.00	\$92.18

**Notes:**

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

TEST BORING DRILLER	06/01/2024	\$49.81	\$9.65	\$18.22	\$0.00	\$77.68
<i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2024	\$51.28	\$9.65	\$18.22	\$0.00	\$79.15
	06/01/2025	\$52.78	\$9.65	\$18.22	\$0.00	\$80.65
	12/01/2025	\$54.28	\$9.65	\$18.22	\$0.00	\$82.15
	06/01/2026	\$55.83	\$9.65	\$18.22	\$0.00	\$83.70
	12/01/2026	\$57.33	\$9.65	\$18.22	\$0.00	\$85.20

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER	06/01/2024	\$45.60	\$9.65	\$18.22	\$0.00	\$73.47
<i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2024	\$47.07	\$9.65	\$18.22	\$0.00	\$74.94
	06/01/2025	\$48.57	\$9.65	\$18.22	\$0.00	\$76.44
	12/01/2025	\$50.07	\$9.65	\$18.22	\$0.00	\$77.94
	06/01/2026	\$51.62	\$9.65	\$18.22	\$0.00	\$79.49
	12/01/2026	\$53.12	\$9.65	\$18.22	\$0.00	\$80.99

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$45.48	\$9.65	\$18.22	\$0.00	\$73.35
	12/01/2024	\$46.95	\$9.65	\$18.22	\$0.00	\$74.82
	06/01/2025	\$48.45	\$9.65	\$18.22	\$0.00	\$76.32
	12/01/2025	\$49.95	\$9.65	\$18.22	\$0.00	\$77.82
	06/01/2026	\$51.50	\$9.65	\$18.22	\$0.00	\$79.37
	12/01/2026	\$53.00	\$9.65	\$18.22	\$0.00	\$80.87
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.82	\$15.07	\$18.67	\$0.00	\$74.56
	12/01/2024	\$40.82	\$15.07	\$20.17	\$0.00	\$76.06
	01/01/2025	\$40.82	\$15.57	\$20.17	\$0.00	\$76.56
	06/01/2025	\$41.82	\$15.57	\$20.17	\$0.00	\$77.56
	12/01/2025	\$41.82	\$15.57	\$21.78	\$0.00	\$79.17
	01/01/2026	\$41.82	\$16.17	\$21.78	\$0.00	\$79.77
	06/01/2026	\$42.82	\$16.17	\$21.78	\$0.00	\$80.77
	12/01/2026	\$42.82	\$16.17	\$23.52	\$0.00	\$82.51
01/01/2027	\$42.82	\$16.77	\$23.52	\$0.00	\$83.11	
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2024	\$57.71	\$9.65	\$19.00	\$0.00	\$86.36
	12/01/2024	\$59.18	\$9.65	\$19.00	\$0.00	\$87.83
	06/01/2025	\$60.68	\$9.65	\$19.00	\$0.00	\$89.33
	12/01/2025	\$62.18	\$9.65	\$19.00	\$0.00	\$90.83
	06/01/2026	\$63.73	\$9.65	\$19.00	\$0.00	\$92.38
	12/01/2026	\$65.23	\$9.65	\$19.00	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2024	\$59.71	\$9.65	\$19.00	\$0.00	\$88.36
	12/01/2024	\$61.18	\$9.65	\$19.00	\$0.00	\$89.83
	06/01/2025	\$62.68	\$9.65	\$19.00	\$0.00	\$91.33
	12/01/2025	\$64.18	\$9.65	\$19.00	\$0.00	\$92.83
	06/01/2026	\$65.73	\$9.65	\$19.00	\$0.00	\$94.38
	12/01/2026	\$67.23	\$9.65	\$19.00	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2024	\$49.78	\$9.65	\$19.00	\$0.00	\$78.43
	12/01/2024	\$51.25	\$9.65	\$19.00	\$0.00	\$79.90
	06/01/2025	\$52.75	\$9.65	\$19.00	\$0.00	\$81.40
	12/01/2025	\$54.25	\$9.65	\$19.00	\$0.00	\$82.90
	06/01/2026	\$55.80	\$9.65	\$19.00	\$0.00	\$84.45
	12/01/2026	\$57.30	\$9.65	\$19.00	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2024	\$51.78	\$9.65	\$19.00	\$0.00	\$80.43
	12/01/2024	\$53.25	\$9.65	\$19.00	\$0.00	\$81.90
	06/01/2025	\$54.75	\$9.65	\$19.00	\$0.00	\$83.40
	12/01/2025	\$56.25	\$9.65	\$19.00	\$0.00	\$84.90
	06/01/2026	\$57.80	\$9.65	\$19.00	\$0.00	\$86.45
	12/01/2026	\$59.30	\$9.65	\$19.00	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.24	\$15.07	\$18.67	\$0.00	\$73.98
	12/01/2024	\$40.24	\$15.07	\$20.17	\$0.00	\$75.48
	01/01/2025	\$40.24	\$15.57	\$20.17	\$0.00	\$75.98
	06/01/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$76.98
	12/01/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$78.59
	01/01/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$79.19
	06/01/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$80.19
	12/01/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$81.93
	01/01/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$82.53
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
	For apprentice rates see "Apprentice- LABORER"					
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS &amp; PIPEFITTERS LOCAL 51</i>	08/28/2023	\$51.99	\$10.15	\$19.95	\$0.00	\$82.09
	08/26/2024	\$54.74	\$10.15	\$19.95	\$0.00	\$84.84
	08/25/2025	\$57.49	\$10.15	\$19.95	\$0.00	\$87.59
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

**Additional Apprentice Information:**

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

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

All steps are six months (1000 hours.)

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

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

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

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

## **CONTRACTING REQUIREMENTS**

**NOTICE OF AWARD**

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Date of Issuance:

Owner:	Town of Marshfield	Owner's Contract No.:	-
Engineer:	Fuss & O'Neill, Inc.	Engineer's Project No.:	20180319.A23
Project:	South River Fish Passage and Veterans Memorial Park Improvements Project	Contract Name:	-

Bidder:

Bidder's Address:

**TO BIDDER:**

You are notified that Owner has accepted your Bid dated [\_\_\_\_\_] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

The Contract Price of the awarded Contract is: \$ \_\_\_\_\_

unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

a set of the Drawings will be delivered separately from the other Contract Documents.

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

1. Deliver to Owner [\_\_\_\_] counterparts of the Agreement, fully executed by Bidder
2. Deliver with the executed Agreement(s) the Contract security and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

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

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

---

Owner: Town of Marshfield

Authorized Signature

By:

Title:

Copy: Engineer



SECTION 00 52 11 - AGREEMENT

THIS AGREEMENT, made this \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_, by and between the party of the first part, the Town of \_\_\_\_\_, hereinafter called "OWNER,"  
acting herein through its \_\_\_\_\_, and the party of the second part,  
\_\_\_\_\_ doing business as \*(an individual) (a  
partnership) (a joint venture) (a corporation) located in the \*(City) (Town) of \_\_\_\_\_, County of  
\_\_\_\_\_, and State of \_\_\_\_\_, hereinafter called  
"CONTRACTOR."

WITNESSETH: That for and in consideration of the payments and agreements hereinafter  
mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the  
OWNER to commence and complete the project described as follows: ,

hereinafter called the project, for the sum of \_\_\_\_\_  
\_\_\_\_\_ Dollars  
(\$\_\_\_\_\_) and all extra work in connection therewith, under the terms as stated in the Contract  
Documents; and at his (its or their) specifications, and expense to furnish all the materials, supplies,  
machinery equipment, tools, superintendence, labor, insurance, and other accessories and services necessary  
to complete the said project in accordance with the conditions and prices stated in Section 00 41 00 BID  
FORM and referenced attachments, Section 00 72 00 GENERAL CONDITIONS, and Section 00 73 00  
SUPPLEMENTARY CONDITIONS, the plans, which include all maps, plates, drawings, technical  
specifications and Contract Documents as prepared by the OWNER.

\_\_\_\_\_  
\*Strike out inapplicable term.

SECTION 00 52 11 - AGREEMENT

The CONTRACTOR hereby agrees to commence work under this Contract on or before a date to be specified in written "Notice to Proceed" issued by the OWNER.

The CONTRACTOR further agrees to fully complete the project, defined as "Substantial Completion" in Section 00 72 00 GENERAL CONDITIONS, within 240 consecutive calendar days of the date upon which the Contract Times are stated to commence on the issued Notice to Proceed, and completed and ready for final payment in accordance with Paragraph 15.06 of Section 00 72 00 GENERAL CONDITIONS within 30 consecutive calendar days after Substantial Completion.

The goals for minority/women business enterprise (MBE/WBE) participation for this contract is a minimum of 15.3 percent for MBEs and 6.9 percent for WBEs, on the basis of the total contract price. The CONTRACTOR agrees to take all affirmative steps necessary to achieve this goal, and shall provide reports documenting the portion of contract and subcontract dollars paid to minority and women-owned businesses, and its efforts to achieve the goals, with each invoice submitted or at such greater intervals as specified by the OWNER. The CONTRACTOR shall require similar reports from its subcontractors.

The CONTRACTOR agrees not to discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age or national origin; and that it shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, religion, color, sex, age, handicapped status, or national origin.

The CONTRACTOR agrees not to participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue Code of 1954, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in Section 00 72 00 GENERAL CONDITIONS as amended by Section 00 73 00 SUPPLEMENTARY CONDITIONS, and to make payments on account thereof as provided in Section 00 72 00 GENERAL CONDITIONS.

The CONTRACTOR shall submit Applications for Payment in accordance with Article 15 of Section 00 72 00 GENERAL CONDITIONS. Applications for Payment will be processed by ENGINEER as provided in Section 00 72 00 GENERAL CONDITIONS.

The CONTRACTOR makes the following representations:

- CONTRACTOR has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- CONTRACTOR has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- CONTRACTOR is familiar with and is satisfied as to all federal, State, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all contract drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except

SECTION 00 52 11 - AGREEMENT

Underground Facilities) which have been identified in Section 00 73 00 SUPPLEMENTARY CONDITIONS as provided in Paragraph 5.03 of Section 00 72 00 GENERAL CONDITIONS.

- CONTRACTOR has obtained and carefully studied (or assumes responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.
- CONTRACTOR does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Contract Documents.
- CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the Site, reports and contract drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.
- CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR has discovered in the Contract Documents, and the written resolution thereof by ENGINEER is acceptable to Contractor.
- The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

Terms used in this Agreement will have the meanings stated in Section 00 72 00 GENERAL CONDITIONS and Section 00 73 00 SUPPLEMENTARY CONDITIONS.

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

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

IN WITNESS WHEREOF, the parties to these presents have executed this contract in counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

SECTION 00 52 11 - AGREEMENT

AGREED:

CONTRACTOR

Signed \_\_\_\_\_

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Corporate Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(City and State)

OWNER (Town of Marshfield, Massachusetts Selectboard)

Signed \_\_\_\_\_

\_\_\_\_\_  
(Name)

Signed \_\_\_\_\_

\_\_\_\_\_  
(Name)

SECTION 00 52 11 - AGREEMENT

Signed \_\_\_\_\_

\_\_\_\_\_  
(Name)

Signed \_\_\_\_\_

\_\_\_\_\_  
(Name)

Signed \_\_\_\_\_

\_\_\_\_\_  
(Name)

Approved as to Form:

By \_\_\_\_\_  
\_\_\_\_\_, Town Counsel

\_\_\_\_\_  
(Name)

In accordance with M.G.L. C.44, Section 31C, this is to certify that an appropriation, including without limitation federal and state grants, in the amount of this contract is available therefor and that the Marshfield Selectboard has been authorized to execute the contract and approve all requisitions and change orders.

By \_\_\_\_\_  
(Town's Accountant)

\_\_\_\_\_  
(Name)

## NOTICE TO PROCEED

Owner: Town of Marshfield, MA Owner's Project No.: \_\_\_\_\_  
Engineer: Fuss & O'Neill Engineer's Project No.: \_\_\_\_\_  
Contractor: \_\_\_\_\_ Contractor's Project No.: \_\_\_\_\_  
Project: \_\_\_\_\_  
Contract Name: \_\_\_\_\_  
Effective Date of Contract: \_\_\_\_\_

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on \_\_\_\_\_ pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

The number of calendar days to achieve Substantial Completion is 240 from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of \_\_\_\_\_; and the number of days to achieve readiness for final payment is 270 from the commencement date of the Contract Times, resulting in a date for readiness for final payment of \_\_\_\_\_.

Before starting any Work at the Site, Contractor must comply with the following:

Owner: Town of Marshfield, MA  
By (*signature*): \_\_\_\_\_  
Name (*printed*): \_\_\_\_\_  
Title: \_\_\_\_\_  
Date Issued: \_\_\_\_\_  
Copy: Engineer

SECTION 00 61 13 – PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we \_\_\_\_\_  
(Name of Contractor)

a \_\_\_\_\_ hereinafter called "Principal" and  
(Corporation, Partnership, Joint Venture or Individual)

\_\_\_\_\_ of \_\_\_\_\_, State of \_\_\_\_\_  
(Surety) (City & State)

\_\_\_\_\_ hereinafter called the "Surety" and licensed by the State Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the City/Town of \_\_\_\_\_, Massachusetts, hereinafter called "Owner", in the penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ (the "Construction Contract"), for the construction described as follows: \_\_\_\_\_.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of the Construction Contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under the Construction Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the Surety's obligation under this Bond shall arise after (1) the Owner has declared the Principal in default of the Construction Contract or any provision thereof or (2) has declared that the Principal has failed, or is otherwise unable or unwilling, to execute the work consistent with, and in conformance to, the Construction Contract (collectively referred to as a "Contractor Default"). The determination of a Contractor Default shall be made solely by the Owner. The Owner need not terminate the Construction Contract to declare a Contractor Default or to invoke its rights under this Bond.

When the Surety's obligation under this Bond arises, the Surety, at its sole expense and at the consent and election of the Owner, shall promptly take one of the following steps: (1) arrange for the Principal to perform and complete the work of the Construction Contract; (2) arrange for a contractor other than the Principal to perform and complete the work of the Construction Contract; (3) reimburse the Owner, in a manner and at such time as the Owner shall decide, for all costs and expenses incurred by the Owner in performing and completing the work of the Construction Contract. Surety will keep Owner reasonably informed of the progress, status and results of any investigation of any claim of the Owner.

SECTION 00 61 13 – PERFORMANCE BOND

If the Surety does not proceed as provided in this Bond with due diligence and all deliberate speed, the Surety shall be deemed to be in default of this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner.

After the Surety's obligation under this Bond arises, the Surety is obligated, to the limit of the amounts of this Bond, for (1) the correction of defective work and completion of the Construction Contract; (2) additional design, professional services, and legal costs, including attorneys' fees, resulting from the Contractor Default or from the default of the Surety under this Bond; (3) any additional work beyond the Construction Contract made necessary by the Contractor Default or default of the Surety under this Bond; (4) indemnification obligation of the Principal, if any, as provided in the Construction Contract; and (5) liquidated damages as provided in the Construction Contract, or if none are so specified, actual and foreseeable consequential damages resulting from the Contractor Default or default of the Surety under this Bond.

Any proceeding, legal or equitable, under this Bond shall be instituted in any court of competent jurisdiction in the Commonwealth of Massachusetts.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Construction Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Construction Contract or to the work or to the specifications.





SECTION 00 61 14 - PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we \_\_\_\_\_

\_\_\_\_\_ a \_\_\_\_\_  
(Name of Contractor) (Corporation, Partnership, Joint Venture or Individual)

hereinafter called "Principal" and \_\_\_\_\_ of \_\_\_\_\_,  
(Surety)

State of \_\_\_\_\_ hereinafter called the "Surety" and licensed by the State  
(City and State)

Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the City/Town of \_\_\_\_\_, Massachusetts, hereinafter called "Owner", in the penal sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for the construction described as follows:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

FUSS & O'NEILL, INC.  
20180319.A23  
MARSHFIELD, MA

SOUTH RIVER FISH PASSAGE AND  
VETERANS MEMORIAL PARK  
IMPROVEMENTS PROJECT

SECTION 00 61 14 - PAYMENT BOND

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_ ( ) counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

ATTEST:

_____		_____
		Surety
_____	By	_____
		(Attorney-in-Fact)
		_____
		_____
		(Address-Zip Code)
_____ (SEAL)		
Witness as to Surety		
_____		
_____		
(Address-Zip Code)		

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute Bond.

SECTION 00 65 16 - CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	Town of Marshfield	Owner's Contract No.:	-
Contractor:		Contractor's Project No.:	
Engineer:	Fuss & O'Neill, Inc.	Engineer's Project No.:	20180319.A23
Project:	South River Fish Passage and Veterans Memorial Park Improvements Project	Contract Name:	-

**This [preliminary] [final] Certificate of Substantial Completion applies to**

All Work  The following specified portions of the Work:

**Date of Substantial Completion**

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

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

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities:  None  As follows

Amendments to Contractor's responsibilities:  None  As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

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

<b>EXECUTED BY ENGINEER:</b>		<b>RECEIVED:</b>		<b>RECEIVED:</b>	
By: _____	By: _____	By: _____	By: _____	By: _____	By: _____
(Authorized signature)	Owner (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)	Contractor (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____	Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____	Date: _____	Date: _____	Date: _____

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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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 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 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.
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.
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.

## 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.
- 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 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.

**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 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.

- 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 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.
- 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.
- 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 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.

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 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;
  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 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 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 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 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 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.
  - 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);
  - 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 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.

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.
- 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;
    - 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.

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.
- 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.
- 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.

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.

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.
- 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.
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 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.
  - 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
  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.
- 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.

- 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.
- 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.

### 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.

## **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.
- 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.

**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.
- 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:
  - 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.

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 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 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
  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 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.
  - 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, expeditors, 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 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 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.
- 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, 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, 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 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.



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;
  - 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 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 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.
    - 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, 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.
- 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, 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 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.

### **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.

## **SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT**

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

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

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, “Paragraph SC-4.05.”

### **EXHIBITS TO THE CONTRACT**

Easement Plan developed by Merrill Engineers and Land Surveyors, obtained by the Town, to be complied with all phases of the Contractor’s work is provided as Exhibit A.

Permit authorizations and requirements to be complied with through all phases and aspects of the Contractor’s work are provided as Exhibit B.

Technical Data known to the Owner relating to conditions at or adjacent to the Site used by the Engineer in the preparation of Drawings and Specifications, which are not to be construed or otherwise solely relied upon as representative of surface or subsurface conditions within any or all portions of the Site, include the following Exhibits:

- C. Subsurface boring logs
- D. Sediment test data

Buy America requirements are provided as Exhibit E.

National Fish and Wildlife Foundation Grant Agreement is provided as Exhibit F.

### **ARTICLE 1—DEFINITIONS AND TERMINOLOGY**

SC-1.01.A.8 – Add the following sentence at the end of the Paragraph:

The Change Order form to be used on this Project is EJCDC C-941 (2018). Agency approval is required before Change Orders are effective.

SC-1.01.A.25 – Add the work “permits” immediately after “resolutions,”.

SC-1.01.A.30 – Add the following sentence at the end of the Paragraph:

Also referred to as “awarding authority” or “contracting authority” in applicable statutory provisions which may be used interchangeably and shall have the same meaning.

SC-1.01.A.33 – Replace the word “Engineer” immediately following “The authorized representative of” with “Owner”.

SC-1.01.A.50 – Add the following at the end of the Paragraph:

The Work Change Directive form to be used on this Project is EJCDC C-940 (2018). Agency approval is required before a Work Change Directive is issued.

SC-1.01.A.51 – Add the following immediately after Paragraph 1.01.A.50:  
“State” shall mean the Commonwealth of Massachusetts.

SC-1.01.A.52 Add the following new paragraph with the title “American Iron and Steel Definitions” immediately after Paragraph 1.01.A.51:

52.a *American Iron and Steel (AIS)* - Requirements mandated by Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference for “iron and steel products,” meaning the following products, if made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and Construction Materials. AIS requirements apply in each of the several states, the District of Columbia, and each federally recognized Tribe, but not the U.S. Territories.

52.b *Coating* - A covering that is applied to the surface of an object. If a Coating is applied to the external surface of a domestic iron or Steel component, and the application takes place outside of the United States, said product would be considered a compliant product under the AIS requirements. Any Coating processes that are applied to the external surface of Iron and Steel components that would otherwise be AIS compliant would not disqualify the product from meeting the AIS requirements regardless of where the Coating processes occur, provided that final assembly of the product occurs in the United States. This exemption only applies to Coatings on the *external surface* of Iron and Steel components. It does not apply to Coatings or linings on internal surfaces of Iron and Steel products, such as the lining of lined pipes. All Manufacturing Processes for lined pipes, including the application of pipe lining, must occur in the United States for the product to be compliant with AIS requirements.

52.c *Construction Materials* - Those articles, materials, or supplies made primarily of iron and/or steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered “structural steel”. Note: Mechanical and electrical components, equipment and systems are not considered Construction Materials. See definitions of Mechanical Equipment and Electrical Equipment.

52.d *Contractor’s Certification* - Documentation submitted by the Contractor upon Substantial Completion of the Contract that all Iron and Steel products installed were Produced in the United States.

52.e *De Minimis* - Various miscellaneous, incidental low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. Examples of *De Minimis* components could include small washers, screws, fasteners (such as “off the shelf” nuts and bolts), miscellaneous wire, corner bead, ancillary tube, signage, trash bins, door hardware etc. Costs for such *De Minimis* components cumulatively may comprise no more than a total of five percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed one percent of the total cost of the materials used in and incorporated into a project.

52.f *Electrical Equipment* - Typically any machine powered by electricity and includes components that are part of the electrical distribution system. AIS does not apply to Electrical Equipment.

52.g *Engineer’s Certification* - Documentation submitted by the Engineer that Drawings, Specifications, and Bidding Documents comply with AIS.

52.h *Iron and Steel products* - The following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and Construction Materials. Only items on the above list made primarily of iron or steel, permanently incorporated into the project must

be Produced in the United States. For example, trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. iron or steel.

52.i *Manufacturer* - A Supplier, fabricator, distributor, materialman, or vendor is an entity with which the Owner, Contractor or any subcontractor has contracted to furnish materials or equipment to be incorporated in the project by the Owner, Contractor or a subcontractor.

52.j *Manufacturer's Certification* - Documentation provided by the Manufacturer stating that the Iron and Steel products to be used in the project are produced in the United States in accordance with American Iron and Steel (AIS) Requirements. If items are purchased via a Supplier, distributor, vendor, etc. from the Manufacturer directly, then the Supplier, distributor, vendor, etc. will be responsible for obtaining and providing these certifications to the parties purchasing the products.

52.k *Manufacturing Processes* - Processes such as melting, refining, pouring, forming, rolling, drawing, finishing, and fabricating. Further, if a domestic Iron and Steel product is taken out of the United States for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a Coating are similarly not covered. Non-iron or Steel components of an Iron and Steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-Iron and Steel components do not have to be of domestic origin. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-U.S. sources.

52.l *Mechanical Equipment* - Typically equipment which has motorized parts and/or is powered by a motor. AIS does not apply to Mechanical Equipment.

52.m *Minor Components* - Components *within* an iron and/or Steel product otherwise compliant with the American Iron and Steel requirements; this waiver is typically used by Manufacturers. It differs from the *De Minimis* definition in that *De Minimis* pertains to the entire project and the minor component definition pertains to a single product. This waiver allows use of non-domestically produced miscellaneous Minor Components comprising up to five percent of the total material cost of an otherwise domestically produced Iron and Steel product. However, unless a separate waiver for a product has been approved, all other Iron and Steel components in said product must still meet the AIS requirements. This waiver does not exempt the whole product from the AIS requirements only Minor Components within said product and the iron or Steel components of the product must be produced domestically. Valves and hydrants are also subject to the cost ceiling requirements described here. Examples of Minor Components could include items such as pins and springs in valves/hydrants, bands/straps in couplings, and other low-cost items such as small fasteners etc.

52.n *Municipal Castings* - Cast iron or Steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and solid waste infrastructure.

52.o *Primarily Iron or Steel* - A product is made of greater than 50 percent iron or Steel on a materials cost basis. An exception to this definition is reinforced precast concrete (see Definitions). All technical specifications and applicable industry standards (e.g. NIST, NSF, AWWA) must be met. If a product is determined to be less than 50 percent iron and/or steel, the AIS requirements do not apply. For example, the cost of a fire hydrant includes:

- The cost of materials used for the iron portion of a fire hydrant (e.g. bonnet, body and shoe); and
- The cost to pour and cast to create those components (e.g. labor and energy).

Not included in the cost are:

- The additional material costs for the non-iron or Steel internal workings of the hydrant (e.g. stem, coupling, valve, seals, etc.); and
- The cost to assemble the internal workings into the hydrant body.

52.p *Produced in the United States* - The production in the United States of the iron or Steel products used in the project requires that all Manufacturing Processes must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives.

52.q *Reinforced Precast Concrete* – Reinforced Precast Concrete structures must comply with AIS, regardless of whether or not it consists of at least 50 percent iron or steel. The reinforcing bar and wire must be Produced in the United States and meet the same standards as for any other iron or Steel product. Additionally, the casting of the concrete product must take place in the United States. The cement and other raw materials used in concrete production are not required to be of domestic origin. If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered Construction Materials and must be Produced in the United States.

52.r *Steel* - An alloy that includes at least 50 percent iron, between 0.02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of Steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of Steel covers carbon steel, alloy steel, stainless steel, tool steel, and other specialty steels.

52.s *Structural Steel* - Rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees, and zees. Other shapes include but are not limited to, H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

## ARTICLE 2—PRELIMINARY MATTERS

SC-2.01 – Delete Paragraphs 2.01.B. and C. in their entirety and insert the following in their place:

- B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies (including all endorsements, and identification of applicable self-insured retentions and deductibles) of insurance required to be provided by Contractor in this Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

SC-2.02 – Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:

- A. Owner shall furnish to Contractor two (2) printed copies of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

SC-2.05 – Add the following paragraphs immediately after Paragraph 2.05.A.4:

5. Before any work at the site is started, Contractor shall deliver to Owner, with a copy to Engineer, certificates of insurance (and other evidence of insurance requested by Owner)

which Contractor is required to purchase and maintain in accordance with the requirements of Article 6.

6. Contractor shall include and identify on the certificate of insurance, indemnification as required by Article 7.18.

SC-2.06 – Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

- B. *Electronic Documents Protocol*: The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol (“EDP” or “Protocol”) for exchange of electronic transmittals.

1. *Basic Requirements*

- a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.
- b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
- c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.
- d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.
- e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party’s use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
- f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. *System Infrastructure for Electronic Document Exchange*

- a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions (“System Infrastructure”) at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.

- 1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 20 MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.
  - 2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.
- b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.
  - c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.
  - d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.
  - e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.
  - f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.
  - g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.
  - h. The Engineer will operate a Project information management system (also referred to in this EDP as "Project Website") for use of Owner, Engineer and Contractor during the Project for exchange and storage of Project-related communications and

information. Except as otherwise provided in this EDP or the General Conditions, use of the Project Website by the parties as described in this Paragraph will be mandatory for exchange of Project documents, communications, submittals, and other Project-related information. The following conditions and standards will govern use of the Project Website:

- 1) Describe the period of time during which the Project Website will be operated and be available for reliance by the parties;
- 2) Provide any minimum system infrastructure, software licensing and security standards for access to and use of the Project Website;
- 3) Describe the types and extent of services to be provided at the Project Website (such as large file transfer, email, communication and document archives, etc.); and
- 4) Include any other Project Website attributes that may be pertinent to Contractor's use of the facility and pricing of such use.

C. *Software Requirements for Electronic Document Exchange; Limitations*

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.
  - a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.
2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.
3. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth in Supplementary Condition Exhibit A to this EDP, including software versions, if listed.

SC-2.06 – Supplement Paragraph 2.06 of the General Conditions by adding the following paragraph:

D. *Requests by Contractor for Electronic Documents in Other Formats*

1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.
2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor ("Request") in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be subject to the provisions of the Owner's response to the Request, and to the following conditions to which Contractor agrees:



- a. The content included in the Electronic Documents created by Engineer and covered by the Request was prepared by Engineer as an internal working document for Engineer's purposes solely, and is being provided to Contractor on an "AS IS" basis without any warranties of any kind, including, but not limited to any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor's application, or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.
  - b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor's sole risk and the Contractor waives any claims against Engineer or Owner arising from use of data in Electronic Documents covered by the Request.
  - c. Contractor shall indemnify and hold harmless Owner and Engineer and their subconsultants from all claims, damages, losses, and expenses, including attorneys' fees and defense costs arising out of or resulting from Contractor's use, adaptation, or distribution of any Electronic Documents provided under the Request.
  - d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless such distribution is specifically identified in the Request and is limited to Contractor's subcontractors. Contractor warrants that subsequent use by Contractor's subcontractors complies with all terms of the Contract Documents and Owner's response to Request.
3. In the event that Owner elects to provide or directs the Engineer to provide to Contractor any Contractor-requested Electronic Document versions of Project information that is not explicitly identified in the Contract Documents as being available to Contractor, the Owner shall be reimbursed by Contractor on an hourly basis (at \$180 per hour) for any engineering costs necessary to create or otherwise prepare the data in a manner deemed appropriate by Engineer.

### **ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE**

SC-3.01 – Add the following paragraphs immediately after Paragraph 3.01.A:

1. Each and every provision of law and clause required by law to be inserted in the Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though they were included herein. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.
2. Sections of Division 1 - General Requirements govern the execution of the work of all sections of the specifications.

SC-3.02.A.1 – Delete the portion of Paragraph 3.02.A.1 starting at “means” and replace with the following:

“shall mean the standard, specification, manual, code, or Laws or Regulations in effect and applicable at the time in question, except as may be otherwise specifically stated in the Contract Documents.”

SC-3.03.A.3 – Delete Paragraph 3.03.A.3 in its entirety and replace with the following:

3. Contractor shall be liable to Owner and/or Engineer for failure to report any such conflict, error, ambiguity, or discrepancy if Contractor knew or reasonably should have known thereof.

#### **ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK**

SC-4.01.A – Delete Paragraph 4.01.A in its entirety and replace with the following:

- A. The Contract Times will commence to run on the day indicated in the Notice to Proceed.

SC-4.03.A – Add the following paragraph immediately after Paragraph 4.03.A:

- B. Engineer may check the lines, elevations, reference marks, batter boards, etc., set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate and satisfactory construction and completion of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.

SC-4.05.A – Delete Paragraph 4.05.A in its entirety.

SC-4.05.C – Amend Paragraph 4.05.C by adding the following subparagraphs:

5. *Force Majeure*
  - a. Except as expressly provided under the terms of this Contract, either party to this Contract will be excused for any delay in performance under this Agreement to the extent that such delay is the result of any unforeseeable happening or event beyond its reasonable control, provided that the party hindered or delayed immediately notifies the other party in writing describing the circumstances causing delay. Such happenings or events will include the following, if material: terrorism, acts of war, riots, civil disorder, rebellions, fire, flood, earthquake, explosion, acts of God, inability to obtain or shortage of material, equipment or transportation and strikes, boycott, lockouts or other labor trouble or shortage, or “abnormal weather conditions” as set forth in the General Conditions (each, a “Force Majeure Event”). Extreme or unusual weather that is typical for the region, elevation, or season in which the Work is undertaken should not be considered abnormal weather conditions for the purpose of this section. Whenever a Force Majeure Event shall occur, the party claiming to be adversely affected thereby shall, as promptly as practicable, use all reasonable efforts to eliminate the cause therefor, reduce costs and resume performance under this Contract. Continued prevention from performance by such causes for periods aggregating forty-five (45) or more days shall be deemed to render performance impossible, and either party shall thereafter have the right to immediately terminate this Contract.

SC-4.05.D.2 – Delete the second sentence of Paragraph 4.05.D.2.

SC-4.05.E – Delete Paragraph 4.05.E in its entirety and replace with the following:

“Contractor shall submit a Change Proposal seeking an increase in Contract Times or Contract Price, which shall be submitted within 30 days of the commencement of the delaying, disrupting, or interfering event, and must be supplemented by supporting data that sets forth in detail the following:”

SC-4.05.G – Add the following paragraph immediately after Paragraph 4.05.G:

H. Delays caused by or within the control of the Owner: In such event, the Contractor’s sole remedy shall be an extension of the Contract Time. Notwithstanding anything to the contrary in the Contract Documents, Contractor shall not be eligible for any increase in the Contract Price on account of any delay in the Work, no matter by whom such delay is caused, and Contractor shall make no claim for such an increase, whether such claim is styled as a claim for delay damages, acceleration of work, loss of production, or otherwise.

1. Certain provisions of the Massachusetts General Laws are applicable to public construction contracts including, but not limited to, those contained in Chapter 30 and Chapter 149. All applicable provisions of the Massachusetts General Laws are incorporated into the Contract Documents as if fully set forth herein, and shall prevail over any conflicting provisions of the General Conditions or Supplemental Conditions.

SC-4.05.H – Add the following paragraphs immediately after Paragraph 4.05.H:

4.06 *Liquidated Damages*

A. If the Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner the amount specified herein, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contract shall be in default after the time stipulated in the Contract for completing the work. Such damages may be retained from time to time by the Owner from progress payments or any amounts owing to the Contractor, or otherwise collected.

2. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 3.2 of the Contract, plus any extensions thereof allowed in accordance with Article 15 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or mediation proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Contractor shall pay Owner as liquidated damages for delay (but not as a penalty), \$250 for each calendar day that expires after the time specified in Paragraph 3.2 of the Contract for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$500 for each calendar day that expires after the time specified in Paragraph 3.2 of the Contract for completion and readiness for final payment until the Work is completed and ready for final payment.

B. The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodical estimates.

C. It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein as definite and certain length of times if fixed for the performance of

any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract; provided, that the Contractor shall not be charged with liquidated damages of any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner.

**ARTICLE 5—SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS**

SC-5.01.A – Add the following paragraph immediately after Paragraph 5.01.A:

1. If all lands and rights-of-way are not obtained as herein contemplated before construction begins, Contractor shall begin the Work upon such land and rights-of-way as Owner has previously acquired and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of-way.

SC-5.01.B – Delete Paragraph 5.01.B in its entirety.

SC-5.03.A.1 – Insert the words “known to owner” after the word “reports”.

SC-5.03.A.2 – Insert the words “known to owner” after the word “reports”.

SC-5.03.C – Insert the word “reasonably” before the word “rely” in the first line and add the following at the end of the first sentence:

“; the Owner does not warrant or guarantee the accuracy or completeness of the information therein, and the Contractor may not so rely to the extent that the Contractor knows, or reasonably should have known, of any inaccuracy or omission therein.”

SC-5.03 –Add the following new paragraphs immediately after Paragraph 5.03.D:

- E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely for a representation of subsurface conditions within the footprint of Veterans Memorial Park within the limits of the project site:

Report Title	Date of Report	Technical Data
<i>Veterans Memorial Lagoon and South River Improvement Project Boring Logs</i>	<i>September 2021</i>	<i>Attachment A</i>

- F. The following table lists the 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 specifically identifies the Technical Data upon which Contractor may rely for a representation of subsurface conditions within the footprint of Veterans Memorial Park within the limits of the project site:

Drawings Title	Date of Drawings	Technical Data
<i>NA</i>	<i>NA</i>	<i>NA</i>

- G. Contractor may examine copies of reports and drawings identified in SC-5.03.E and SC-5.03.F that were not included with the Bidding Documents at the offices of Fuss & O'Neill, Inc., located at 317 Iron Horseway, Suite 204, in Providence, RI, during regular business hours, or may request copies from the Engineer.

SC-5.04.A – Insert the following paragraph before Paragraph 5.04.A:

- A. In accordance with Massachusetts General Laws Chapter 30, Section 39N, if, during the progress of the Work, the Contractor or the Owner discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents either the Contractor or the Owner may request an equitable adjustment in the Contract Price applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such request to the other party as soon as possible after such conditions are discovered. Upon receipt of such a request from the Contractor, or upon its own initiative, the Owner will make an investigation of such physical conditions, and if they differ substantially or materially from those shown on the plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the Work or a change in the construction methods required for the performance of the Work which results in an increase or decrease in the cost of the Work, the Owner will make an equitable adjustment in the Contract Price and the Contract shall be modified in writing accordingly.

SC-5.04.D – Add the following sentence at the end of Paragraph 5.04.D:

“Any determination and instruction to proceed in accordance with this Paragraph shall be communication writing by the Engineer to Owner, which shall include the reasons therefor.”

SC-5.04.E.1 – Delete Paragraph 5.04.E.1 in its entirety.

SC-5.04.F – Add the following paragraph immediately after Paragraph 5.04.F:

- G. Adjustments resulting from actual subsurface or latent physical conditions from those indicated will be in accordance with Massachusetts General Law, Chapter 30, Section 39N and the applicable provisions of the Contract Documents.

SC-5.05.A.5 – Add the following paragraph immediately after Paragraph 5.05.A.5:

6. Contractor’s attention is directed to the requirements of the Massachusetts General Laws Chapter 82, Section 40, regarding the notification of owners of underground facilities.

SC-5.05.B – Delete the phrase “or was not shown or indicated on the Drawings with reasonable accuracy” following the word “Drawings” in the first sentence of Paragraph 5.05.B.

SC-5.05.E – Add the following paragraph immediately after Paragraph 5.05.E:

1. Any determination and instruction to proceed in accordance with this Paragraph shall be communicated in writing by the Engineer to Owner, which shall include the reasons therefor.

SC-5.06.A.3 – Add the following new paragraphs immediately after Paragraph 5.06.A.3:

4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

Report Title	Date of Report	Technical Data
<i>None</i>		

5. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
<i>None</i>		

SC-5.06.B – Delete paragraph 5.06.B in its entirety.

SC-5.06.C – Add the following at the end of the first sentence of Paragraph 5.06.C:

“, or unless Contractor caused or contributed to such Hazardous Environmental Condition.”

SC-5.06.E – Delete the second and third sentences of Paragraph 5.06.E.

SC-5.06.I – Delete Paragraph 5.06.I in its entirety.

SC-5.06.J – Delete Paragraph 5.06.J in its entirety.

**ARTICLE 6—BONDS AND INSURANCE**

SC-6.02.E – Delete Paragraph 6.02.E in its entirety.

SC-6.02.N – Add the following paragraph immediately after Paragraph 6.02.N:

- O. If Owner has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by Contractor in accordance with this Article 6 on the basis of its not complying with the Contract Documents, Owner will notify Contractor in writing thereof within thirty days of the date of delivery of such certificates to Owner in accordance with Paragraph 2.01.B. Contractor will provide such additional information in respect of insurance provided by it as Owner may reasonably request.

SC-6.03 –Insert the following paragraphs immediately after Paragraph 6.03.C:

- D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and watercraft liability and unmanned aerial vehicle liability (if applicable) policies must include as additional insureds (in addition to Owner and Engineer) the following:

1. Town of Marshfield, MA
2. Fuss & O’Neill, Inc.

- E. *Workers’ Compensation and Employer’s Liability:* Contractor shall purchase and maintain workers’ compensation and employer’s liability insurance, including, as applicable, United States Longshoreman and Harbor Workers’ Compensation Act, Jones Act, stop-gap employer’s liability coverage for monopolistic states, and foreign voluntary workers’ compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions). Workers’ Compensation Insurance shall provide statutory coverage as required by the Commonwealth of Massachusetts. Each contractor, subcontractor, and consultant performing work on or about the Site shall have similar policies covering their employees.

Workers’ Compensation and Related Policies	Policy limits of not less than:
<b>Workers’ Compensation</b>	
State	Statutory

<b>Workers' Compensation and Related Policies</b>	<b>Policy limits of not less than:</b>
Applicable Federal (e.g., Longshoreman's)	Statutory
<b>Employer's Liability</b>	\$1,000,000
Each accident	\$1,000,000
Each employee	\$1,000,000
Policy limit	\$1,000,000

- F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:
1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
  2. damages insured by reasonably available personal injury liability coverage, and
  3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage.
    - a. Such insurance must be maintained for six (6) years after final payment.
    - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
  2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
  4. Underground, explosion, and collapse coverage.
  5. Personal injury coverage.
  6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
  7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
  8. The policy's general aggregate limit must apply specifically to the Project.

- H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions shall provide coverage for Operations/Premises, Contractor's Protective, Products/Completed Operations, and Personal Injury liabilities, and must not include any of the following:
1. Any modification of the standard definition of “insured contract” (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
  2. Any exclusion for water intrusion or water damage.
  3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
  4. Any exclusion of coverage relating to earth subsidence or movement.
  5. Any exclusion for the insured’s vicarious liability, strict liability, or statutory liability (other than worker’s compensation).
  6. Any limitation or exclusion based on the nature of Contractor’s work.
  7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.
  8. Any exclusion relating to employment for personal injury coverage.
- I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
<b>Bodily Injury and Property Damage (property damage liability insurance shall provide coverage for property in the care, custody and control of the insured)</b>	
Each Occurrence	\$1,000,000
Annual Aggregate	\$3,000,000
<b>Property Damage, including explosion, collapse and underground coverage</b>	
Each Occurrence	\$1,000,000
Annual Aggregate	\$3,000,000
<b>Products—Completed Operations Aggregate</b>	\$3,000,000
<b>Personal and Advertising Injury</b>	\$1,000,000

- J. *Watercraft Liability:* If watercraft are to be used by Contractor and/or any subcontractors in the performance of their operations, Contractor and/or subcontractor shall purchase and maintain watercraft liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any watercraft, including but not limited to any owned, non-owned, hired, rented or leased watercraft. The watercraft liability insurance must be written on an occurrence basis and can be included as an endorsement to Contractor’s commercial general liability insurance.

Watercraft Liability	Policy limits of not less than:
<b>Bodily Injury and Property Damage</b>	
Each Occurrence	\$1,000,000
Annual Aggregate	\$3,000,000



- K. *Automobile Liability*: Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle, including but not limited to any owned, non-owned, hired, rented or leased vehicles. The automobile liability policy must be written on an occurrence basis.

<b>Automobile Liability</b>	<b>Policy limits of not less than:</b>
<b>Bodily Injury</b>	
Each Person	\$1,000,000
Each Accident	\$1,000,000
<b>Property Damage, each occurrence</b>	<b>\$1,000,000</b>
<b>Combined Single Limit</b>	
Combined Single Limit (Bodily Injury and Property Damage)	\$1,000,000

- L. *Umbrella or Excess Liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, automobile liability, and watercraft liability and UAV liability (if applicable) insurance described herein. The coverage afforded must be at least as broad as that of each and every one of the underlying policies. The products and completed operations liability insurance provided in the policy must be maintained for six (6) years after final payment. The policy's general aggregate limit must apply specifically to the Project.

<b>Excess or Umbrella Liability</b>	<b>Policy limits of not less than:</b>
Each Occurrence	\$3,000,000
Annual Aggregate	\$3,000,000

- M. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements*: Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of \$2,000,000 after accounting for partial attribution of its limits to underlying policies, as allowed above.

- N. *Owner's Protective Liability Insurance*: Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insured. This insurance shall provide coverage for not less than the following amounts:

<b>Owner's Protective Liability</b>	<b>Policy limits of not less than:</b>
<b>Bodily Injury</b>	
Each Occurrence	\$1,000,000
<b>Property Damage</b>	
Each Occurrence	\$1,000,000
Annual Aggregate	\$1,000,000

- O. *Contractor's Pollution Liability Insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

<b>Contractor's Pollution Liability</b>	<b>Policy limits of not less than:</b>
Each Occurrence/Claim	\$3,000,000
General Aggregate	\$3,000,000

- P. *Contractor's Professional Liability Insurance:* If Contractor will provide or furnish professional services under this *Contract*, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must be provided on a Claims Made Basis and cover negligent acts, errors, or omissions in the performance of professional design, construction oversight or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

<b>Contractor's Professional Liability</b>	<b>Policy limits of not less than:</b>
Each Claim	\$2,000,000
Annual Aggregate	\$3,000,000

- Q. *Unmanned Aerial Vehicle Liability Insurance:* If Contractor uses unmanned aerial vehicles (UAV—commonly referred to as drones) at the Site or in support of any aspect of the Work, Contractor shall obtain UAV liability insurance in the amounts stated; name Owner, Engineer, and all individuals and entities identified in the Supplementary Conditions as additional insureds; and provide a certificate to Owner confirming Contractor's compliance with this requirement. Such insurance will provide coverage for property damage, bodily injury or death, and invasion of privacy.

SC-6.04.C

<b>Unmanned Aerial Vehicle Liability Insurance</b>	<b>Policy limits of not less than:</b>
Each Occurrence	\$1,000,000
General Aggregate	\$3,000,000

– Delete Paragraph 6.04.C in its entirety.

SC-6.04.D – Delete Paragraph 6.04.D in its entirety and replace with the following:

- D. Owner may occupy or use a portion of the Work prior to Substantial Completion.

SC-6.04.E – Delete the first sentence of 6.04.E in its entirety and replace with the following:

*“Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or

a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.”

SC-6.04.E –Add the following paragraphs immediately after paragraph 6.04.E:

F. *Builder's Risk Requirements:* The builder's risk insurance must:

1. be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).
  - a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.
  - b. To the extent such coverage is reasonably commercially available, sublimits of not less than \$10,000,000 should apply to loss or damage from flood and earthquake.
2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of contractors, engineers, and architects).
4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier). If this coverage is subject to a sublimit, such sublimit will be a minimum of \$250,000.
5. extend to cover damage or loss to insured property while in transit. If this coverage is subject to a sublimit, such sublimit will be a minimum of \$250,000.
6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.
7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.
8. include performance/hot testing and start-up, if applicable.
9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.
10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this

and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds." In addition to Owner, Contractor, and Subcontractors of every tier, include as insureds the following:

- a. *None*
  11. include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties:
    - a. *None*
  12. If debris removal in connection with repair or replacement of insured property is subject to a coverage sublimit, such sublimit will be a minimum of \$50,000.
- G. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by Contractor in accordance with Article 6 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty days' prior written notice has been given to Owner by certified mail and will contain waiver provisions in accordance with paragraph 6.05.B."

SC-6.05.A – Delete the first sentence of 6.05.A in its entirety and replace with the following:

“The insurance policies purchased and maintained in accordance with Article 6 (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 Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.”

SC-6.05.B – Delete Paragraph 6.05.B in its entirety and replace with the following:

- B. Owner and Contractor intend that all policies of insurance purchased in accordance with the provisions of Article 6 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and officers, director, members, partners, employees, agents, consultants, and subcontractors or each and any of them) in such policies and will, where required to provided such insurance, provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby.

SC-6.05.D – Add the following paragraph immediately after Paragraph 6.05.D:

- E. The Contractor shall pay for all costs not covered because of the application of a policy deductible due under any of its insurance policies required hereunder.

SC-6.06.A – Delete Paragraph 6.06.A in its entirety.

SC-6.06.B – Delete Paragraph 6.06.B in its entirety.

SC-6.06.C – Delete Paragraph 6.06.C in its entirety.

## **ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES**

SC-7.01.B – Insert the following at the end of Paragraph 7.01.B:

“Contractor shall not be entitled to any equitable adjustment in Contract Price as a result of such services.”

SC-7.03.C – Insert the following new paragraph immediately after 7.03.C

- D. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any),

Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-7.03.D – Add the following new subparagraph immediately after Paragraph SC-7.03.D:

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as \$150.00 per labor hour plus \$200.00 travel and per diem costs per day.

SC-7.05.A – Insert the following at the end of Paragraph 7.05.A:

“, and in accordance with M.G.L. c.30, §39M.”

SC-7.05.A.1.b – Add the following new paragraph immediately after Paragraph 7.05.A.1.b:

- c. It shall be Contractor's responsibility to coordinate all submittals to Engineer for approval to eliminate any conflicts which might arise due to the use of “or equal” items. Any additional costs incidental to the use of “or equal” items shall be paid by Contractor.

SC-7.07.A – Add the following sentences to the end of the Paragraph 7.07.A:

“Contractor shall not employ any Subcontractor, Supplier or other person or organization, (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner makes reasonable objection. Acceptance of any Subcontractor, other person or organization by Owner shall not constitute a waiver of any right of Owner to reject defective Work.”

SC-7.07.H – Add the following paragraph immediately after Paragraph 7.07.H:

1. Contractor shall make payments to Subcontractors in accordance with Massachusetts General Laws Chapter 30, Section 39F.

SC-7.07.I – Add the following paragraph immediately after Paragraph 7.07.I:

1. Owner or Engineer may furnish to any such Subcontractor, Supplier, or other person or organization, to the extent practicable, information about amounts paid to Contractor in accordance with Contractor's Applications for Payment on account of the particular Subcontractor's, Suppliers, other person's, or other organization's Work.

SC-7.07.J – Insert the following language at the beginning of the Paragraph 7.06.J:

“Except as otherwise required by Massachusetts General Law, Chapter 149, Section 44F,”

SC-7.08.A – Delete the second sentence of Paragraph 7.07.A

SC-7.08.B – Delete Paragraph 7.08.B in its entirety.

SC-7.08.C – Delete the word “arbitration” and replace with “mediation”.

SC-7.09.A – Add the following paragraph immediately after Paragraph 7.09.A:

1. The Contractor shall become familiar with all obtained permits listed in Exhibit B.

SC-7.10 – Add the following paragraphs immediately after Paragraph 7.10.A:

- B. The total amount of work subcontracted by the Contractor shall not exceed fifty percent of the Contract price without prior approval from the Owner. Contractor shall not employ any Subcontractor, Supplier or other person or organization, (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner makes reasonable objection. Acceptance of any Subcontractor, other person or

organization by Owner shall not constitute a waiver of any right of Owner to reject defective Work.

- C. The materials and supplies to be used in the Work under this Contract are exempt from the Sales and Use Tax of the Commonwealth of Massachusetts. Contractor shall obtain the proper certificates, maintain the necessary records, and otherwise comply with all applicable requirements governing the exemption from sales tax.

SC-7.11.B – Delete the word “arbitration” and replace with “mediation”.

SC-7.11.C – Delete the last sentence of Paragraph 7.11.C.

SC-7.12.A – Insert the following paragraphs immediately after Paragraph 7.12.A:

- B. The Contractor shall return to the Engineer one set of the Contract Drawings marked in colored pencil, showing all changes made during construction and including the location, by dimensions and elevations, of installed equipment, and underground facilities that will become concealed or buried by the construction. This shall include ties to all concealed work, etc. measured from permanent structures. Additionally, the Contractor shall be required to keep marked-up drawings current and on site and to provide mark-ups to the Owner on a monthly basis.
- C. Contractor shall comply with all applicable provisions of Chapter 30, Section 39R of the Massachusetts General Laws regarding Contractor’s records.

SC-7.13.D – Delete the text in parentheses in Paragraph 7.13.D.

SC-7.16.F – Insert the following paragraph immediately after Paragraph 7.16.F:

- E. The accuracy of all such information submitted by the Contractor is the responsibility of the Contractor. In reviewing Shop Drawings, Samples, and similar submittals, the Engineer shall be entitled to rely upon the Contractor’s representation that such information is correct and accurate.”

SC-7.17.E – Insert the following new paragraph immediately after Paragraph 7.17.E:

- F. Contractor shall guarantee all materials and equipment furnished and Work performed for a period of two (2) years from the date of Substantial Completion. Contractor warrants and guarantees for a period of two (2) years from the date of Substantial Completion that the completed Work is free from all defects due to faulty materials or workmanship and Contractor shall promptly make such corrections as may be necessary by reason of any such defects including the repairs of any damage to other parts of the Work resulting from such defects. In the event that Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, Owner may do so and charge Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

SC-7.18.A – Delete the phrase in parentheses “(other than the Work itself)” in Paragraph 7.18.A. Delete the word “arbitration” and replace with “mediation”. Change the phrase “negligent act or omission” to “negligent or willful or wrongful act or omission.”

SC-7.18.B – Add the following language at the end of Paragraph 7.18.B

“If, through the acts or neglect of Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the Work, Contractor shall settle with such other Contractor or Subcontractor by agreement if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against Owner on account of any damage alleged to have been sustained, Owner shall notify Contractor, who shall indemnify and hold harmless Owner against any such claims.”

## **ARTICLE 8—OTHER WORK AT THE SITE**

SC-8.02 – Delete Paragraph 8.02 in its entirety

SC-8.03.C – Delete Paragraph 8.03.C in its entirety and replace with the following:

- C. Should Contractor cause damage to the work or property of any separate contractor at the site, or should any claim arising out of Contractor's performance of the Work at the site be made by any separate contractor against Contractor, Owner, Engineer, Engineer's Consultants, or any other person, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by mediation or at law. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner, Engineer, and Engineer's Consultants, harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals, and court and mediation costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any separate contractor against Owner, Engineer, or Engineer's Consultants, to the extent based on a claim arising out of the Contractor's performance of the Work. Should a separate contractor cause damage to the Work or property of Contractor or should the performance of Work by any separate contractor at the site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or Engineer's Consultants or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any mediator which seeks to impose liability on or to recover damages from Owner, Engineer, or Engineer's Consultants, on such action or claim. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and Owner and Contractor are unable to agree to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of times in accordance with Article 11.02. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and Engineer's Consultants, for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from Owner, Engineer or Engineer's Consultant, for activities that are their respective responsibilities.

## **ARTICLE 9—OWNERS RESPONSIBILITIES**

SC-9.02.A – Delete the phrase “provided Contractor makes no reasonable objection to the replacement engineer” in Paragraph 9.02.A.

SC-9.06 – Delete Paragraph 9.06 in its entirety.

SC-9.09.A – Insert the following after the first sentence of Paragraph 9.09.A

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

## **ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION**

SC-10.01.A – Insert the following paragraph immediately after Paragraph 10.01.A:

- B. Nothing contained in the Contract Documents shall be construed to create a contractual relationship of any kind (1) between the Engineer and Contractor, (2) between the Owner and a Subcontractor or Subcontractors, or (3) between any person or entities other than the Owner and Contractor. The Engineer shall, however, be entitled to performance and enforcement of

obligations under the Contract Documents intended to facilitate performance of the Engineer's duties."

SC-10.02.B – Insert the following sentence at the end of Paragraph 10.02.B:

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

SC-10.03.A – Delete the last sentence of Paragraph 10.03.A.

SC-10.03.B – Insert the following paragraph immediately after Paragraph 10.03.B:

1. The Town of Marshfield will provide a Resident Project Representative under contract with the Town of Marshfield.

SC-10.07.E – Insert the following paragraph immediately after Paragraph 10.07.E:

- F. Engineer's interpretations will be made in accordance with Massachusetts General Laws Chapter 30, Section 39P.

SC-10.08.B – Insert the following after the first sentence in Paragraph 10.08.B:

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

## **ARTICLE 11—CHANGES TO THE CONTRACT**

SC-11.05.A – Add the following new paragraph immediately after Paragraph 11.05.A:

1. Engineer's interpretations will be made in accordance with Massachusetts General Laws Chapter 30, Section 39P.

SC-11.05.D – Add the following paragraph immediately after Paragraph 11.05.D:

- E. Upon request of the Owner or Engineer, the Contractor shall without cost to the Owner submit to the Engineer, in such form as the Engineer may require, an accurate written estimate of the cost of any such proposed extra Work or change. The estimate shall indicate the quantity and unit cost of each item of materials, and the number of hours of work and hourly rate for each class of labor, as well as the description and amounts of all other costs chargeable under the terms of this Article. Unit labor costs for the installation of each item of materials shall be shown if required by the Engineer. The Contractor shall promptly revise and resubmit such estimate if the Engineer determines that it is not in compliance with the requirements of this Article, or that it contains errors of facts or mathematical errors. If required by the Engineer, in order to establish the exact cost of new Work added or previously required Work omitted, the Contractor shall obtain and furnish to the Engineer bona fide proposals from recognized suppliers for furnishing any material included in such Work, and shall be furnished at Contractor's expense. The Contractor shall state in the estimate any extension of time required for the completion of the Work if the change or extra work is ordered.

SC-11.07.C.2.c – Delete Paragraph 11.07.C.2.c in its entirety.

## **ARTICLE 12—CLAIMS**

SC-12.01.D.1 – Insert the following paragraph immediately after Paragraph 12.01.D.1:



- a. Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings unless otherwise agreed in writing by Owner and Contractor.

SC-12.01.D.3 – Insert the following paragraph immediately after Paragraph 12.01.D.3:

- a. Shall be agreed upon by the Contractor and Owner, and shall occur in the Commonwealth of Massachusetts.

## **ARTICLE 13—COST OF WORK; ALLOWANCES, UNIT PRICE WORK**

SC-13.01.B – Insert the following language before the first sentence in Paragraph 13.01.B

“Following the Notice of Award and prior to the execution of the AGREEMENT the Owner, prospective contractor and, if any, each prospective filed subbid contractor shall agree on what percentage markup shall be used as direct labor costs in determination of extra work costs.”

SC-13.01.B.1 –Delete the word "superintendents" in the second sentence of Paragraph 13.01.B.1.d.

SC 13.01.B.5 –Delete subparagraphs a,d,e,f,g and h of Paragraph 13.01.B.5.

SC-13.01.B.5.c.2 – Add the following sentence to Paragraph 13.01.B.5.c.2:

“The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work provisions of this Contract is the most current edition of the Rental Rate Blue Book.”

SC-13.01 – Supplement Paragraph 13.01.C.2 by adding the following definition of small tools and hand tools:

- a. For purposes of this paragraph, “small tools and hand tools” means any tool or equipment whose current price if it were purchased new at retail would be less than \$500.

SC-13.03 – Delete Paragraph 13.03.E in its entirety and insert the following in its place:

### *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 extended price of a particular item of Unit Price Work amounts to fifty (50) percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than ten (10) percent 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**

SC-14.02.F – Delete the remainder of Paragraph 14.02..F following “Contractor’s Expense”.

SC-14.05.C.2 – Delete Paragraph 14.05.C.2 in its entirety.

SC-14.06.B – Insert the following paragraph immediately after Paragraph 14.06.B:

- B. If Owner stops Work under Paragraph 14.06.A, Contractor shall not be entitled to any extension of Contract Time or increase in Contract Price.

**ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD**

SC-15.01.B.1 – Delete the first phrase prior to the words “Contractor shall” in the first sentence of Paragraph 15.01.B.1 and replace with the following:

“On a monthly basis and in accordance with M.G.L. c.30, §39G,”.

SC-15.01.B.3 – Delete Paragraph 15.01.B.3 in its entirety and replace with the following:

3. Retainage with respect to progress payments will be five percent or, if stipulated, the maximum allowed by law.

SC-15.01.B.4 – Add the sentence “No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage or invest the retainage for the benefit of the Contractor” at the end of Paragraph 15.01.B.4 and insert the following new paragraph immediately after Paragraph 15.01.B.4:

5. Contractor shall furnish evidence that payment received on the basis of materials and equipment not incorporated and suitably stored, has in fact been paid to the respective supplier(s) within ten (10) days of payment by Owner. Failure to provide such evidence of payment may result in the withdrawal of previous approval(s) and removal of the cost of related materials and equipment from the next submitted Application for Payment.

SC-15.01.B.5 – Add new paragraph immediately after Paragraph 15.01.B.5:

6. The Application for Payment form to be used on this Project is EJCDC® C-620. The Engineer must approve all Applications for Payment before payment is made.

SC-15.01.B.6 – Add new paragraph immediately after Paragraph 15.01.B.6:

7. Owner shall make progress payments on account of the Contract Price on the basis of Contractor’s Applications for Payment on or about the first day of each month during performance of the Work as provided in Paragraphs 5.2.A.1 and 5.2.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.03 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:

- a. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 15.01 of the General Conditions:
  - i. 95 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, Owner, on recommendation of Engineer, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no additional retainage; and
  - ii. 50 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- b. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 98 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 15.01 of the General Conditions and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

SC-15.01.C.1 – Delete Paragraph 15.01.C.1 in its entirety and replace with the following:

1. Progress Payments shall be made in accordance with Massachusetts General Laws, Chapter 30, Section 39G.

SC-15.01.D.1 – Delete Paragraph 15.01.D.1 in its entirety and replace with the following:

1. Payment shall be made in accordance with M.G.L. c.30, §39G.

SC-15.01.E.2 – Delete words “immediate” and “promptly” in the first sentence of Paragraph 15.01.E.2.

SC-15.01.E.3 – Delete Paragraph 15.01.E.3 in its entirety.

SC-15.02.A – Insert the following new paragraphs immediately after Paragraph 15.02.A:

- B. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.”
- C. Contractor shall indemnify and save Owner harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall, at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the Contractor, either pay unpaid bills, of which Owner has written notice, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon Owner to either Contractor, or Contractor's Surety. In paying any unpaid bills of the Contractor, Owner's

payment shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.

SC-15.04.A – Delete the phrase “subject to the following conditions” at the end of the first sentence of Paragraph 15.04.A.

SC-15.04.A.2 – Delete Paragraph 15.04.A.2 in its entirety.

SC-15.06.B.1 - Delete Paragraph 15.06.B.1 and replace with the following:

1. If, on the basis of Engineer’s observations of the Work during construction and final inspection, and Engineer’s review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor’s other obligations under the Contract Documents have been fulfilled, Engineer will indicate in writing Engineer’s recommendation of payment and present the Application for Payment to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

SC-15.06.E – Add the sentence at the end of Paragraph 15.06.E:

“Final payment shall be made in accordance with M.G.L. c.30, §39G.”

SC-15.07.A – Delete Paragraph 15.07.A and replace with the following:

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

SC-15.08.C – Delete the word “arbitration” and replace with “mediation”.

## **ARTICLE 16—SUSPENSION OF WORK AND TERMINATION**

SC-16.01.A – Delete Paragraph 16.01.A and replace with the following:

- A. Owner may suspend the work or any portion thereof in accordance with M.G.L. c.30, §39O.

SC-16.02.A.4 – Insert the following paragraph immediately after Paragraph 16.02.A.4:

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

SC-16.03.A.1 – Delete the phrase “including fair and reasonable sums for overhead and profit on such Work” in Paragraph 16.03.A.1.

SC-16.03.A.2 – Delete the phrase “plus fair and reasonable sums for overhead and profit on such expenses” in Paragraph 16.03.A.2.

SC-16.03.A.3 – Delete Paragraph 16.03.A.3 in its entirety.

SC-16.04.B – Delete the last sentence of Paragraph 16.04.B.

## **ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES**

SC 17.01.B – Insert the following new paragraph immediately after Paragraph 17.01.B

- C. Contractor shall be responsible to carry on the Work and maintain the progress schedule during the dispute resolution proceedings.

SC 17.01 – Insert the following Section titled “Venue” following Paragraph 17.01.

### 17.02 *Venue*

- A. Any legal action relating to this Contract shall be filed in the Superior Court for the County in the Commonwealth of Massachusetts in which the Project is located, unless otherwise agreed by Contractor and Owner in writing.

SC 17.02 – Insert the following Section titled “Dispute Resolution” following Paragraph 17.02.

### 17.03 *Dispute Resolution*

- A. Any claim or controversy concerning the application, interpretation, or enforcement of any clause of this Contract, or breach thereof, may be settled by non-binding mediation in accordance with the rules agreed to by the parties. If mediation is unsuccessful or if the parties do not agree to pursue such alternative method of resolution, any action shall be brought in a court of competent jurisdiction in The Commonwealth of Massachusetts, to whose jurisdiction the parties hereby assent and notwithstanding any applicable conflict of law principles.

## **ARTICLE 18—MISCELLANEOUS**

SC 18.10.A– Delete Paragraph 18.10.A and replace with the following:

- A. The headings or titles of any article, paragraph, subparagraph, section, subsection, or part of the Contract Documents shall not be deemed to limit or restrict the article, paragraph, section, or part.

SC 18.10 – Add the following new paragraph immediately after Paragraph 18.10:

### 18.11 *Wage Rates*

- A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to employment of labor, and to the schedule of minimum wage rates established in compliance with laws shall be a part of the Contract Documents. If after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administering the laws mentioned above.”
- B. The schedule of wages referred to above is minimum rates only, and Owner will not consider any claims for additional compensation made by Contractor because of payment by Contractor of any wage in excess of the applicable, required rates.”
- C. The said schedules of wages shall continue to be the minimum rates to be paid during the life of this Agreement, unless state laws and regulations require updating the same in which case the Owner shall provide the updated applicable schedule of wages, and a legible copy of said schedules shall be kept posted in a conspicuous place at the site of the work.

**SC-19 – Add the following new ARTICLE 19 immediately after ARTICLE 18:**

## ARTICLE 19 - FEDERAL REQUIREMENTS

### 19.01 *Agency Not a Party*

- A. This Contract is expected to be funded in part with funds provided by Agency. Neither Agency, nor any of its departments, entities, or employees, is a party to this Contract.

### 19.03 *Conflict of Interest*

- A. Contractor may not knowingly contract with a Supplier or Manufacturer if the individual or entity who prepared the Drawings and Specifications has a corporate or financial affiliation with the Supplier or Manufacturer. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest or other interest in or a tangible personal benefit from the Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

### 19.04 *Gratuities*

- A. If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.
- B. In the event this Contract is terminated as provided in paragraph 19.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

### 19.05 *Small, Minority and Women's Businesses*

- A. If Contractor intends to let any subcontracts for a portion of the work, Contractor will take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Affirmative steps will include:
  1. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
  2. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
  3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
  4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;

5. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

19.06 *Anti-Kickback*

- A. Contractor shall comply with the Copeland Anti-Kickback Act (40 USC 3145) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

19.07 *Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended*

- A. Contractor to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

19.08 *Equal Employment Opportunity*

- A. The Contract is considered a federally assisted construction contract. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

19.09 *Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)*

- A. Contractors that apply or bid for an award exceeding \$100,000 must file the required certification (RD Instruction 1940-Q Exhibit A-1). The Contractor certifies to the Owner and every subcontractor certifies to the Contractor that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining the Contract if it is covered by 31 U.S.C. 1352. The Contractor and every subcontractor must also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

19.10 *Environmental Requirements*

- A. When constructing a Project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental conditions:
  1. Wetlands – When disposing of excess, spoil, or other Construction Materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.
  2. Floodplains – When disposing of excess, spoil, or other Construction Materials on public or private property, Contractor shall not fill in or otherwise convert 100-year floodplain areas (Standard Flood Hazard Area) delineated on the latest Federal Emergency Management

Agency Floodplain Maps, or other appropriate maps, e.g., alluvial soils on NRCS Soil Survey Maps.

3. Historic Preservation - Applicants shall ensure that Contractors maintain a copy of the following inadvertent discovery plan onsite for review:
  - a. If during the course of any ground disturbance related to any Project, any post review discovery, including but not limited to, any artifacts, foundations, or other indications of past human occupation of the area are uncovered, shall be protected by complying with 36 CFR § 800.13(b)(3) and (c) and shall include the following:
    - i. All Work, including vehicular traffic, shall immediately stop within a 50 ft. radius around the area of discovery. The Contractor shall ensure barriers are established to protect the area of discovery and notify the Engineer to contact the appropriate RD personnel. The Engineer shall engage a Secretary of the Interior (SOI) qualified professional archeologist to quickly assess the nature and scope of the discovery; implement interim measures to protect the discovery from looting and vandalism; and establish broader barriers if further historic and/or precontact properties, can reasonably be expected to occur.
    - ii. The RD personnel shall notify the appropriate RD environmental staff member, the Federal Preservation Officer (FPO), and State Historic Preservation Office (SHPO) immediately. Indian tribe(s) or Native Hawaiian Organization (NHOs) that have an interest in the area of discovery shall be contacted immediately. The SHPO may require additional tribes or NHOs who may have an interest in the area of discovery also be contacted. The notification shall include an assessment of the discovery provided by the SOI qualified professional archeologist.
    - iii. When the discovery contains burial sites or human remains, the Contractor shall immediately notify the appropriate RD personnel who will contact the RD environmental staff member, FPO, and the SHPO. The relevant law enforcement authorities shall be immediately contacted by onsite personnel to reduce delay times, in accordance with tribal, state, or local laws including 36 CFR Part 800.13; 43 CFR Part 10, Subpart B; and the Advisory Council on Historic Preservation's Policy Statement Regarding treatment of Burial Sites, Human Remains, or Funerary Objects (February 23, 2007).
    - iv. When the discovery contains burial sites or human remains, all construction activities, including vehicular traffic shall stop within a 100 ft. radius of the discovery and barriers shall be established. The evaluation of human remains shall be conducted at the site of discovery by a SOI qualified professional. Remains that have been removed from their primary context and where that context may be in question may be retained in a secure location, pending further decisions on treatment and disposition. RD may expand this radius based on the SOI professional's assessment of the discovery and establish broader barriers if further subsurface burial sites, or human remains can reasonably be expected to occur. RD, in consultation with the SHPO and interested tribes or NHOs, shall develop a plan for the treatment of native human remains.
    - v. Work may continue in other areas of the undertaking where no historic properties, burial sites, or human remains are present. If the inadvertent discovery appears to be a consequence of illegal activity such as looting, the onsite personnel shall contact the appropriate legal authorities immediately if the landowner has not already done so.



- vi. Work may not resume in the area of the discovery until a notice to proceed has been issued by RD. RD shall not issue the notice to proceed until it has determined that the appropriate local protocols and consulting parties have been consulted.
  - vii. Inadvertent discoveries on federal and tribal land shall follow the processes required by the federal or tribal entity.
  - 4. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.
  - 5. Mitigation Measures – The following environmental mitigation measures are required on this Project: *[Insert mitigation measures from the Letter of Conditions here]*.
- 19.11 *Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)*
- A. Where applicable, for contracts awarded by the Owner in excess of \$100,000 that involve the employment of mechanics or laborers, the Contractor will comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, the Contractor will compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic will be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
- 19.12 *Debarment and Suspension (Executive Orders 12549 and 12689)*
- A. A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.
- 19.13 *Procurement of recovered materials*
- A. The Contractor will comply with 2 CFR Part 200.322, “Procurement of recovered materials.”
- 19.14 *American Iron and Steel*
- A. Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference applies an American Iron and Steel requirement to this project. All iron and steel products used in this project must be produced in the United States. The term “iron and steel products” means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and Construction Materials.
  - B. The following waivers apply to this Contract:

FUSS & O'NEILL, INC.  
20180319.A23  
MARSHFIELD, MA

SOUTH RIVER FISH PASSAGE AND  
VETERANS MEMORIAL PARK  
IMPROVEMENTS PROJECT

1. *De Minimis*,
2. Minor Components, and
3. Pig iron and direct reduced iron

**EXHIBIT A—SOFTWARE REQUIREMENTS FOR ELECTRONIC DOCUMENT EXCHANGE**

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
a.2	Meeting agendas, meeting minutes, RFP's and responses to RFP's, and Contract forms.	Email w/ Attachment	PDF	(2)
a.3	Contactors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	Email w/ Attachment or LFE	PDF	
a.5	Layouts and drawings to be submitted to Owner for future use and modification.	Email w/ Attachment or LFE	DWG	
a.6	Correspondence, reports and Specifications to be submitted to Owner for future word processing use and modification.	Email w/ Attachment or LFE	DOC	
a.7	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	EXC	
a.8	Database files and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	DB	
Notes				
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.			
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.			
Key				
Email	Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies			
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)			
PDF	Portable Document Format readable by Adobe® Acrobat Reader Version 2022.001.20117 or later			
DWG	Autodesk® AutoCAD .dwg format Version 13.0.1410.0			
DOC	Microsoft® Word .docx format Version 2204			
EXC	Microsoft® Excel .xls or .xml format Version 2204			
DB	Microsoft® Access .mdb format Version 2204			

**DIVISION 01 – GENERAL REQUIREMENTS**

## SECTION 01 10 00 - SUMMARY

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Project information.
  - 2. Work covered by Contract Documents.
  - 3. Phased construction.
  - 4. Access to site.
  - 5. Work restrictions.
  - 6. Specification formats and drawing conventions.
  - 7. Storage and handling of materials.

#### 1.3 PROJECT INFORMATION

- A. Project Identification: Project consists of, but is not limited to, replacing an existing dam and fishway with a nature-like riffle-pool fishway and associated water control features as indicated on the Contract Drawings. .
  - 1. Project Location: Veterans Memorial Park, Marshfield, Massachusetts.
    - a. Includes adjacent areas within the Limit of Disturbance as shown on Drawings

- B. Owner Identification: Town of Marshfield, MA

- C. Engineer Identification: The Contract Documents were prepared for the Project by Fuss & O'Neill Inc. Retain "Engineer's Consultants" Paragraph below if providing contact information for Engineer's consultants for Project use.

#### 1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project includes, but is not limited to, construction of all proposed site improvements including, but limited to, removal of existing dam and fishway structures, construction of a nature-like riffle-pool fishway, reconstruction of a lagoon and adjacent stone masonry walls, construction of various water control structures and public access/safety improvements , traffic control, and stabilization of areas disturbed by construction and as depicted on the Contract Drawings and as directed by the Engineer.

1.5 DEFINITIONS

- A. Furnish: Supply and deliver to the project site.
- B. Install: Place in position for service or use.
- C. Provide: Furnish and install, complete and ready for intended use.

1.6 QUALITY ASSURANCE

- A. Standard Specifications: Shall mean the most recent version of the “Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition”, and Supplemental Specifications (March 31, 2024).

1.7 WORK SEQUENCE

- A. The Work shall be conducted in the general sequence as indicated in the “Water Control & Construction Phasing Plan” section on Sheets CS-109 of the Contract Drawings.
  - 1. The phases shall be determined at the Contractor’s discretion, but the phases shall have been determined in time for discussion at the Pre-Construction Conference to be scheduled after the award of the contract. Once the final construction pursuant to this contract commences in a phase it shall continue until completion of that phase.

1.8 SUBMITTALS

- A. Submit the following schedules in accordance with Paragraph 3.2 of this Section:
  - 1. Construction schedule
  - 2. Schedule of submittals/shop drawings

1.9 ACCESS TO SITE

- A. General: Contractor shall have full use of the portion of the Project site owned by the Town of Marshfield for construction operations during construction period, and partial use of the Project site on the abutting property north of the park for construction access and construction of improvements on the north side of the river channel and northern riverbank. Contractor's use of Project site on the northern abutting property is limited to Owner's right to perform work as prescribed in the Owner’s easement.
- B. Use of Site: Limit use of Project site to areas within the contract Limits. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to limits of disturbance as indicated on the Contract Drawings.
- C. Minimize damage to access routes and restore damaged areas to their original condition or better.
- D. Remove and restore to original condition all signs, utilities and other improvements required to be relocated or affected for construction of the Work. Costs for such activity shall be borne by the

Contractor unless otherwise indicated. Notify the Engineer, the Owner, and utilities of intended modification or disruption to the property prior to the start of construction and cooperate with them in the scheduling and performance of operations.

- E. Acquire necessary permits, authorizations, and approvals for working in, on or from the right-of-way or easements owned by the Town of Marshfield and other abutters. The Contractor shall also secure all necessary permits for working on the site, including but not limited to, permits required for working in the onsite wetlands.
- F. If the Contractor, by direct negotiation and bargain with any landowner, lessee or tenant, has secured any right to use more space or greater privileges in the space provided by the Owner for purposes incidental to the performance of the Contract, shall upon request furnish to the Engineer proper evidence that such additional rights have been properly secured and assurance that no damage to or claim upon the Owner or Engineer will arise therefrom. Neither the Owner nor the Engineer shall be liable in any way for any expense incurred by the Contractor in securing any such right to use additional property.
- G. The Contractor shall be responsible for and reimburse the Owner and others for any and all losses, damage or expense which the Owner or those others may suffer, either directly or indirectly or through any claims of any person or party, for any trespass outside the spaces and rights of way provided by the Owner to the Contractor or any violation or disregard of the terms and conditions established for the use or occupancy of those rights or for negligence in the exercise of those rights.
  - 1. The Owner may retain or deduct from any sum or sums due or to become due to the Contractor such amount or amounts as may be proper to insure the Owner against loss or expense by reason of the failure of the Contractor to observe the limits and conditions of the rights-of-way, rights-of-access, easements, etc., provided by the Owner.

#### 1.10 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  - 1. Comply with limitations on use of public roads and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.
  - 1. Should access to the Site at other days and/or times be necessary, provide written request to the Owner at least two (2) business days in advance. Transport of materials to or from the Site is not permitted on Saturdays, Sundays or legal holidays.
- C. Existing Utility Interruptions: There are no known underground utilities at the site. Existing overhead utilities must be temporarily relocated and reinstalled after site work is completed.
  - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
  - 2. Obtain utility owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption with Owner.

1. Notify Owner not less than 2 days in advance of proposed disruptive operations.

#### 1.11 SPECIFICATION FORMATS AND DRAWING CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the CSI/CSC's "MasterFormat" numbering system.
  1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
  2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
    - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

#### 1.12 STORAGE AND HANDLING OF MATERIALS

- A. At all times, handle and store materials and equipment to be incorporated in the work in a manner to prevent intrusion of foreign matter, warping, twisting, bending, breaking, and any injury, theft or damage of every description to the material or equipment.
- B. Upon delivery, promptly inspect shipments to assure that products comply with requirements, quantities are correct and products are undamaged. Packages, materials and equipment showing evidence of damage shall be rejected and replaced at no additional cost to the Owner.
- C. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Provide access to products during storage for inspection.
  1. If products are stored for an extended period of time, conduct periodic inspections to assure products are undamaged and are maintained under required conditions.
  2. Keep an inspection log indicating date and time of inspections. Note problems, if any.



- D. For exterior storage of fabricated products, place sloped supports beneath products to keep items from coming in contact with the ground. Cover products subject to deterioration with impervious sheet covering providing ventilation to avoid condensation.
- E. Store loose granular materials on solid surfaces in a well-drained area and prevent from mixing with foreign matter.
- F. Store excavated soils and other construction materials in non-wooded areas near excavations. Store synthetic materials off the ground (or otherwise) to prevent accumulation of dirt or grease, and in a position to prevent accumulation of standing water.

#### 1.13 SITE CONDITIONS

- A. The utilities and structures at the site have been located primarily from limited field surveys and the locations as depicted on the Drawings are considered approximate as to size and location. There may be additional underground utilities and structures that are not shown on the Drawings, and it shall be the responsibility of the Contractor to locate all existing utilities and structures and to protect same from damage or harm. Restore utilities interfered with or damaged, at the expense of the Contractor, and to the satisfaction of its Owner.
- B. Ensure construction activities do not impact the activities or properties of the Town of Marshfield without prior coordination and consent from the Town.
- C. Immediately notify the Engineer upon encountering archaeological material, including "charcoal," "bone," "shell," "cultural objects" (e.g., fire cracked stones/stone flaking material), "middens," or any other artifacts or related items of historical significance.

#### 1.14 DIG SAFE

- A. The Contractor shall be responsible for complying with all applicable Dig Safe rules and regulations.
- B. Contact Dig Safe at 1-888-344-7233 at least 72 hours prior to the start of construction (excluding weekends and holidays) to mark out the utility locations.

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Perform construction during the times and seasons as set forth within the Contract Drawings, weather- and condition-permitting. Construction phasing requirements contained in the Contract Drawings must be adhered to in the Contractor's detailed construction schedule submitted to the Engineer, including installation of erosion and sedimentation controls, installation of temporary cofferdams and water conveyances, and removal of such cofferdams and conveyances.

- B. The Contractor shall provide its own detailed construction schedule to the Engineer prior to the initiation of Work.
  - 1. Deviation from Contractor's schedule will require the Contractor to submit notification of such change in schedule to the Engineer at least seven (7) days prior to the subject change. Such notification shall be accompanied by a revised project schedule and phasing drawing, if applicable.

### 3.2 ADMINISTRATIVE SUBMITTALS

- A. Do not commence portion of the Work requiring a submission until submission has been accepted by the Engineer.
- B. In addition to the submittals required by the various Technical Specifications, provide the following submittals within 10 days after the effective date of the Agreement:
  - 1. Construction Schedule. Submit a proposed schedule of construction (schedule of operations) to the Engineer.
    - a. Provide a bar-chart-type or Gantt-chart-type schedule that clearly indicates the start date and duration of specific construction activities. The Contractor shall not work on Saturday, Sunday, or Holidays without approval of the Engineer. Portions of the Work to be performed by subcontractors or utilities shall be clearly indicated as such.
    - b. Incorporate the erosion control and control of water construction phasing provisions into the construction schedule.
    - c. Prepare scaled drawing clearly showing proposed construction corresponding to construction schedule.
    - d. No work shall be started until the schedule of construction is reviewed and approved by the Engineer.
    - e. Contract completion date shall not be changed by submission of a schedule, unless specifically authorized by Change Order approved by the Owner.
  - 2. Schedule of Submittals/Shop Drawings. The Contractor shall submit his proposed schedule of submittals to the Engineer.

### 3.3 PROJECT MEETINGS

- A. Pre-construction Conference/Meeting: Prior to the start of construction, a pre-construction conference shall be held between the Contractor and representatives of the Conservation Commission, Engineer, Owner and other interested parties.
- B. Progress Meetings: During progress of the Work, meetings may be required in order that scheduling and overall job coordination can be maintained. The Contractor shall be required to attend these meetings throughout the project duration.

### 3.4 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on the Contract Drawings. If substantive discrepancies are discovered, notify Engineer prior to proceeding with the Work.

### 3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated. Complete work and install components in accordance with the Contract Documents.

### 3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 degrees Fahrenheit.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
- D. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials into sewers or waterways will not be permitted.

### 3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. The Contractor shall take any and all precautions necessary to protect all utilities during the execution of this contract, including relevant provisions of Sections 4.10 and 6.03 of the Standard Specifications.
- B. Comply with supplier's written instructions for temperature and relative humidity, where applicable.

### 3.8 PROTECTION AND RESTORATION OF PROPERTY

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. The Contractor, in constructing or installing facilities alongside or near sanitary sewers, storm drains, water or gas pipes, electric, cable or telephone conduits, poles, sidewalks, walls or other structures, shall, at its expense, sustain them securely in place, cooperating with the officers and agents of the various utility companies and municipal departments which control them, so that the services of these structures shall be maintained.
  - 1. Contractor shall also be responsible for the repair or replacement, at the contractor's own expense, of any damage to such structures caused by the contractor's acts or neglect, and shall leave them in the same or better condition as they existed prior to the commencement of work.
  - 2. In case of damage to utilities, the Contractor shall promptly notify the owner and shall, if requested by the Engineer, furnish laborers to work temporarily under the utility owner's direction in providing access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the utility company which suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation therefor.
  - 3. If, as the work progresses, it is found that any of the utility structures are so placed as to render it impracticable, in the judgment of the Engineer, to do the work called for under this

Contract, the Contractor shall protect and maintain the services in such utilities and structures and the Owner will, as soon thereafter as it reasonably can, cause the position of the utilities to be changed or take such action as it deems suitable and proper. If live service connections are to be interrupted by excavation of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall also be plugged off or otherwise made secure by the utility company involved.

4. Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in protecting or repairing property as specified in this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

### 3.9 PERMITS

- A. Obtain all required local permits required for performance of the work and to furnish temporary facilities, including but not limited to construction, curb cut/road opening permit, dumpster and/or sanitary facility permits, if/as required by respective Town of Marshfield officials having jurisdiction.

### 3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
  1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
  2. Correction of the work will not be compensated for.
- B. Restore permanent facilities used during construction to their specified condition.

### 3.11 REGULATORY COMPLIANCE

- A. All equipment operators and workers performing work at the proposed location shall hold the appropriate Commonwealth of Massachusetts licenses for their responsibilities.
- B. Contractor shall provide a 'Competent Person', as defined by the US Department of Labor Occupational Safety & Health Administration (OSHA), for the location of the proposed work.
- C. Contractor and all subcontractor and vendors working at the site shall have an OSHA ten (10) hour construction safety program for their on-site employees.
- D. All required licenses and/or certificates for work being performed shall be copied and supplied to the Engineer prior to beginning work by each contractor, subcontractor or vendor employee conducting work at the site. All required licenses and/or certificates for work being performed shall be in the possession of the person(s) while performing the work.
- E. The Contractor shall be solely responsible to conduct their operations in a manner that meets all local, state, and federal regulations.

END OF SECTION

## SECTION 01 22 19 – PAYMENT ITEMS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section describes the measurement and payment for the Work to be completed under each item on the Bid Form. The descriptions may not reference all of the associated Work. Work specified but not designated as a separate Bid Item is considered incidental to all Bid Items. The Contractor shall review all work associated with each work item and shall have no claim for being unfamiliar with the requirements of these specifications.
  - 1. All work items described herein, including in measurement and payment descriptions or otherwise, do not state all requirement of the work stated in the Contract Documents; all such descriptions shall be inclusive of all incidental work for respective items, as stated in the Contract Documents.
  - 2. This Section addresses general measurement and payment requirements for:
    - a. Contract Base Bid Items
    - b. Unit Price Bid Items
    - c. Alternate Bid Items
- B. Related Sections of the Specifications include the following:
  - 1. Divisions 01 through 49 Sections for detailed procedural, material, and installation requirements associated with the Work of each payment item.
- C. Related Requirements in the Specifications:
  - 1. Division 01 Section "Contract Modification Procedures"

#### 1.3 DEFINITIONS

- A. Payment Items: Contractor's distribution of the Contract Sum through listed work items, as outlined in this Specification, reviewed, and accepted by the Engineer.
  - 1. Each item is specified to include a defined scope of services. However, not all materials, labor, equipment, or services of a payment item are guaranteed to be listed or specified.
  - 2. Include costs associated with items of work required to complete the defined scope of services within the appropriately specified payment item.
  - 3. Payment items include all necessary materials, plus cost for delivery, installation, applicable fees and taxes, administrative over-site, tools, labor, incidentals, overhead, and profit.
  - 4. Field-directed bid items not reflected on the Drawings will only be incorporated into the project if selected and authorized in writing by the Owner. Costs associated with field-

directed bid items shown on the Drawings (including but not limited to the field-directed placement of boulders within the roughened channel/riffle section with low-flow channel downstream of the nature-like fishway) shall be included under the Contract Base Bid Price.

5. Unit bid price items shall be paid only as accepted and where accepted prior to the completion of the respective work.
  6. All work described in the Contract Documents shall be included in the payment items described herein.
- B. Unit Price: An amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services identified in the Contract Documents.
- C. Lump Sum: When used as an item of payment, means complete payment for the work prescribed for that portion of the Work under the item, or all work prescribed in the Contract, as the case may be.
1. Lump sum payment items are groupings of the Work as determined by the Owner only for the Owner's convenience. Such listings of payment items shall establish the minimum level of detail for the Schedule of Values.
  2. The Schedule of Values shall further include the breakdown of each lump sum bid item that appears in the Agreement and shall include the Contractor's verified quantities it used in preparing its bid. If accepted by the Engineer, this breakdown will be used in approximating percentages of completion of the lump sum bid items during the processing of payment applications.
- D. Provide: Procure, fabricate, sample/test, deliver, place/install, adjust, correct and replace if needed all products or materials to be incorporated into all temporary and permanent elements of the Work in accordance with the Contract Documents.
- E. Complete and In Place: When used in the measurement and payment provisions, means the completion of the contract item, including the fabrication, testing, reporting, furnishing, installation, adjustment and correction of all products and materials to be incorporated into the Work including all equipment, tools, labor, health and safety requirements, and work incidental thereto, in accordance with all provisions stated in the Contract Documents.

#### 1.4 PROCEDURES

- A. To ensure payment items are balanced, Mobilization/Demobilization for the base bid shall be limited to no more than five (5) percent of the total bid price for the base bid. Such limit will not prohibit the Contractor from seeking payment for documented expenditures (i.e., invoices or cancelled checks) in excess of this amount under other bid items during project startup and mobilization.
- B. Unit price items, lump sum items and alternate unit price items include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- C. Measurement and Payment: Refer to the Sections 3.1 herein for methods of measurement and payment.

- D. Notify Engineer at least 72-hours prior to the time at which necessary measurements must be taken. Notification must be in advance of obscuring pay item; do not proceed until such measurements have been taken in the presence of the Resident Project Representative.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 LIST OF CONTRACT BASE BID ITEMS

- A. The payment items listed below include references to Specification Sections of work to be completed under the payment item, however not all Sections of related work are guaranteed to be listed.
- B. Base Bid Item No. 1 – Phase 1 - Mobilization
  - 1. Work associated with this item will be paid for at the stated price including respective portions of work under all specifications necessary to initiate Contractor's activities at the project site.
    - a. All or portions of the Contract Requirements and Division 01 specifications, as applicable.
    - b. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to complete the work associated with the mobilization of materials, personnel, and equipment to the project site to complete work associated with the Contract Base Bid Items. Also includes posting all required temporary and permitting signage. The bid amount for this item shall not exceed 3% of the Total Contract Base Bid Price.
  - 2. Measurement: This item will not be measured for payment but will be pro-rated with the Contractor's progress of work as accepted by Engineer.
  - 3. Payment: Phase 1 - Mobilization will be paid for on a Lump Sum basis. When 1% of the total original contract amount is earned from other Contract Base Bid Items, 50% of the amount for Phase 1 - Mobilization will be paid. When 5% of the total original contract amount is earned from other Contract Base Bid Items, the remaining 50% for Phase 1 - Mobilization will be paid.
- C. Base Bid Item No. 2 – Phase 1 - General Requirements
  - 1. Work associated with this item will be paid for at the stated price including respective portions of work under all specifications necessary to sustain Contractor's activities at the project site.
    - a. All or portions of the Contract Requirements and Division 01 specifications, as applicable.
    - b. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for Contractor's general requirements to complete the work, including insurance, bonds, administrative and general requirements, meetings, schedules (including, but not limited to, construction schedules, submittal schedules, and schedule of values), coordination with utility

owners for temporary and permanent utility relocations (not including utility owner fees which are paid under Allowances), temporary facilities and controls for field office trailers and support utilities (including associated permits, fees and electrical/communication utility connection and usage costs), securing local permits as required, and all other measures not specified elsewhere and miscellaneous costs associated with the Work including incidentals not covered by other payment items. The bid amount for this item shall not exceed 5% of the Total Contract Base Bid Price.

- c. Payment of invoiced costs by utility owners for permanent services will be made under Alternate Price Sub-Item ALT-2.18: Allowance No. 3 – Public Utility Relocation Cost/Fee Reimbursement.
  - d. Also includes other incidental items such as obtaining necessary remaining permits, field and laboratory testing, construction survey layout, and project record drawings/mapping.
2. Measurement: This item will not be measured for payment but will be pro-rated with the Contractor's progress of work as accepted by Engineer.
  3. Payment: Phase 1 - General Requirements will be paid for on a Lump Sum basis. Contractor will be paid 40% upon completion of phase 1 - mobilization, 30% upon earning 50% of the total base bid contract value, and the remaining 30% upon completion of phase 1 - demobilization from the site as accepted by the Engineer.

D. Base Bid Item No. 3 – Phase 1 - Demobilization

1. Work associated with this item will be paid for at the stated price including respective portions of work under all specifications necessary to conclude Contractor's activities at the project site.
  - a. All or portions of the Contract Requirements and Division 01 specifications, as applicable.
  - b. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for demobilization of materials, personnel, and equipment from the project site. Also includes restoring all incidental areas inside or outside the project limits damaged by Contractor's activities or traffic control to existing condition or better including construction access ways (e.g., temporary staging and storage areas) and restoring and establishing a satisfactory stand of vegetation in non-hardscape areas affected by construction.
2. Measurement: This item will not be measured for payment but will be paid as a lump sum unit price bid item.
3. Payment: Phase 1 - Demobilization will be paid for on a Lump Sum basis, complete and in place. Phase 1 - Demobilization shall be considered complete when the Contractor has achieved final completion of the work and removed all equipment and materials from the site.

E. Base Bid Item No. 4 – Phase 1 - Site Clearing and Demolition

1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
  - a. All or portions of Division 01 specifications, as applicable.



- b. Section 02 41 13 Selective Demolition
  - c. Section 31 10 00 Site Clearing
  - d. Section 31 20 00 Earth Moving
  - e. Section 31 50 00 Excavation Support and Protection
  - f. Section 35 01 70 Control of Water
  - g. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for demolition, handling, transport and disposal of items to be removed and disposed within the Phase 1 base bid limits as indicated on Contract Drawings; remove and dispose of concrete fishway and associated stone masonry walls, including storing for reuse existing stone masonry stones and off-site disposal of reinforced concrete; removing and disposing existing dam/spillway boulder step structure to enable construction of the nature-like fishway structure, including storing for reuse existing stone masonry stones and off-site disposal of reinforced concrete; clearing, grubbing and tree removal within the project limit of disturbance; remove and storing (on-site) existing water wheel; remove and dispose of existing timbers lining the lagoon inlet; removing timber rail fence and avian barrier screen; remove and replace walkways in conflict with Phase 1 construction (e.g. required to install drainage, electric, and lagoon utilities; remove and dispose existing 18-inch HDPE pipe and inlet structure); Selectively demolish and reconstruct sections of stone masonry walls as required to complete proposed work where indicated within Phase 1 limits on Contract Drawings, screening and stockpiling topsoil where such materials are to be proposed for reuse on completed areas where depicted on the Contract Drawings and as directed by the Engineer. Includes protecting existing structures and vegetation to remain within and adjacent to work areas; and repairing any damage to such features resulting from the Contractor's operations.
- 2. Measurement: As measured by the Contractor and accepted by the Engineer, pro-rated with the Contractor's progress of work in performing and completing respective work items associated with this bid item.
  - 3. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
- F. Base Bid Item No. 5 – Phase 1 - Temporary Traffic Control and Protection of Public
- 1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - a. All portions of Division 01 specifications, as applicable.
    - b. Section 01 55 26 Traffic Control
    - c. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for installation, maintenance and removal of all temporary pavement markings, impact attenuators, concrete barriers, construction barricades, drums, advanced warning and traffic signs, cones, lights, temporary traffic signing, including associated costs for electrical utility and land-based or wireless communication connections and services, flaggers, and other products and materials required for the control and protection of the traveling public

and working personnel throughout construction as indicated within the Contract Documents or as directed by the engineer. Any traffic control devices which are lost, stolen, destroyed, or deemed unacceptable while in use shall be replaced without additional compensation. All materials, labor, and equipment necessary to complete the work shall be considered as incidental to the construction and be included in the lump sum price. This item is for work completed under the base bid.

2. Measurement: As measured by the Contractor and accepted by the Engineer, pro-rated with the Contractor's progress of work in performing and completing respective work items associated with this bid item.
3. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
  - a. Payment of invoiced costs for police details will be made under Bid Price Item Allowance No. 1 – Phase 1 Police Detail Cost/Fee Reimbursement.

G. Base Bid Item No. 6 – Phase 1 - Temporary Erosion and Sedimentation Controls

1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
  - a. All or portions of Division 01 specifications, as applicable, including:
  - b. Section 01 57 13 Temporary Erosion and Sedimentation Control
  - c. Section 31 20 00 Earth Moving
  - d. Section 32 92 00 Site and Wetland Restoration
  - e. Section 35 01 70 Control of Water
  - f. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for installing, maintaining, and removing and disposing all temporary erosion and sedimentation control measures and practices for completion of all Base Bid work associated with the project. Such measures include, but are not limited to, biodegradable fiber rolls, construction entrances, and temporary construction dewatering basins.
  - g. Also includes removing and disposing of all accumulated sediment off-site and establishing temporary vegetation in areas to remain dormant for extended periods as indicated on the Contract Drawings.
2. Measurement: As measured by the Contractor and accepted by the Engineer, pro-rated with the Contractor's progress of work in establishing, maintaining and restoring all temporary and erosion control measures and practices required for completion of work.
3. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.

H. Base Bid Item No. 7 – Phase 1 - Control of Water

1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
  - a. All or portions of Division 1 specifications, as applicable.

- b. Section 31 20 00 Earth Moving
  - c. Section 31 50 00 Excavation Support and Protection
  - d. Section 35 01 70 Control of Water
  - e. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for controlling surface and groundwater within project Base Bid work areas through the furnishing, installation, operation, maintenance, and removal of temporary water control measures including cofferdams, steel sheeting, and other appurtenances as indicated on the Contract Drawings for Normal Water Control; temporary protection of work area measures for Flood Water Control conditions (i.e. flood water flow in excess of Normal Water Control conditions); groundwater/surface water pumps and temporary dewatering areas; and other water control measures and appurtenances such as surface and subsurface dams, flow diversions, special linings for erosion protection, pipes, barriers, prefabricated sediment containment devices, pumps, and watertight seals.
  - f. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to furnish and install temporary geomembrane liner placed over the excavated lagoon in accordance with the Contract Documents and as directed by the engineer.
  - g. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to furnish and install lagoon outlet control structure (including stop log controls), 30" HDPE lagoon outlet pipe, and other required components in accordance with the Contract Documents and as directed by the engineer.
  - h. All other Control of Water work required by Alternative Bid Item No. 2 work will not be included within this lump sum price and will be paid for under Alternate Bid Item No. 2.7 – Phase 2 - Control of Water.
- 2. Measurement: As measured by the Contractor and accepted by the Engineer, pro-rated with the Contractor's progress of work in performing and completing respective work items associated with this bid item.
  - 3. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
- I. Base Bid Item No. 8 –River Channel Dredging
- 1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - a. All or portions of Division 1 specifications, as applicable.
    - b. Section 31 10 00 Site Clearing
    - c. Section 31 20 00 Earth Moving
    - d. Section 35 10 70 Control of Water
    - e. Includes, but is not limited to: Preliminary and final surveys of river channel dredge areas; dredging, testing, transportation, and stockpiling of dredge material within temporary staging area as indicated on the Contract Drawings and/or as directed by the Engineer. This item includes all dredging completed within the river channel

located within the project limits. Also includes transportation to and/or re-used in an onsite location identified within project limits or final disposal area identified by the town. Includes all labor, materials, equipment, survey and positioning, tools, and all other incidentals required to complete the work.

2. Measurement: The amount of material dredged, stockpiled, dewatered, transported and/or reused will be determined by a calculation of volume when comparing the Contractor pre and post survey elevations or as determined by the Engineer. The calculation will be performed by using the average end area method with cross-sections taken every 20-feet.
3. Payment: Payment for this bid item will be made on a unit price per cubic yard of dredge material reused onsite or transported offsite, complete and accepted by the Engineer.

J. Lump Sum Bid Price Item No. 9 – Nature-Like Fishway Construction

1. Work associated with this item will be paid for at the stated Lump Sum Bid Price including, but not limited to, work under the following:
  - a. All or portions of Division 1 specifications, as applicable.
  - b. Section 31 20 00 Earth Moving
  - c. Section 35 10 70 Control of Water
  - d. Section 35 79 13 Nature-Like Fishway
  - e. Includes, but is not limited to: Excavating/grading existing river channel bed and riverbank areas for construction of the fishway structure and downstream roughened channel/riffle section (with low-flow channel), including handling, furnishing, storing and placing all materials for use in constructing the fishway, boulder riffles, pools, roughened channel/riffle section, and riverbank slope stabilization measures within the river reach of the proposed fishway (placing stones to the required grades and elevations, installing biodegradable fiber roll/vegetated coir fascine).
  - f. Includes, but is not limited to: placing excavated native stable channel bottom material from the natural river channel in the downstream roughened channel/riffle section with low flow channel. Work associated with this item also includes installation of random boulder placement within the downstream riffle as directed by the engineer.
  - g. Includes, but is not limited to: excavating, furnishing, and installing soil-filled stone/cobble streambed channel protection within the fishway including incidental materials including, but not limited to existing streambed sand/gravel/cobble material or imported riprap stone as indicated on the Contract Drawings; and furnishing and installing native boulders to repair eroded river channel and to protect existing stone masonry walls.
  - h. Includes, but is not limited to furnishing and installing suitable backfill material for finalized construction of the grassed peninsula.
2. Measurement: As measured by the Contractor and accepted by the Engineer, pro-rated with the Contractor's progress of work in constructing respective items associated with this bid price item.
3. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.

K. Lump Sum Bid Price Item No. 10 – Stone Wall Construction/Reconstruction

1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
  - a. All portions of Division 1 specifications, as applicable
  - b. Section 04 43 00 Stone Masonry
  - c. Section 31 20 00 Earth Moving
  - d. Section 31 50 00 Excavation Support and Protection
  - e. Section 35 10 70 Control of Water
  - f. Reconstruct Stone Wall includes, but is not limited to, the following:
    - i. Retaining a qualified Historic Mason for the oversight, submittal preparation; and execution of all work under this Item;
    - ii. Preparation of submittals, including photographs, shop drawings, and mockups for review and approval as required prior to the execution of work under this Item;
    - iii. Constructing/Rebuilding stone masonry walls laid in dry or mortared joints, as indicated on the Contract Drawings or where directed by the Engineer;
    - iv. All appurtenant work as specified, indicated on the Contract Drawings, or otherwise required for the complete and accepted execution of Reconstruction stone wall, including but not limited to: controlled dismantling, protection and storage of existing wall stones, reclamation of fallen stones from the adjacent channel, provision of replacement stone materials as required, excavation for reconstruction work including installation of compacted base, provision of excavation support and protection; installation of filter fabric, and backfilling and compacting.
    - v. Includes incidental materials and labor to: reconstruct stone masonry walls, construct new stone masonry walls protect existing features within and adjacent to stone wall reconstruction areas and repair any damage to such features resulting from the Contractor's operations; provide, maintain, reset as needed, and remove water control system at active work areas; provide additional water control measures, personal, equipment, and other measures as required during high flow and heavy rainfall events; and restore disturbed areas with stable grass vegetation and erosion and sedimentation controls.
2. Measurement: As measured per each square foot of exposed vertical wall face constructed or damaged and subject to reconstruction, measured from the bottom of exposed wall to the top of wall at each point along the length of the repair constructed area, prior to initiation of any repair work under this item.
  - a. Such measurement shall be by the Contractor in the presence of the Engineer, notification for which shall be at least 72-hours prior to such measurement.
  - b. All such survey measurements shall be clearly depicted on a scaled site plan, with supporting computations provided in electronic (spreadsheet) or otherwise in hard copies, and preconstruction photographs as requested by the Engineer. All plans and computations shall be certified as accurate by an Officer of the Contractor's corporation and transmitted for the Engineer's review and recommendation for payment.

- c. Areas repaired or otherwise temporarily dismantled outside areas depicted on the Contract Drawings for repair, or otherwise not instructed in writing by the Engineer, shall not be included in any measurement, and where the Engineer determines that such area(s) have been included in any measurement, such correction as deemed appropriate by the Engineer shall be applied under its recommendation for payment.
  3. Payment: Stone Wall Construction/Reconstruction Wall will be paid for by the square foot of exposed vertical wall face constructed or damaged and subject to reconstruction, as accepted, complete in place.
- L. Base Bid Item No. 11 – Lagoon Inlet and Outlet Weirs/Water Wheel Outlet Weir/and Water Control Structures
  1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - a. All or portions of Division 1 specifications, as applicable.
    - b. 02 41 13 Selective Demolition
    - c. 03 30 00 Cast-In-Place Concrete
    - d. 31 11 13 Formation of Subgrade
    - e. 31 20 00 Earth Moving
    - f. 33 37 00 Flow Control Structures
    - g. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to furnish and install concrete lagoon inlet structure with stop log controls, concrete lagoon outlet weir with stop log controls, concrete water wheel outlet weir with sluice gate, low-flow water wheel channel and associated foundation systems, associated material and compaction testing, and all other incidentals required to finish the work in accordance with the Contract Documents and as directed by the Engineer.
  2. Measurement: As measured by the Contractor and accepted by the Engineer, pro-rated with the Contractor's progress of work in constructing respective items associated with this bid price item.
  3. Payment: – Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
- M. Base Bid Item No. 12 – Water Wheel Bypass System
  1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - a. All or portions of Division 1 specifications, as applicable.
    - b. 02 41 13 Selective Demolition
    - c. 31 11 13 Formation of Subgrade
    - d. 31 20 00 Earth Moving
    - e. 33 37 00 Flow Control Structures
    - f. 33 40 00 Water Bypass Pipping



- c. Section 32 72 00 Wetland Restoration
  - d. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to construct/restore the floodplain restoration area, lower riverbank stabilization area, riverbank stabilization area, upper riverbank restoration area, and staging/storage areas within the Base Bid project limits with plantings and seed mixtures as indicated on the Contract Drawings. Such restoration measures also includes other vegetative site features to their original condition (or better) that were damaged, disrupted or displaced by Base Bid construction activities as well as establishing, maintaining and protecting satisfactory vegetation for one year from the date of seeding and planting.
  - e. All other restoration work required to restore Alternative Bid work will not be included within this lump sum price and will be paid for under Alternate Bid Item No. 2.14 – Phase 2 - Site Restoration.
2. Measurement: As measured by the Contractor and accepted by the Engineer, pro-rated with the Contractor's progress of work in constructing respective items associated with this bid price item.
  3. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
- P. Base Bid Item No. 15 - Allowance No. 1 - Phase 1 Police Detail Cost/Fee Reimbursement
1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - a. All or portions of Division 1 specifications, as applicable
    - b. Section 01 55 26 Traffic Control
    - c. Includes, but is not limited to: Marshfield Police Department fees incurred by the project for the control and protection of the traveling public and working personnel throughout construction as required by the Contract Documents.
  2. Measurement: This item will not be measured for payment.
  3. Payment: Reimbursement of costs (with no overhead, profit or other markup) under this allowance will be made based on invoices generated by the Marshfield Police Department. At contract closeout, any funds remaining from the allowance will be credited to the Owner by a balancing Change Order.

### 3.2 LIST OF ALTERNATE BID ITEMS

- A. Alternate Bid Item No. 1 – Phase 2 - Electric System Improvements
1. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - a. All or portions of Division 1 specifications, as applicable.
    - b. Section 26 05 33 Electrical Basic Materials and Methods
    - c. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to furnish and install, complete, and ready for operations all remaining utility work, not completed within the Base Bid, as



shown on the Contract Drawings including service panels, system control panels, wire and cable. Also, it includes required inspections, testing, and coordination with respective utility company owners to determine specific utility requirements for work related to this Project, providing the Utility Companies with any information necessary for the Utility Companies to perform their work, and preparing and filing requests for service with Utility Companies.

2. Measurement: As measured by the Contractor and accepted by the Engineer, pro-rated with the Contractor's progress of work in constructing respective items associated with this bid price item.
3. Payment: – Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.

B. Alternate Bid Item No. 2

1. Work associated with this item will be paid for at the combined prices stated in Alternate Bid Item No. 2.1 through Alternate Bid Item No. 2.16. All work described below will be completed as part of Alternate Bid Item No. 2:
2. Alternate Bid Item No. 2.1 – Phase 2 – Mobilization
  - a. Work associated with this item will be paid for at the stated price including respective portions of work under all specifications necessary to initiate Contractor's activities at the project site.
    - i. All or portions of the Contract Requirements and Division 01 specifications, as applicable.
    - ii. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to complete the work associated with the mobilization of materials, personnel, and equipment to the project site to complete work associated with Alternate Bid Item No. 2. Also includes posting all required temporary and permitting signage. The bid amount for this item shall not exceed 3% of the Total Alternate Bid Item No. 2 Price.
  - b. Measurement: This item will not be measured for payment but will be pro-rated with the Contractor's progress of work as accepted by Engineer.
  - c. Payment: Mobilization will be paid for on a Lump Sum basis. When 1% of the total original Alternate Bid Item No. 2 amount is earned from other Alternate Bid Sub-Items, 50% of the amount for Mobilization will be paid. When 5% of the total original Alternate Bid Item No. 2 amount is earned from other Alternate Bid Sub-Items the remaining 50% for Mobilization will be paid.
3. Alternate Bid Item No. 2.2 – Phase 2 - General Requirements
  - a. Work associated with this item will be paid for at the stated price including respective portions of work under all specifications necessary to sustain Contractor's activities at the project site.
    - i. All or portions of the Contract Requirements and Division 01 specifications, as applicable.
    - ii. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for Contractor's general requirements to complete the Alternate Bid Item No. 2 work, including

insurance, bonds, administrative and general requirements, meetings, schedules (including, but not limited to, construction schedules, submittal schedules, and schedule of values), coordination with utility owners for temporary and permanent utility relocations (not including utility owner fees which are paid under Allowances), temporary facilities and controls for field office trailers and support utilities (including associated permits, fees and electrical/communication utility connection and usage costs), securing local permits as required, and all other measures not specified elsewhere and miscellaneous costs associated with the Alternate Bid Item No. 2 Work including incidentals not covered by other Alternate Bid Item No. 2 Sub-Items. The bid amount for this item shall not exceed 5% of the Total Alternate Bid Item No. 2 Price.

- iii. Payment of invoiced costs by utility owners for permanent services will be made under Alternate Bid Item ALT-2.16: Allowance No. 3 – Public Utility Relocation Cost/Fee Reimbursement.
  - iv. Also includes other incidental items such as obtaining necessary remaining permits, field and laboratory testing, construction survey layout, and project record drawings/mapping.
  - b. Measurement: This item will not be measured for payment but will be pro-rated with the Contractor's progress of work as accepted by Engineer.
  - c. Payment: Phase 2 - General Requirements will be paid for on a Lump Sum basis. Contractor will be paid 40% upon completion of phase 2 - mobilization, 30% upon earning 50% of the total Alternate Bid Item No. 2 contract value, and the remaining 30% upon completion of phase 2 - demobilization from the site as accepted by the Engineer.
4. Alternate Bid Item No. 2.3 – Phase 2 - Demobilization
- a. Work associated with this item will be paid for at the stated price including respective portions of work under all specifications necessary to conclude Contractor's activities at the project site.
    - i. All or portions of the Contract Requirements and Division 01 specifications, as applicable.
    - ii. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for demobilization of materials, personnel, and equipment from the project site associated with completing work under Alternate Bid Item No. 2. Also includes restoring all incidental areas inside or outside the project limits damaged by Contractor's activities or traffic control to existing condition or better including construction access ways (e.g., temporary staging and storage areas) and restoring and establishing a satisfactory stand of vegetation in non-hardscape areas affected by construction under Alternate Bid Item No. 2.
  - b. Measurement: This item will not be measured for payment but will be paid as a lump sum unit price bid item.
  - c. Payment: Phase 2 - Demobilization will be paid for on a Lump Sum basis, complete and in place. Phase 2 - Demobilization shall be considered complete when the Contractor has achieved final completion of the work under Alternate Bid Item No. 2 and removed all equipment and materials from the site.

5. Alternate Bid Item No. 2.4 – Phase 2 - Site Clearing and Demolition
  - a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All or portions of Division 01 specifications, as applicable.
    - ii. Section 02 41 13 Selective Demolition
    - iii. Section 31 10 00 Site Clearing
    - iv. Section 31 20 00 Earth Moving
    - v. Section 31 50 00 Excavation Support and Protection
    - vi. Section 35 01 70 Control of Water
    - vii. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for demolition, handling, transport and disposal of items to be removed and disposed within the Alternate Bid Item No. 2 limits as indicated on Contract Drawings; clearing, grubbing and tree removal within the Phase 2 project limit of disturbance; installing timber rail fence with aviary screen; Selectively demolish and reconstruct sections of stone masonry walls as required to complete proposed work where indicated on Contract Drawings, screening and stockpiling topsoil where such materials are to be proposed for reuse on completed areas where depicted on the Contract Drawings and as directed by the Engineer. Includes protecting existing structures and vegetation to remain within and adjacent to work areas; and repairing any damage to such features resulting from the Contractor's operations.
  - b. Measurement: As measured by the Contractor and accepted by the Engineer, prorated with the Contractor's progress of work in performing and completing respective work items associated with this bid item.
  - c. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
6. Alternate Bid Item No. 2.5 – Phase 2 - Temporary Traffic Control and Protection of Public
  - a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All portions of Division 01 specifications, as applicable.
    - ii. Section 01 55 26 Traffic Control
    - iii. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for installation, maintenance and removal of all temporary pavement markings, impact attenuators, concrete barriers, construction barricades, drums, advanced warning and traffic signs, cones, lights, temporary traffic signing, including associated costs for electrical utility and land-based or wireless communication connections and services, flaggers, and other products and materials required for the control and protection of the traveling public and working personnel throughout construction as indicated within the Contract Documents. Any traffic control devices which are lost, stolen, destroyed, or deemed unacceptable while in use shall be replaced without additional compensation. All materials, labor, and

equipment necessary to complete the work shall be considered as incidental to the construction and be included in the lump sum price. This item is for work completed under Alternate Bid Price Item No. 2

- b. Measurement: As measured by the Contractor and accepted by the Engineer, prorated with the Contractor's progress of work in performing and completing respective work items associated with this bid item.
  - c. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
    - i. Payment of invoiced costs for police details will be made under Alternate Bid Price Item No. 2.17 - Allowance No. 2 – Phase 2 Police Detail Cost/Fee Reimbursement.
7. Alternate Bid Item No. 2.6 – Phase 2 - Temporary Erosion and Sedimentation Controls
- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All or portions of Division 01 specifications, as applicable, including:
    - ii. Section 01 57 13 Temporary Erosion and Sedimentation Control
    - iii. Section 31 01 00 Site Restoration and Plantings
    - iv. Section 31 20 00 Earth Moving
    - v. Section 35 01 70 Control of Water
    - vi. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for installing, maintaining, and removing and disposing all temporary erosion and sedimentation control measures and practices for completion of all Alternate Bid Item No. 2 work associated with the project. Such measures include, but are not limited to, biodegradable fiber rolls, construction entrances, and temporary construction dewatering basins.
    - vii. Also includes removing and disposing of all accumulated sediment off-site and establishing temporary vegetation in areas to remain dormant for extended periods as indicated on the Contract Drawings.
  - b. Measurement: As measured by the Contractor and accepted by the Engineer, prorated with the Contractor's progress of work in establishing, maintaining and restoring all temporary and erosion control measures and practices required for completion of work.
  - c. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
8. Alternate Bid Item No. 2.7 – Phase 2 - Control of Water
- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All or portions of Division 1 specifications, as applicable.
    - ii. Section 31 20 00 Earth Moving

- iii. Section 31 50 00 Excavation Support and Protection
  - iv. Section 35 01 70 Control of Water
  - v. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required for controlling surface and groundwater within project Alternate Bid Item No. 2 work areas through the furnishing, installation, operation, maintenance, and removal of temporary water control measures including cofferdams, steel sheeting, and other appurtenances as indicated on the Contract Drawings for Normal Water Control; temporary protection of work area measures for Flood Water Control conditions (i.e. flood water flow in excess of Normal Water Control conditions); groundwater/surface water pumps and temporary dewatering areas; and other water control measures and appurtenances such as surface and subsurface dams, flow diversions, special linings for erosion protection, pipes, barriers, prefabricated sediment containment devices, pumps, and watertight seals.
- b. Measurement: As measured by the Contractor and accepted by the Engineer, prorated with the Contractor's progress of work in performing and completing respective work items associated with this bid item.
  - c. Payment: Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
9. Alternate Bid Item No. 2.8 – Lagoon Supplemental Water Supply System
- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All or portions of Division 1 specifications, as applicable.
    - ii. 02 41 13 Selective Demolition
    - iii. 03 40 00 Precast Concrete Structures
    - iv. 31 20 00 Earth Moving
    - v. 31 11 13 Formation of Subgrade
    - vi. 33 41 00 Subdrainage
    - vii. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to furnish and install precast cistern, submersible pump, PVC discharge pipe, perforated cistern underdrain, underdrain cleanout and all other incidentals required to finish the work in accordance with the Contract Documents and as directed by the Engineer.
  - b. Measurement: As measured by the Contractor and accepted by the Engineer, prorated with the Contractor's progress of work in constructing respective items associated with this bid price item.
  - c. Payment: – Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
10. Base Bid Item No. 2.9– Lagoon Dredging

- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
  - b. All or portions of Division 1 specifications, as applicable.
  - c. Section 31 10 00 Site Clearing
  - d. Section 31 20 00 Earth Moving
  - e. Section 35 10 70 Control of Water
  - f. Includes, but is not limited to: Preliminary and final surveys of lagoon dredge areas; dredging, testing, transportation, and stockpiling of dredge material within temporary staging area as indicated on the Contract Drawings and/or as directed by the Engineer. This item includes all dredging completed within the lagoon within the project limits. Also includes transportation to and/or re-used in an onsite location identified within project limits or final disposal area identified by the town. Includes all labor, materials, equipment, survey and positioning, tools, and all other incidentals required to complete the work.
  - g. Measurement: The amount of material dredged, stockpiled, dewatered, transported and/or reused will be determined by a calculation of volume when comparing the Contractor pre and post survey elevations or as determined by the Engineer. The calculation will be performed by using the average end area method with cross-sections taken every 20-feet.
  - h. Payment: Payment for this bid item will be made on a unit price per cubic yard of dredge material reused onsite or transported offsite, complete and accepted by the Engineer.
11. Alternate Bid Item No. 2.10 – Clay Liner
- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All or portions of Division 1 specifications, as applicable.
    - ii. 02 41 13 Selective Demolition
    - iii. 31 20 00 Earth Moving
    - iv. 31 23 23 Compacted Clay Liner
    - v. 32 11 13 Formation of Subgrade
    - vi. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to furnish and install impermeable liner and all other incidentals required to finish the work in accordance with the Contract Documents and as directed by the Engineer.
  - b. Measurement: As measured by the Contractor and accepted by the Engineer, prorated with the Contractor's progress of work in constructing respective items associated with this bid price item.
  - c. Payment: – Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.

12. Alternate Bid Item No. 2.11 – Lagoon Pool Outlet Structure

- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
  - i. All or portions of Division 1 specifications, as applicable.
  - ii. 02 41 13 Selective Demolition
  - iii. 03 30 00 Cast-In-Place Concrete
  - iv. 31 20 00 Earth Moving
  - v. 32 11 13 Subgrade Modifications
  - vi. 33 37 00 Flow Control Structures
  - vii. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to furnish and install concrete lagoon pool outlet structure with stop logs and associated foundation systems, associated material and compaction testing, and all other incidentals required to finish the work in accordance with the Contract Documents and as directed by the Engineer.
- b. Measurement: As measured by the Contractor and accepted by the Engineer, prorated with the Contractor's progress of work in constructing respective items associated with this bid price item.
- c. Payment: – Payment for this bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.

13. Alternate Bid Item No. 2.12 – Timber Pedestrian Bridges and Walkways

- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
  - i. All portions of Division 1 specifications, as applicable
  - ii. Section 02245 - Control of Water
  - iii. Section 02260 - Excavation Support and Protection
  - iv. Section 02300 - Earthwork
  - v. Section 06135 - Timber Bridge Structures
  - vi. Includes, but is not limited to: Furnishing timber pedestrian bridge structures and walkways as depicted on the Contract Drawings. Includes incidental materials and labor to protect existing features within and adjacent to timber pedestrian bridge replacement areas/walkway construction areas and repairing any damage to such features resulting from the Contractor's operations;
- b. Measurement: As measured by the Contractor and accepted by the Engineer, prorated with the Contractor's progress of work in constructing respective items associated with this alternate bid item.
- c. Payment: Payment for this alternate bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.

14. Alternate Bid Item No. 2.13 – Stone Wall Construction/Reconstruction

- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
  - i. All portions of Division 1 specifications, as applicable
  - ii. Section 04 43 00 Stone Masonry
  - iii. Section 31 20 00 Earth Moving
  - iv. Section 31 50 00 Excavation Support and Protection
  - v. Section 35 10 70 Control of Water
  - vi. Reconstruct Stone Wall includes, but is not limited to, the following:
    - a) Retaining a qualified Historic Mason for the oversight, submittal preparation; and execution of all work under this Item;
    - b) Preparation of submittals, including photographs, shop drawings, and mockups for review and approval as required prior to the execution of work under this Item;
    - c) Constructing/Rebuilding stone masonry walls laid in dry or mortared joints, as indicated on the Contract Drawings or where directed by the Engineer;
    - d) All appurtenant work as specified, indicated on the Contract Drawings, or otherwise required for the complete and accepted execution of Reconstruction stone wall, including but not limited to: controlled dismantling, protection and storage of existing wall stones, reclamation of fallen stones from the adjacent channel, provision of replacement stone materials as required, excavation for reconstruction work including installation of compacted base, provision of excavation support and protection; installation of filter fabric, and backfilling and compacting.
    - e) Includes incidental materials and labor to: reconstruct stone masonry walls, construct new stone masonry walls protect existing features within and adjacent to stone wall reconstruction areas and repair any damage to such features resulting from the Contractor's operations; provide, maintain, reset as needed, and remove water control system at active work areas; provide additional water control measures, personal, equipment, and other measures as required during high flow and heavy rainfall events; and restore disturbed areas with stable grass vegetation and erosion and sedimentation controls.
- b. Measurement: As measured per each square foot of exposed vertical wall face constructed or damaged and subject to reconstruction, measured from the bottom of exposed wall to the top of wall at each point along the length of the repair constructed area, prior to initiation of any repair work under this item.
  - i. Such measurement shall be by the Contractor in the presence of the Engineer, notification for which shall be at least 72-hours prior to such measurement.
  - ii. All such survey measurements shall be clearly depicted on a scaled site plan, with supporting computations provided in electronic (spreadsheet) or



otherwise in hard copies, and preconstruction photographs as requested by the Engineer. All plans and computations shall be certified as accurate by an Officer of the Contractor's corporation and transmitted for the Engineer's review and recommendation for payment.

- iii. Areas repaired or otherwise temporarily dismantled outside areas depicted on the Contract Drawings for repair, or otherwise not instructed in writing by the Engineer, shall not be included in any measurement, and where the Engineer determines that such area(s) have been included in any measurement, such correction as deemed appropriate by the Engineer shall be applied under its recommendation for payment.
  - c. Payment: Stone Wall Construction/Reconstruction will be paid for by the square foot of exposed vertical wall face constructed or damaged and subject to reconstruction, as accepted, complete in place.
15. Alternate Bid Item No. 2.14 – Replace Missing Stone Wall Stones
- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All portions of Division 1 specifications, as applicable
    - ii. Section 04 43 00 Stone Masonry
    - iii. Section 35 10 70 Control of Water
    - iv. Replace Missing Stone Wall Stones includes, but is not limited to, the following:
      - a) Retaining a qualified Historic Mason for the oversight, submittal preparation; and execution of all work under this Item;
      - b) Preparation of submittals, including photographs, shop drawings, and mockups for review and approval as required prior to the execution of work under this Item;
      - c) Replace missing stone wall stones as indicated on the Contract Drawings or where directed by the Engineer, using stones reclaimed from the river channel, and where required approved stone materials furnished by the Contractor and delivered/installed at the site.
      - d) Includes incidental materials and labor to: reset missing stones, protect existing features within and adjacent to stone wall reconstruction areas and repair any damage to such features resulting from the Contractor's operations.
  - b. Measurement: As measured per each square foot of exposed vertical wall face damaged and subject to reconstruction, measured from the bottom to the top of wall at each point along the length of the repair area, prior to initiation of any repair work under this item.
    - i. Such measurement shall be by the Contractor in the presence of the Engineer, notification for which shall be at least 72-hours prior to such measurement.
    - ii. All such survey measurements shall be clearly depicted on a scaled site plan, with supporting computations provided in electronic (spreadsheet) or otherwise in hard copies, and preconstruction photographs as requested by the Engineer. All plans and computations shall be certified as accurate by an Officer of the

Contractor's corporation and transmitted for the Engineer's review and recommendation for payment.

- iii. Areas repaired or otherwise temporarily dismantled outside areas depicted on the Contract Drawings for repair, or otherwise not instructed in writing by the Engineer, shall not be included in any measurement, and where the Engineer determines that such area(s) have been included in any measurement, such correction as deemed appropriate by the Engineer shall be applied under its recommendation for payment.

- c. Payment: Replace Missing Stone Wall Stones will be paid for by the square foot of vertical void area damaged and to be repaired, as accepted, complete in place.

16. Alternate Bid Item No. 2.13 – Chink/Repoint Stone Wall

- a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
  - i. All portions of Division 1 specifications, as applicable
  - ii. Section 04 43 00 Stone Masonry
  - iii. Section 35 10 70 Control of Water
  - iv. Chink/Repoint Stone Wall includes, but is not limited to, the following:
    - a) Retaining a qualified Historic Mason for the oversight, submittal preparation; and execution of all work under this Item;
    - b) Preparation of submittals, including photographs, shop drawings, and mockups for review and approval as required prior to the execution of work under this Item;
    - c) Chinking of any voids greater than four inches in any two dimensions with approved stone materials as indicated on the Contract Drawings or where directed by the Engineer.
    - d) Removing deteriorated mortar, soil, debris and biological growth from surfaces of stones and furnishing/installing mortar in open stone masonry joints within limits of work depicted. Includes incidental materials and labor to: repoint stone walls, protect existing features within and adjacent to stone wall reconstruction areas and repair any damage to such features resulting from the Contractor's operations.
- b. Measurement: As measured per each square foot of exposed vertical wall face damaged and subject to reconstruction, measured from the bottom to the top of each point along the length of the repair area, prior to initiation of any repair work under this item.
  - i. Such measurement shall be by the Contractor in the presence of the Engineer, notification for which shall be at least 72-hours prior to such measurement.
  - ii. All such survey measurements shall be clearly depicted on a scaled site plan, with supporting computations provided in electronic (spreadsheet) or otherwise in hard copies, and preconstruction photographs as requested by the Engineer. All plans and computations shall be certified as accurate by an Officer of the Contractor's corporation and transmitted for the Engineer's review and recommendation for payment.

- iii. Areas repaired or otherwise temporarily dismantled outside areas depicted on the Contract Drawings for repair, or otherwise not instructed in writing by the Engineer, shall not be included in any measurement, and where the Engineer determines that such area(s) have been included in any measurement, such correction as deemed appropriate by the Engineer shall be applied under its recommendation for payment.
  - c. Payment: Chink Wall/Repoint Stone Wall will be paid for by the square foot of vertical wall face damaged and to be chinked/repointed, as accepted, complete in place.
- 17. Alternate Bid Item No. 2.14 – Phase 2 – Site Restoration
  - a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All or portions of Division 1 specifications, as applicable
    - ii. Section 31 01 00 – Site Restoration and Plantings
    - iii. Includes, but is not limited to: All products, materials, equipment, tools, labor, overhead and profit, and incidentals required to restore Alternate Bid Item No. 2 construction activities including but not limited to temporary on-site construction staging/stockpile/storage areas, temporary construction access routes, and areas of Veterans Memorial Park disturbed within project limits with seed mixtures as indicated on the Contract Drawings. Such restoration measures also includes restoring other vegetative site features to their original condition (or better) that were damaged, disrupted or displaced by Alternate Bid Item No. 2 construction activities as well as establishing, maintaining and protecting satisfactory vegetation for one year from the date of seeding and planting.
  - b. Measurement: As measured by the Contractor and accepted by the Engineer, prorated with the Contractor's progress of work in constructing respective items associated with this alternate bid item.
  - c. Payment: Payment for this alternate bid item will be made on a Lump Sum basis based on a percentage of completion as estimated from measurements made by the Contractor and accepted by the Engineer.
- 18. Alternate Bid Item No. 2.15 – Allowance No. 2 – Phase 2 Police Detail Cost/Fee Reimbursement
  - a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All or portions of Division 1 specifications, as applicable
    - ii. Section 01 55 26 Traffic Control
    - iii. Includes, but is not limited to: Marshfield Police Department fees incurred by the project for the control and protection of the traveling public and working personnel throughout construction of Alternate Bid Item No. 2 as required by the Contract Documents.
  - b. Measurement: This item will not be measured for payment.
  - c. Payment: Reimbursement of costs (with no overhead, profit or other markup) under this allowance will be made based on invoices generated by the Marshfield Police

Department. At contract closeout, any funds remaining from the allowance will be credited to the Owner by a balancing Change Order.

19. Alternate Bid Item No. 2.16 – Allowance No. 3 – Public Utility Relocation Cost/Fee Reimbursement
  - a. Work associated with this item will be paid for at the stated price including, but not limited to, work under the following:
    - i. All or portions of Division 1 specifications, as applicable
    - ii. Section 26 00 00 Electrical General Provisions
    - iii. Section 26 05 33 Electrical Basic Materials and Methods
    - iv. Includes, but is not limited to: Public utility owner fees incurred by the project associated with the permanent relocation of utilities as shown on the Contract Drawings.
  - b. Measurement: This item will not be measured for payment.
  - c. Payment: Reimbursement of costs (with no overhead, profit or other markup) under this allowance will be made based on invoices generated by respective utility owners. At contract closeout, any funds remaining from the allowance will be credited to the Owner by a balancing Change Order.

END OF SECTION

## SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

#### 1.3 FIELD ORDER

- A. Engineer will issue written supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Price or the Contract Time, on EJCDC Form C-942. A sample copy of a Field Order is included at the end of the Section.

#### 1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Price or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by Engineer are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
  - 2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Price and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Price and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

#### 1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Engineer will issue a Change Order for signatures of Owner and Contractor on EJCDC Document C-941.

#### 1.6 WORK CHANGE DIRECTIVE

- A. Work Change Directive: Engineer may issue a Work Change Directive on EJCDC Document C-940. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
  1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Price or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.
  1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

## PROPOSAL REQUEST

Proposal Request No. \_\_\_\_\_

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

Please submit an itemized quotation for changes in the Contract Price or Contract Time incidental to the proposed modifications to the Contract Documents described herein.

Description:

Attachments: (List documents supporting description)

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

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ENGINEER

**FIELD ORDER NO.:** \_\_\_\_\_

Owner:

Owner's Project No.:

Engineer:

Engineer's Project No.:

Contractor:

Contractor's Project No.:

Project:

Contract Name:

Date Issued:

Effective Date of Field Order:

---

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

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**Reference:**

Specification Section(s):

Drawing(s) / Details (s):

**Description:****Attachments:**

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**Issued by Engineer**

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

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

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



**WORK CHANGE DIRECTIVE NO.: \_\_\_\_\_**

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Owner:	Owner's Project No.:
Engineer:	Engineer's Project No.:
Contractor:	Contractor's Project No.:
Project:	
Contract Name:	
Date Issued:	Effective Date of Field Order:

---

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

**Description:**

**Attachments:**

**Purpose for the Work Change Directive:**

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

- Non-agreement on pricing of proposed change.       Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price:     \$ \_\_\_\_\_ **[increase] [decrease] [not yet estimated].**

Contract Time:     \_\_\_\_\_ days **[increase] [decrease] [not yet estimated].**

Basis of estimated change in Contract Price:

- Lump Sum     Unit Price     Cost of the Work     Other

	Recommended by Engineer	Authorized by Owner
By:	_____	_____
Title:	_____	_____
Date:	_____	_____

**CHANGE ORDER NO.:** \_\_\_\_\_

Owner:	Owner's Project No.:
Engineer:	Engineer's Project No.:
Contractor:	Contractor's Project No.:
Project:	
Contract Name:	
Date Issued:	Effective Date of Field Order:

The Contract is modified as follows upon execution of this Change Order:

**Description:**

**Attachments:**

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES <i>[note changes in Milestones if applicable]</i>
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ <div style="text-align: right; font-size: small;">days or dates</div>
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ <div style="text-align: right; font-size: small;">Days</div>
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ <div style="text-align: right; font-size: small;">days or dates</div>
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ <div style="text-align: right; font-size: small;">days or dates</div>
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ <div style="text-align: right; font-size: small;">days or dates</div>

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____ Engineer (if required)	By: _____ Owner (Authorized Signa-	By: _____ Contractor (Authorized Signa-
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____
Approved by Funding Agency (if appli- cable)		
By: _____	Title: _____	Date: _____

## **A. GENERAL INFORMATION**

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

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

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

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

## **B. COMPLETING THE CHANGE ORDER FORM**

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

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

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

## SECTION 01 29 00 - PAYMENT PROCEDURES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

#### 1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values for Bid items with preparation of Contractor's Construction Schedule.
  - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the Application for Payment forms with Continuation Sheets.
  - 2. Submit a Schedule of Values to the Engineer 10 days after the effective date of the Agreement. No payment will be made to the Contractor before the Schedule of Values has been submitted and Accepted by the Engineer.

#### 1.3 SCHEDULE OF PAYMENTS

- A. Coordination: Coordinate preparation of the Schedule of Payments with preparation of Contractor's Construction Schedule and Schedule of Values.
  - 1. Such schedule shall be broken down by monthly pay period through Project completion and reflect items listed in the Schedule of Values.
  - 2. Submit a Schedule of Payments to Engineer 10 days after effective date of Agreement.

#### 1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
  - 1. Initial/Monthly Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is the 15th day of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends 15 days before the date for each progress payment. The Contractor shall submit its estimate for payment on or before the third day of each month.
- C. Payment Application Forms: EJCDC Document C-620 in addition to one or more forms to accompany each payment application, which forms will be furnished by the Engineer.

- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
  2. Include amounts of Change Orders and Work Change Directives issued before last day of construction period covered by application.
  3. Itemized data and format provided on continuation sheets shall include schedules, line items, values as stipulated in the Schedule of Values as accepted by Owner.
    - a. Continuation sheets shall include a total list of all scheduled component items of work with item number and scheduled dollar value for each item. Dollar values to be included in each column for each scheduled line item when Work has been performed or products stored. Round off values to nearest dollar or as may be specified for Schedule of Values.
    - b. List each Change Order executed prior to date of submission at end of continuation sheets. List by Change Order number and description as to original component item of Work.
- E. Transmittal: Submit signed and notarized copies of each Application for Payment to Engineer
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
  2. Submit Applications to Engineer by means ensuring receipt within 24 hours.
  3. Product Ownership: All Work covered by Progress Payments shall, at the time of payment, become the property of the Town of Marshfield.
- F. Ownership: All Work covered by Progress Payments shall, at the time of payment, become the property of Owner.
- G. Processing: With each Application for Payment the Contractor shall certify such Application for Payment represents a just estimate of costs reimbursable to Contractor under terms of the Contract and shall certify there are no Mechanic's or Materialmen's Liens outstanding at the date of that Application for Payment, that all due and payable bills with respect to the Work have been paid to date or shall be paid from the proceeds of that Application for Payment, that there is no known basis for the filing of any Mechanic's or Materialmen's Lien against the Surety in connection with the Work, that Waivers and Bills Paid Affidavit forms from all Subcontractors and Materialmen have been, or will be, obtained in the form agreeable to the Town of Marshfield, and that amount of the contract remaining to be expended is sufficient to complete the project.

H. Waivers and Mechanics Liens

1. Monthly Applications for Payment shall include Waivers of Mechanic's Liens and Claims for all Work included in the period of construction covered by the Application for Payment and the previous month's Application. Waivers of Liens and Claims from Subcontractors or Subcontractors and suppliers shall include the period of construction covered by the Application for Payment, the total amount paid prior to and including the previous month's Application.
2. Partial Waivers of Liens shall be submitted on each item of work for the amount requested, prior to deduction for retainage, for each item.
3. Contractor shall submit final or full Waivers of Liens and Claims for completed items of work shown on the monthly Application for Payment.
4. Owner reserves the right to designate which entities involved in the Work must submit Waivers of Liens.
5. The Contractor's final Application for Payment shall be submitted with, or preceded by final Waivers from every entity involved with the performance of work, supplying of materials or the providing of professional services covered by the Application who could lawfully be entitled to a Lien.
6. Waivers of Liens shall be provided on forms, and executed in a manner acceptable to the Town of Marshfield.

I. Prevailing Wages

1. Monthly Applications for Payment shall include certified prevailing wage forms for all Contractor's applicable employees, and applicable subcontractor employees, corresponding to the payment period for the subject Application for Payment.
2. The Owner reserves the right to withhold payment for missing, incomplete or inaccurate certified payroll forms.
3. It is the Contractor's sole responsibility to provide full and complete forms for its employees and subcontractors corresponding to the payment period and respective work items addressed by the application. Failure to comply with this requirement shall not be cause for any cessation of work.

J. Initial/Monthly Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following, which shall be updated for Monthly Applications for Payment, as applicable:

1. List of subcontractors with DBE forms, as applicable
2. Schedule of Values
3. Contractor's Construction Schedule (preliminary if not final), updated monthly
4. Schedule of unit or add/deduct prices, if any
5. Submittal schedule (preliminary if not final)
6. Name of Contractor Superintendent
7. Copies of building permits
8. Copies of authorizations and licenses from governing authorities for performance of work

9. Any material stored off site must carry additional insurance stating Owner as insured. All material is to be inspected by Engineer personnel before billing can be approved. Bill of Sale and receipts for items being billed at cost only are required and 25% retainage will be held for off-site stored materials. Paperwork must accompany request two weeks prior to billing to ensure adequate time to schedule inspection.
  10. Contractor's Health and Safety Plan (HASP)
  11. Certificates of insurance and insurance policies
- K. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  2. Submit Warranties and maintenance agreements, as applicable.
  3. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- L. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Completion of items specified by the Engineer for correction after Substantial Completion.
  3. Required Project Records including permit drawings, as constructed drawings both on hard copy and in electronic format.
  4. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  5. Updated final statement, accounting for final changes to the Contract Sum.
  6. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims"
  7. AIA Document G706A, "Contractor's Affidavit of Release of Liens"
  8. AIA Document G707, "Consent of Surety to Final Payment"
  9. List of unsettled claims, if any.
  10. Evidence that claims have been settled, if any.
  11. Final, liquidated damages settlement statement, if any.
  12. Removal of all temporary facilities and services
  13. Removal of all surplus materials, rubbish, and similar elements.
- M. CHANGE PROCEDURES
1. See Section 01 26 00 - Contract Modification Procedures

FUSS & O'NEILL, INC.  
20180319.A23  
MARSHFIELD, MA

SOUTH RIVER FISH PASSAGE AND  
VETERANS MEMORIAL PARK  
IMPROVEMENTS PROJECT

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION



## SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. General coordination procedures
  - 2. Coordination Drawings
  - 3. Project meetings
- B. The Contractor shall assure each its contractors comply with relevant coordination requirements.
- C. Related Requirements:
  - 1. Division 01 Section "Execution Requirements"
  - 2. Division 01 Section "Closeout Procedures"

#### 1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule
  2. Preparation of the Schedule of Values
  3. Installation and removal of temporary facilities and controls
  4. Delivery and processing of submittals
  5. Progress meetings
  6. Pre-installation conferences
  7. Project closeout activities
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
- E. Staff Names: Within seven (7) calendar days of the preconstruction conference, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including cellular and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Insert special requirements that exceed requirements contained in the General and Supplementary Conditions for superintendent and assistants.

#### 1.4 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
    - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.

- f. Indicate required installation sequences.
- g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

## 1.5 PROJECT MEETINGS

- A. General: Engineer with schedule and conduct meetings and conferences at Project site unless otherwise indicated.
  - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of and conflicts with scheduled meeting dates and times.
  - 2. Agenda: The Engineer will prepare the meeting agenda.
  - 3. Three-Week Look-Ahead Schedule: The Contractor shall prepare and transmit to the Engineer updated Three-Week Look-Ahead Schedules no less than one day prior to progress meetings, depicting scheduled construction activities, deliveries, traffic management operations (including operations affecting normal and emergency vehicle access) and other activities to be conducted in support of the Work.
  - 4. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved and distribute the meeting minutes to everyone concerned within 10 calendar days.
- B. Preconstruction Conference: Engineer will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner, Contractor, and Engineer.
  - 1. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 2. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule
    - b. Critical work sequencing
    - c. Permitting conditions and requirements
    - d. Designation of key personnel and their duties
    - e. Lines of communications
    - f. Procedures for processing field decisions and Change Orders
    - g. Procedures for processing Applications for Payment
    - h. Distribution of the Contract Documents
    - i. Submittal procedures
    - j. Preparation of record documents

- k. Use of the premises
  - l. Responsibility for temporary facilities and controls
  - m. Parking availability
  - n. Office, work, and storage areas
  - o. Equipment deliveries and priorities
  - p. Security
  - q. Progress cleaning
  - r. Working hours
3. Execution of Owner-Contractor Agreement including executed bonds and insurance certificates may be completed immediately prior to pre-construction conference.
- C. Progress Meetings: Engineer will conduct progress meetings at bi-weekly intervals.
- 1. Attendees: In addition to representatives of Owner and Engineer, the Contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work, and shall at a minimum include Contractor's superintendent and supervisory representatives of primary subcontractors at relevant phases of work to coordinate/conduct construction operations.
  - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    - b. Review present and future needs of each entity present, including the following:
      - 1) Interface requirements
      - 2) Sequence of operations
      - 3) Status of submittals
      - 4) Deliveries
      - 5) Access
      - 6) Site utilization
      - 7) Temporary facilities and controls
      - 8) Progress cleaning
      - 9) Quality and work standards
      - 10) Field observations

- 11) Change Orders
- 12) Documentation of information for payment requests
3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a summary, in narrative form, of progress since the previous meeting and report.
  - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

## SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

### PART 1 - GENERAL

#### 1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 Summary

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Startup construction schedule
  - 2. Contractor's construction schedule
  - 3. Construction schedule updating reports
- B. Related Requirements:
  - 1. Division 01 Section "Submittal Procedures"

#### 1.3 Definitions

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
  - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
  - 2. Predecessor Activity: An activity that precedes another activity in the network.
  - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Engineer.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.

- F. Float: The measure of leeway in starting and completing an activity.
  - 1. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
  - 2. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

#### 1.4 Informational Submittals

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. PDF electronic file.
- B. Startup construction schedule.
  - 1. Approval of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
  - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
  - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
  - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
  - 3. Total Float Report: List of all activities sorted in ascending order of total float.
- E. Construction Schedule Updating Reports: Submit with Applications for Payment.
- F. Special Reports: Submit at time of unusual event.

#### 1.5 Coordination

- A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. Secure time commitments for performing critical elements of the Work from entities involved.

2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

## PART 2 - PRODUCTS

### 2.1 Contractor's Construction Schedule, General

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion and final completion.
  1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
  1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Engineer.
  2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
    - a. Temporary Bridge Design
    - b. Steel Sheeting and Piles
    - c. Precast Pre-stressed Concrete Box Beams
    - d. Trailer-Mounted Portable Generator
    - e. Water Control Gates, Actuators and Control Modules
  3. Submittal Review Time: Include review and resubmittal times indicated in Section 0133023 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
  4. Startup and Testing Time: Include no fewer than 14 days for startup and testing.
  5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.
  6. Punch List and Final Completion: Include not more than 14 days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.



1. Phasing: Arrange list of activities on schedule by phase.
  2. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Uninterruptible services
    - b. Seasonal variations
    - c. Environmental control
  3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
    - a. Subcontract awards
    - b. Submittals
    - c. Purchases
    - d. Mockups
    - e. Fabrication
    - f. Sample testing
    - g. Deliveries
    - h. Installation
    - i. Tests and inspections
    - j. Adjusting
    - k. Curing
    - l. Startup and placement into final use and operation
  4. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
    - a. Structural completion
    - b. Completion of mechanical installation
    - c. Completion of electrical installation
    - d. Substantial Completion
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion, and the following interim milestones:
1. Temporary bridge and roadway design
  2. Temporary bridge and roadway construction

3. Permitting Time of Year and upstream/downstream migratory fish passage windows and provisions for protection and compliance
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
1. See Division 01 Section "Payment Procedures" for cost reporting and payment procedures.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
  2. Unanswered Requests for Information.
  3. Rejected or unreturned submittals.
  4. Notations on returned submittals.
  5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
1. Use Microsoft Project, Primavera, Meridian Prolog, for Windows 10 operating system.
- 2.2 Startup Construction Schedule
- A. Bar-Chart Schedule: Submit startup, horizontal, bar-chart-type construction schedule within ten (10) days of date established for Notice of Award.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 180 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- 2.3 Contractor's Construction Schedule (CPM Schedule)
- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. CPM Schedule: Prepare Contractor's construction schedule using a time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for Notice to Proceed.
    - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Engineer's approval of the schedule.
  2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
  3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
  4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.
- C. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
    - a. Preparation and processing of submittals
    - b. Mobilization and demobilization
    - c. Purchase of materials
    - d. Delivery
    - e. Fabrication
    - f. Utility interruptions
    - g. Traffic Interruptions
    - h. Installations
    - i. Testing and Commissioning]
    - j. Demonstration and Training
    - k. Substantial Completion and Final Completion.
    - l. Activities occurring following Final Completion.
  2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.

3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
  4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
    - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- D. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.
- E. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
  2. Description of activity.
  3. Main events of activity.
  4. Immediate preceding and succeeding activities.
  5. Early and late start dates.
  6. Early and late finish dates.
  7. Activity duration in workdays.
  8. Total float or slack time.
  9. Average size of workforce.
  10. Dollar value of activity (coordinated with the schedule of values).
- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
  2. Changes in early and late start dates.
  3. Changes in early and late finish dates.
  4. Changes in activity durations in workdays.
  5. Changes in the critical path.
  6. Changes in total float or slack time.
  7. Changes in the Contract Time.

- G. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
  2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
  3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
  4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
    - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
    - b. Submit value summary printouts one week before each regularly scheduled progress meeting.

#### 2.4 Reports

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project Site
  2. List of separate contractors at Project Site
  3. Approximate count of personnel at Project Site
  4. Equipment at Project Site
  5. Material deliveries
  6. High and low temperatures and general weather conditions, including presence of rain or snow
  7. Accidents
  8. Meetings and significant decisions
  9. Unusual events (see special reports)
  10. Stoppages, delays, shortages, and losses
  11. Meter readings and similar recordings
  12. Emergency procedures
  13. Orders and requests of authorities having jurisdiction
  14. Change Orders received and implemented
  15. Field Orders and Work Change Directives received and implemented

16. Services connected and disconnected
  17. Traffic interruptions
  18. Equipment or system tests and startups
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage
  2. Material stored prior to previous report and since removed from storage and installed
  3. Material stored following previous report and remaining in storage
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

### PART 3 - EXECUTION

#### 3.1 Contractor's Construction Schedule

- A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.
1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
  2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  3. As the Work progresses, indicate final completion percentage for each activity.

- C. Contractor's Three-Week Look-Ahead Schedules: Issue one day before each regularly scheduled progress meeting.
- D. Distribution: Distribute copies of approved schedule to Engineer, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
  - 1. Post copies in Project meeting rooms and temporary field offices.
  - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

## SECTION 01 33 00 - SUBMITTAL PROCEDURES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Contract Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.
- B. Related Sections include the following:
  - 1. Division 01 Section "Closeout Procedures"

#### 1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Engineer's responsive action.
- B. Informational Submittals: Written information that does not require Engineer's approval. Submittals may be rejected for not complying with requirements.
- C. Addresses: Include mailing address, telephone number, facsimile number, and e-mail address.
- D. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).

#### 1.4 SUBMITTAL PROCEDURES

- A. Master List Submittal: Submit a master list of the required submittals with a proposed date for each item to be submitted. Show the date submittal was sent, days since submittal was sent, status of submittal, date submittal was received in return, and any date associated with resubmittals. Update master list with each submission and response. Issue copy of master list at least monthly to the Architect.
- B. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Engineer for Contractor's use in preparing submittals, unless requested to by the Contractor.
- C. Method of Transmitting Submittals: Electronic transmission of submittals will be allowed. A distribution list will be agreed upon at the Pre-Construction Meeting.
- D. Clarity: Provide neat, clean and legible printed materials that can be easily reproduced by normal photocopying or blueprinting process. Illegible submittals will be returned unreviewed.



- E. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, delivery, other submittals, and related activities that require sequential activity.
  2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- F. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
  2. Concurrent Review: Where concurrent review of submittals by Engineer's consultants, the Owner, or other parties is required, allow 30 days for initial review of each submittal.
  3. If intermediate submittal is necessary, process it in same manner as initial submittal.
  4. Allow 15 calendar days for processing each resubmittal.
  5. No extension of the Contract Time or claims for delay will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- G. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
  2. Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
  3. Include the following information on label for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name and address of Engineer.
    - d. Name and address of Contractor.
    - e. Name and address of subcontractor.
    - f. Name and address of supplier including name and telephone number of contact.
    - g. Name of manufacturer including name and telephone number of contact.
    - h. Unique identifier, including revision number.
    - i. Number and title of appropriate Specification Section.
    - j. Drawing number and detail references, as appropriate.
    - k. Other necessary identification.

- H. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals. Provide list or narrative of deviations on Submittal Transmittal form.
- I. Additional Copies: Unless revisions are required for final submittal, and unless Engineer observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
  - 1. Submit an electronic or one hard copy of submittal to concurrent reviewer in addition to electronic copy to Engineer.
  - 2. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- J. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return submittals, without review received from sources other than Contractor.
  - 1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
  - 2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
  - 3. Transmittal Form: Use sample form at end of Section.
- K. Distribution: Furnish required electronic or hard copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- L. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

## PART 2 - PRODUCTS

### 2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
  - 1. Number of Copies: Submit an electronic copy of each submittal along with number of hard copies specified by Engineer, unless otherwise indicated. Mark up and retain one returned copy as a Record Document.
    - a. Submit a preliminary single copy of each submittal where selection of options, color, pattern, texture, or similar characteristics is required. Engineer will return submittal with options selected.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.
  3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Standard color charts.
    - e. Manufacturer's catalog cuts.
    - f. Standard product operating and maintenance manuals.
    - g. Compliance with recognized trade association standards.
    - h. Notation of coordination requirements.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Include the following information, as applicable:
    - a. Dimensions.
    - b. Identification of products.
    - c. Fabrication and installation drawings.
    - d. Roughing-in and setting diagrams.
    - e. Shopwork manufacturing instructions.
    - f. Templates and patterns.
    - g. Schedules.
    - h. Design calculations.
    - i. Compliance with specified standards.
    - j. Notation of coordination requirements.
    - k. Notation of dimensions established by field measurement.
  2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
- D. Samples: Prepare physical units of materials or products, including the following:
1. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Include cost and wearing capability of each color and pattern.
  2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Engineer's sample where so indicated. Attach label on unexposed side that includes the following:
    - a. Generic description of Sample including type, quality or grade designation.
    - b. Product name or name of manufacturer.

- c. Sample source.
    - d. Name of Project.
    - e. Name of Contractor or subcontractor.
  3. Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, provide the following:
    - a. Size limitations.
    - b. Compliance with recognized standards.
    - c. Availability.
    - d. Delivery time.
  4. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
    - a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least two sets of paired units that show approximate limits of the variations.
    - b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
  5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise not designated as the Owner's property, are the property of Contractor.
- E. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location.
- F. Delegated-Design Submittal: Comply with requirements in Division 01 Section "Quality Requirements."
- G. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
  1. Name, address, and telephone number of entity performing subcontract or supplying products.
  2. Number and title of related Specification Section(s) covered by subcontract.
  3. Drawing number and detail references, as appropriate, covered by subcontract.

## 2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
  - 1. Number of Copies: Submit an electronic copy of each submittal, unless otherwise indicated.
  - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
  - 3. Inspection Reports: Comply with requirements in Division 01 Section "Quality Requirements."
- B. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of engineers and the Owner's, and other information specified.
- C. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- D. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- E. Material or Product Certificates: Prepare written statements on manufacturer's letterhead certifying that material or product complies with requirements. Use attached sample Material Certificate, or provide certificate that includes the following information.
  - 1. Project to which material is consigned.
  - 2. Name of contractor receiving material.
  - 3. Item number and description of material.
  - 4. Quantity of material represented by the certificate.
  - 5. Means of identifying consignment including label, marking, or lot number.
  - 6. Date and method of shipment.
  - 7. Signature of Supplier's authorized agent.
  - 8. Notarization of certificate.
- F. Material Test Reports: The Contractor shall conduct all material testing, unless otherwise noted.
- G. Product Test Reports: The Contractor shall complete all product testing, unless otherwise noted.
- H. Field Test Reports: The Contractor shall complete all field testing, unless otherwise noted.
- I. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating products and equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
  - 1. Preparation for installation.

2. Sequence of installation or erection.
  3. Required installation tolerances.
  4. Required adjustments.
  5. Recommendations for cleaning, maintenance, and protection.
- J. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- K. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 01 Section "Closeout Procedures."

### PART 3 - EXECUTION

#### 3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark each copy of each submittal with approval stamp before submitting to Engineer.
- B. Approval Stamp: Stamp each submittal with a uniform approval stamp.
- C. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents. See attached Submittal Transmittal for sample of statement.

#### 3.2 ENGINEER'S ACTION

- A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and submittal transmittal and will return them without action.
  1. Engineer may elect not to review partial or incomplete submittals and will return such submittals with no action taken.

- B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
1. Furnish as Submitted: Submittal appears to conform to Contract Documents and Contractor may proceed with ordering and installation.
  2. Furnish as Noted: Same as "Furnish as Submitted" except that the Contractor must comply with modifications or notes added to the submittal by the Engineer.
  3. Revise and Resubmit: Submittal must be revised and resubmitted.
  4. Rejected: Submittal is not accepted and a replacement product, material and/or method shall be resubmitted.
  5. Received: Submittal is noted as being received by the Engineer.
- C. Informational Submittals: Engineer will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Engineer will forward each submittal to an appropriate party if reviews by others is required.
- D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION

FUSS & O'NEILL, INC.  
20180319.A23  
MARSHFIELD, MA

SOUTH RIVER FISH PASSAGE AND  
VETERANS MEMORIAL PARK  
IMPROVEMENTS PROJECT

To: Fuss & O'Neill, Inc.  
317 Iron Horse Way, Suite 204  
Providence, RI 02908  
ATTN: Nils S. Wiberg, P.E., CFM

From:

PROJECT: \_\_\_\_\_ SUBMITTAL NO.: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
(List Section No., Article No., Paragraph)  
(Revision: 1st, 2nd, 3rd, etc.)

Transmitted herewith for review and comment are the following:

Copies	Dwg.	No.	Description
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

MANUFACTURER / SUPPLIER

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone No.: \_\_\_\_\_ Facsimile No.: \_\_\_\_\_  
For Additional Information, Contact: \_\_\_\_\_  
E-mail Address: \_\_\_\_\_

I hereby certify that I have carefully examined the enclosed submittal and have determined and verified all field measurements, construction criteria, materials, catalog numbers and similar data, coordinated the submittal with other submissions and the work of other trades and contractors, and that to the best of my knowledge and belief, the enclosed submittal is in full compliance with the Contract Documents, except for the following deviations:

BY:

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

Date:

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



-- SAMPLE --

MATERIALS CERTIFICATE

-- SAMPLE --

(Submit on Manufacturer's letterhead)

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

WE HEREBY CERTIFY THAT

\_\_\_\_\_  
(Description, Kind of Material, Product Name, Model No.)

FURNISHED TO

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Prime or Subcontractor)

FOR USE ON

\_\_\_\_\_  
(Project Name)

OWNER

\_\_\_\_\_  
(Project Owner)

IDENTIFIED BY:

\_\_\_\_\_  
(Label, Marking, Seal No., Consignment, or Waybill No.)

SHIPPED VIA:

\_\_\_\_\_  
(Method of Shipment, Car No., Truck No.)

SHIPPED ON:

DELIVERED ON:

MEETS THE REQUIREMENTS OF THE CONTRACT DOCUMENTS FOR THE SUBJECT PROJECT IN ALL RESPECTS. PROCESSING, PRODUCT TESTING AND INSPECTION CONTROL OF RAW MATERIALS ARE IN CONFORMANCE WITH APPLICABLE SPECIFICATIONS, DRAWINGS AND STANDARDS OF ARTICLES FURNISHED. ARTICLES FURNISHED COMPLY WITH THE FOLLOWING STANDARD SPECIFICATIONS:

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

All records and documents pertinent to this certificate and not submitted herewith will be maintained available by the undersigned for a period of not less than 3 years from the date of this certificate.

\_\_\_\_\_  
(Name of Manufacturer)

\_\_\_\_\_  
(Authorized Representative's Signature)

\_\_\_\_\_  
(Title)

-- SAMPLE --

EQUIPMENT RECORD SHEET

-- SAMPLE --

PROJECT: \_\_\_\_\_ SUBMITTAL NO.: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (list Section No., Article No.,  
and Paragraph)  
\_\_\_\_\_  
(Revision: 1st, 2nd, 3rd, etc.)

EQUIPMENT MANUFACTURER

SERVICE REPRESENTATIVE

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

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

TYPE \_\_\_\_\_

Motor Mfr. \_\_\_\_\_

MODEL NO. \_\_\_\_\_

Motor Size \_\_\_\_\_

SERIAL NO. \_\_\_\_\_

Volts \_\_\_\_\_ Amps \_\_\_\_\_

CAPACITY \_\_\_\_\_ at \_\_\_\_\_

Phase \_\_\_\_\_ Cycles \_\_\_\_\_ RPS \_\_\_\_\_

SPECIAL NOTES AND REMARKS:

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

## SECTION 01 40 00 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.

#### 1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

#### 1.4 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

#### 1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority. The Contractor shall provide a current organizational chart including names, telephone numbers and current certifications of personnel responsible for the Quality Control Program, testing, inspection, etc. on the project at the Pre-Construction Meeting. All tests performed shall be under the supervision of certified personnel or it may result in nonpayment, delay and/or reduction in payment for the material of concern.

- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.
- C. Schedule of Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Description of test and inspection.
  - 3. Identification of applicable standards.
  - 4. Identification of test and inspection methods.
  - 5. Number of tests and inspections required.
  - 6. Time schedule or time span for tests and inspections.
  - 7. Entity responsible for performing tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.
- D. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

#### 1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- D. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those

performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

- F. Licensed Surveyor Qualifications: A surveyor who is licensed by the Commonwealth of Massachusetts Board of Registration of Engineers and Land Surveyors and who is experienced in providing survey services of the kind required under the Contract Documents.

## 1.7 QUALITY CONTROL

- A. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
- B. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections, at site or at source of products, including storage and curing of test samples.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field-curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- C. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

## PART 2 - PRODUCTS (Not used)

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. The Contractor shall coordinate with the Owner about scheduling for all material testing and sequencing to avoid the necessity of removing and replacing construction work to accommodate inspections and tests. The Contractor is responsible coordinating with the Owner for scheduling times for inspections, testing, taking samples, and similar activities and

shall be responsible for ensuring all tests are performed in accordance with the Contract Documents and the most recent version of the Commonwealth of Massachusetts Standard Specifications for Highways and Bridges and all appendices, latest edition and the supplemental specifications.

### 3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, the Contractor shall repair any damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
  - 2. Repair items of work where testing indicates that the work does not meet requirements specified herein and retest at no cost to the Owner.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.
- D. If testing or inspection results reveal that portions of the work fail and/or do not comply with the Contract Documents, all cost for the correction and re-testing of the work shall be borne by the Contractor.

END OF SECTION

## SECTION 01 41 00 - REGULATORY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 CODES, AUTHORITIES, REGULATORY AGENCIES, AND INDUSTRY REFERENCES

- A. The Contractor shall be solely responsible to conduct its operations in a manner that meets all local, state and federal regulations including, but not limited to, Town of Marshfield, MA DEP, MassDOT, US Army Corps of Engineers, USEPA, OSHA and other labor and equipment licensing requirements.
- B. Where references are made on Drawings or Specifications to codes, they shall be considered an integral part of the Contract Documents as minimum standards. Nothing contained in the Contract Documents shall be so construed as to be in conflict with any law, bylaw or regulation of the municipal, state, federal or other authorities having jurisdiction.
- C. Perform Work in compliance with the following authorities:
  - 1. Utility Company (e.g. Eversource, Verizon etc.).
- D. Perform Work in compliance with the following agencies:
  - 1. Massachusetts Department of Environmental Protection (MA DEP)
  - 2. OSHA Code of Federal Regulations
  - 3. Massachusetts Department of Transportation (MassDOT)
  - 4. Massachusetts Executive Office of Labor and Workforce Development (EOLWD))
  - 5. All federal, state, and local clean air, clean water, water rights, resource recovery, and solid waste disposal standards and the Federal Endangered Species Act, and the Occupational Safety and Health Acts
  - 6. Environmental Protection Agency (EPA)
  - 7. U.S. Army Corps of Engineers (ACOE)

#### 1.3 PERMITTING

- A. At no additional expense to the Owner, file for and obtain necessary licenses and permits, including fees, for any interim phases for construction, and be responsible for complying with any Federal, State, County, and Municipal Laws, Codes, regulations applicable to the performance of the Work, including, but not limited to, any laws or regulations requiring the use of licensed Subcontractors to perform parts of the Work.

#### 1.4 INSPECTION AND CERTIFICATIONS

- A. Arrange inspection and obtain Certificates of approval from applicable authorities having jurisdiction. Furnish certificate in accordance with Conditions of the Contract.
- B. Notify and coordinate for all inspections of the work. Allow enough time to maintain progress of the work.

#### 1.5 PERFORMANCE

- A. Should Contractor knowingly perform any Work that does not conform with the requirements of applicable codes, ordinances, regulations, or standards, without given prior written notice to Engineer and obtaining required variance, etc. from the governing body, Contractor shall assume full responsibility thereof and shall bear all costs involved in correcting such non-complying Work. Costs shall include but not be limited to all fines, inspection costs, mitigation costs, repair costs, damages, design and management fees in addition to the cost of removal and replacement of the work of all trades involved.
- B. All equipment operators and workers performing work at the Project Site shall hold the appropriate Commonwealth of Massachusetts licenses for their responsibilities.
- C. Contractor shall provide a 'Competent Person', as defined by the US Department of Labor Occupational Safety & Health Administration (OSHA), at the Project Site at all times when work is being conducted.
- D. Contractor and all subcontractor and vendors working at the Project Site shall have completed the OSHA ten (10) hour construction safety program for its on-site employees.
- E. All required licenses and/or certificates for work being performed shall be copied and supplied to the Owner prior to beginning work by each contractor, subcontractor or vendor employee conducting work at the site. All required licenses and/or certificates for work being performed shall be in the possession of the person(s) while performing the work at the Project Site.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION



## SECTION 01 42 00 - REFERENCES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Accepted": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "accepted" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

#### 1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

#### 1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up to date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org	(703) 358-2960
AAADM	American Association of Automatic Door Manufacturers www.aaadm.com	(216) 241-7333
AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials www.transportation.org	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists www.aatcc.org	(919) 549-8141
ABAA	Air Barrier Association of America www.airbarrier.org	(866) 956-5888
ABMA	American Bearing Manufacturers Association www.abma-dc.org	(202) 367-1155
ACI	American Concrete Institute www.concrete.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216

AEIC	Association of Edison Illuminating Companies, Inc. (The) www.aeic.org	(205) 257-2530
AF&PA	American Forest & Paper Association www.afandpa.org	(800) 878-8878 (202) 463-2700
AGA	American Gas Association www.aga.org	(202) 824-7000
AGC	Associated General Contractors of America (The) www.agc.org	(703) 548-3118
AHA	American Hardboard Association (Now part of CPA)	
AHAM	Association of Home Appliance Manufacturers www.aham.org	(202) 872-5955
AI	Asphalt Institute www.asphaltinstitute.org	(859) 288-4960
AIA	American Institute of Architects (The) www.aia.org	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction www.aitc-glulam.org	(303) 792-9559
ALCA	Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network)	
ALSC	American Lumber Standard Committee, Incorporated www.alsc.org	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
AOSA	Association of Official Seed Analysts, Inc. www.aosaseed.com	(405) 780-7372
APA	Architectural Precast Association www.archprecast.org	(239) 454-6989

APA	APA - The Engineered Wood Association www.apawood.org	(253) 565-6600
APA EWS	APA - The Engineered Wood Association; Engineered Wood Systems (See APA - The Engineered Wood Association)	
API	American Petroleum Institute www.api.org	(202) 682-8000
ARI	Air-Conditioning & Refrigeration Institute www.ari.org	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association www.asphaltroofing.org	(202) 207-0917
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASCE/SEI	American Society of Civil Engineers/Structural Engineering Institute (See ASCE)	
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers www.ashrae.org	(800) 527-4723 (404) 636-8400
ASME	ASME International (American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763 (973) 882-1170
ASSE	American Society of Sanitary Engineering www.asse-plumbing.org	(440) 835-3040
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9500
AWCI	Association of the Wall and Ceiling Industry www.awci.org	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (Now WCMA)	
AWI	Architectural Woodwork Institute www.awinet.org	(571) 323-3636
AWPA	American Wood Protection Association (Formerly: American Wood Preservers' Association) www.awpa.com	(205) 733-4077

AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association www.awwa.org	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 297-2122
BIA	Brick Industry Association (The) www.bia.org	(703) 620-0010
BICSI	BICSI, Inc. www.bicsi.org	(800) 242-7405 (813) 979-1991
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) www.bifma.com	(616) 285-3963
BISSC	Baking Industry Sanitation Standards Committee www.bissc.org	(866) 342-4772
BWF	Badminton World Federation (Formerly: IBF - International Badminton Federation) www.internationalbadminton.org	6-03-9283 7155
CCC	Carpet Cushion Council www.carpetcushion.org	(610) 527-3880
CDA	Copper Development Association www.copper.org	(800) 232-3282 (212) 251-7200
CEA	Canadian Electricity Association www.canelect.ca	(613) 230-9263
CEA	Consumer Electronics Association www.ce.org	(866) 858-1555 (703) 907-7600
CFFA	Chemical Fabrics & Film Association, Inc. www.chemicalfabricsandfilm.com	(216) 241-7333
CGA	Compressed Gas Association www.cganet.com	(703) 788-2700
CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org	(888) 881-2462 (937) 222-2462
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	(630) 584-1919

CISPI	Cast Iron Soil Pipe Institute <a href="http://www.cispi.org">www.cispi.org</a>	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute <a href="http://www.chainlinkinfo.org">www.chainlinkinfo.org</a>	(301) 596-2583
CRRC	Cool Roof Rating Council <a href="http://www.coolroofs.org">www.coolroofs.org</a>	(866) 465-2523 (510) 485-7175
CPA	Composite Panel Association <a href="http://www.pbmdf.com">www.pbmdf.com</a>	(301) 670-0604
CPPA	Corrugated Polyethylene Pipe Association <a href="http://www.cppa-info.org">www.cppa-info.org</a>	(800) 510-2772 (202) 462-9607
CRI	Carpet and Rug Institute (The) <a href="http://www.carpet-rug.com">www.carpet-rug.com</a>	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute <a href="http://www.crsi.org">www.crsi.org</a>	(847) 517-1200
CSA	Canadian Standards Association	(800) 463-6727 (416) 747-4000
CSA	CSA International (Formerly: IAS - International Approval Services) <a href="http://www.csa-international.org">www.csa-international.org</a>	(866) 797-4272 (416) 747-4000
CSI	Cast Stone Institute <a href="http://www.caststone.org">www.caststone.org</a>	(717) 272-3744
CSI	Construction Specifications Institute (The) <a href="http://www.csinet.org">www.csinet.org</a>	(800) 689-2900 (703) 684-0300
CSSB	Cedar Shake & Shingle Bureau <a href="http://www.cedarbureau.org">www.cedarbureau.org</a>	(604) 820-7700
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute) <a href="http://www.cti.org">www.cti.org</a>	(281) 583-4087
DHI	Door and Hardware Institute <a href="http://www.dhi.org">www.dhi.org</a>	(703) 222-2010
EIA	Electronic Industries Alliance <a href="http://www.eia.org">www.eia.org</a>	(703) 907-7500
EIMA	EIFS Industry Members Association <a href="http://www.eima.com">www.eima.com</a>	(800) 294-3462 (770) 968-7945
EJCDC	Engineers Joint Contract Documents Committee	(703) 295-5000

	www.ejdc.org	
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org	(914) 332-0040
ESD	ESD Association (Electrostatic Discharge Association) www.esda.org	(315) 339-6937
ETL SEMCO	Intertek ETL SEMCO (Formerly: ITS - Intertek Testing Service NA) www.intertek.com	(800) 967-5352
FIBA	Federation Internationale de Basketball (The International Basketball Federation) www.fiba.com	41 22 545 00 00
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation) www.fivb.ch	41 21 345 35 35
FM Approvals	FM Approvals LLC www.fmglobal.com	(781) 762-4300
FM Global	FM Global (Formerly: FMG - FM Global) www.fmglobal.com	(401) 275-3000
FMRC	Factory Mutual Research (Now FM Global)	
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc. www.floridarroof.com	(407) 671-3772
FSA	Fluid Sealing Association www.fluidsealing.com	(610) 971-4850
FSC	Forest Stewardship Council www.fsc.org	49 228 367 66 0
GA	Gypsum Association www.gypsum.org	(202) 289-5440
GANA	Glass Association of North America www.glasswebsite.com	(785) 271-0208
GRI	(Part of GSI)	
GS	Green Seal www.greenseal.org	(202) 872-6400

GSI	Geosynthetic Institute <a href="http://www.geosynthetic-institute.org">www.geosynthetic-institute.org</a>	(610) 522-8440
HI	Hydraulic Institute <a href="http://www.pumps.org">www.pumps.org</a>	(973) 267-9700
HI	Hydronics Institute <a href="http://www.gamanet.org">www.gamanet.org</a>	(908) 464-8200
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)	
HPVA	Hardwood Plywood & Veneer Association <a href="http://www.hpva.org">www.hpva.org</a>	(703) 435-2900
HPW	H. P. White Laboratory, Inc. <a href="http://www.hpwhite.com">www.hpwhite.com</a>	(410) 838-6550
IAS	International Approval Services (Now CSA International)	
IBF	International Badminton Federation (Now BWF)	
ICEA	Insulated Cable Engineers Association, Inc. <a href="http://www.icea.net">www.icea.net</a>	(770) 830-0369
ICRI	International Concrete Repair Institute, Inc. <a href="http://www.icri.org">www.icri.org</a>	(847) 827-0830
IEC	International Electrotechnical Commission <a href="http://www.iec.ch">www.iec.ch</a>	41 22 919 02 11
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The) <a href="http://www.ieee.org">www.ieee.org</a>	(212) 419-7900
IESNA	Illuminating Engineering Society of North America <a href="http://www.iesna.org">www.iesna.org</a>	(212) 248-5000
IEST	Institute of Environmental Sciences and Technology <a href="http://www.iest.org">www.iest.org</a>	(847) 255-1561
IGCC	Insulating Glass Certification Council <a href="http://www.igcc.org">www.igcc.org</a>	(315) 646-2234
IGMA	Insulating Glass Manufacturers Alliance <a href="http://www.igmaonline.org">www.igmaonline.org</a>	(613) 233-1510
ILI	Indiana Limestone Institute of America, Inc. <a href="http://www.iliai.com">www.iliai.com</a>	(812) 275-4426



ISO	International Organization for Standardization www.iso.ch	41 22 749 01 11
	Available from ANSI www.ansi.org	(202) 293-8020
ISSFA	International Solid Surface Fabricators Association www.issfa.net	(877) 464-7732 (702) 567-8150
ITS	Intertek Testing Service NA (Now ETL SEMCO)	
ITU	International Telecommunication Union www.itu.int/home	41 22 730 51 11
KCMA	Kitchen Cabinet Manufacturers Association www.kcma.org	(703) 264-1690
LMA	Laminating Materials Association (Now part of CPA)	
LPI	Lightning Protection Institute www.lightning.org	(800) 488-6864
MBMA	Metal Building Manufacturers Association www.mbma.com	(216) 241-7333
MFMA	Maple Flooring Manufacturers Association, Inc. www.maplefloor.org	(888) 480-9138
MFMA	Metal Framing Manufacturers Association, Inc. www.metalframingmfg.org	(312) 644-6610
MH	Material Handling (Now MHIA)	
MHIA	Material Handling Industry of America www.mhia.org	(800) 345-1815 (704) 676-1190
MIA	Marble Institute of America www.marble-institute.com	(440) 250-9222
MPI	Master Painters Institute www.paintinfo.com	(888) 674-8937 (604) 298-7578
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc. – www.mss-hq.com	(703) 281-6613
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(630) 942-6591

NACE	NACE International (National Association of Corrosion Engineers International) www.nace.org	(800) 797-6623 (281) 228-6200
NADCA	National Air Duct Cleaners Association www.nadca.com	(202) 737-2926
NAGWS	National Association for Girls and Women in Sport  www.aahperd.org/nagws/	(800) 213-7193, ext. 453
NAIMA	North American Insulation Manufacturers Association www.naima.org	(703) 684-0084
NBGQA	National Building Granite Quarries Association, Inc. www.nbgqa.com	(800) 557-2848
NCAA	National Collegiate Athletic Association (The) www.ncaa.org	(317) 917-6222
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute www.ncpi.org	(262) 248-9094
NCTA	National Cable & Telecommunications Association www.ncta.com	(202) 775-2300
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association www.necanet.org	(301) 657-3110
NeLMA	Northeastern Lumber Manufacturers' Association www.nelma.org	(207) 829-6901
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association www.netaworld.org	(888) 300-6382 (269) 488-6382
NFHS	National Federation of State High School Associations www.nfhs.org	(317) 972-6900
NFPA	NFPA (National Fire Protection Association) www.nfpa.org	(800) 344-3555 (617) 770-3000

NFRC	National Fenestration Rating Council www.nfrc.org	(301) 589-1776
NGA	National Glass Association www.glass.org	(866) 342-5642 (703) 442-4890
NHLA	National Hardwood Lumber Association www.natlhardwood.org	(800) 933-0318 (901) 377-1818
NLGA	National Lumber Grades Authority www.nlga.org	(604) 524-2393
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association) www.nofma.com	(901) 526-5016
NOMMA	National Ornamental & Miscellaneous Metals Association www.nomma.org	(888) 516-8585
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	(888) 846-7622 (301) 587-1400
NSF	NSF International (National Sanitation Foundation International) www.nsf.org	(800) 673-6275 (734) 769-8010
NSSGA	National Stone, Sand & Gravel Association www.nssga.org	(800) 342-1415 (703) 525-8788
NTMA	National Terrazzo & Mosaic Association, Inc. (The) www.ntma.com	(800) 323-9736 (540) 751-0930
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)	
NWWDA	National Wood Window and Door Association (Now WDMA)	
OPL	Omega Point Laboratories, Inc. (Now ITS)	
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDCA	Painting & Decorating Contractors of America www.pdca.com	(800) 332-7322 (314) 514-7322

PDI	Plumbing & Drainage Institute <a href="http://www.pdionline.org">www.pdionline.org</a>	(800) 589-8956 (978) 557-0720
PGI	PVC Geomembrane Institute <a href="http://pgi-tp.ce.uiuc.edu">http://pgi-tp.ce.uiuc.edu</a>	(217) 333-3929
PLANET	Professional Landcare Network (Formerly: ACLA - Associated Landscape Contractors of America) <a href="http://www.landcarenetwork.org">www.landcarenetwork.org</a>	(800) 395-2522 (703) 736-9666
PTI	Post-Tensioning Institute <a href="http://www.post-tensioning.org">www.post-tensioning.org</a>	(602) 870-7540
RCSC	Research Council on Structural Connections <a href="http://www.boltcouncil.org">www.boltcouncil.org</a>	
RFCI	Resilient Floor Covering Institute <a href="http://www.rfci.com">www.rfci.com</a>	(301) 340-8580
RIS	Redwood Inspection Service <a href="http://www.redwoodinspection.com">www.redwoodinspection.com</a>	(888) 225-7339 (415) 382-0662
SAE	SAE International <a href="http://www.sae.org">www.sae.org</a>	(877) 606-7323 (724) 776-4841
SDI	Steel Deck Institute <a href="http://www.sdi.org">www.sdi.org</a>	(847) 458-4647
SDI	Steel Door Institute <a href="http://www.steeldoor.org">www.steeldoor.org</a>	(440) 899-0010
SEFA	Scientific Equipment and Furniture Association <a href="http://www.sefalabs.com">www.sefalabs.com</a>	(877) 294-5424 (516) 294-5424
SEI/ASCE	Structural Engineering Institute/American Society of Civil Engineers – (See ASCE)	
SGCC	Safety Glazing Certification Council <a href="http://www.sgcc.org">www.sgcc.org</a>	(315) 646-2234
SIA	Security Industry Association <a href="http://www.siaonline.org">www.siaonline.org</a>	(866) 817-8888 (703) 683-2075
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)	
SJI	Steel Joist Institute <a href="http://www.steeljoist.org">www.steeljoist.org</a>	(843) 626-1995
SMA	Screen Manufacturers Association <a href="http://www.smacentral.org">www.smacentral.org</a>	(561) 533-0991

SMACNA	Sheet Metal and Air Conditioning Contractors' National Association <a href="http://www.smacna.org">www.smacna.org</a>	(703) 803-2980
SMPTE	Society of Motion Picture and Television Engineers <a href="http://www.smpte.org">www.smpte.org</a>	(914) 761-1100
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division) - <a href="http://www.sprayfoam.org">www.sprayfoam.org</a>	(800) 523-6154
SPIB	Southern Pine Inspection Bureau (The) <a href="http://www.spib.org">www.spib.org</a>	(850) 434-2611
SPRI	Single Ply Roofing Industry <a href="http://www.spri.org">www.spri.org</a>	(781) 647-7026
SSINA	Specialty Steel Industry of North America <a href="http://www.ssina.com">www.ssina.com</a>	(800) 982-0355 (202) 342-8630
SSPC	SSPC: The Society for Protective Coatings <a href="http://www.sspc.org">www.sspc.org</a>	(877) 281-7772 (412) 281-2331
STI	Steel Tank Institute <a href="http://www.steeltank.com">www.steeltank.com</a>	(847) 438-8265
SWI	Steel Window Institute <a href="http://www.steelwindows.com">www.steelwindows.com</a>	(216) 241-7333
SWRI	Sealant, Waterproofing, & Restoration Institute <a href="http://www.swrionline.org">www.swrionline.org</a>	(816) 472-7974
TCA	Tile Council of America, Inc. (Now TCNA)	
TCNA	Tile Council of North America, Inc. <a href="http://www.tileusa.com">www.tileusa.com</a>	(864) 646-8453
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance - <a href="http://www.tiaonline.org">www.tiaonline.org</a>	(703) 907-7700
TMS	The Masonry Society <a href="http://www.masonrysociety.org">www.masonrysociety.org</a>	(303) 939-9700
TPI	Truss Plate Institute, Inc. <a href="http://www.tpinst.org">www.tpinst.org</a>	(703) 683-1010
TPI	Turfgrass Producers International <a href="http://www.turfgrassod.org">www.turfgrassod.org</a>	(800) 405-8873 (847) 649-5555

TRI	Tile Roofing Institute <a href="http://www.tilerroofing.org">www.tilerroofing.org</a>	(312) 670-4177
UL	Underwriters Laboratories Inc. <a href="http://www.ul.com">www.ul.com</a>	(877) 854-3577 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association <a href="http://www.uni-bell.org">www.uni-bell.org</a>	(972) 243-3902
USAV	USA Volleyball <a href="http://www.usavolleyball.org">www.usavolleyball.org</a>	(888) 786-5539 (719) 228-6800
USGBC	U.S. Green Building Council <a href="http://www.usgbc.org">www.usgbc.org</a>	(800) 795-1747
USITT	United States Institute for Theatre Technology, Inc. <a href="http://www.usitt.org">www.usitt.org</a>	(800) 938-7488 (315) 463-6463
WASTEC	Waste Equipment Technology Association <a href="http://www.wastec.org">www.wastec.org</a>	(800) 424-2869 (202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau <a href="http://www.wclib.org">www.wclib.org</a>	(800) 283-1486 (503) 639-0651
WCMA	Window Covering Manufacturers Association <a href="http://www.wcmanet.org">www.wcmanet.org</a>	(212) 297-2122
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association) - <a href="http://www.windowcoverings.org">www.windowcoverings.org</a>	(800) 506-4636 (212) 297-2109
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association) - <a href="http://www.wdma.com">www.wdma.com</a>	(800) 223-2301 (847) 299-5200
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California) - <a href="http://www.wicnet.org">www.wicnet.org</a>	(916) 372-9943
WIC	Woodwork Institute of California (Now WI)	
WMMPA	Wood Moulding & Millwork Producers Association <a href="http://www.wmmpa.com">www.wmmpa.com</a>	(800) 550-7889 (530) 661-9591
WSRCA	Western States Roofing Contractors Association <a href="http://www.wsrca.com">www.wsrca.com</a>	(800) 725-0333 (650) 570-5441
WWPA	Western Wood Products Association <a href="http://www.wwpa.org">www.wwpa.org</a>	(503) 224-3930

- C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

IAPMO	International Association of Plumbing and Mechanical Officials <a href="http://www.iapmo.org">www.iapmo.org</a>	(909) 472-4100
ICC	International Code Council <a href="http://www.iccsafe.org">www.iccsafe.org</a>	(888) 422-7233
ICC-ES	ICC Evaluation Service, Inc. <a href="http://www.icc-es.org">www.icc-es.org</a>	(800) 423-6587 (562) 699-0543
UBC	Uniform Building Code (See ICC)	

- D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE	Army Corps of Engineers <a href="http://www.usace.army.mil">www.usace.army.mil</a>	(202) 761-0011
CPSC	Consumer Product Safety Commission <a href="http://www.cpsc.gov">www.cpsc.gov</a>	(800) 638-2772 (301) 504-7923
DOC	Department of Commerce <a href="http://www.commerce.gov">www.commerce.gov</a>	(202) 482-2000
DOD	Department of Defense <a href="http://.dodssp.daps.dla.mil">http://.dodssp.daps.dla.mil</a>	(215) 697-6257
DOE	Department of Energy <a href="http://www.energy.gov">www.energy.gov</a>	(202) 586-9220
EPA	Environmental Protection Agency <a href="http://www.epa.gov">www.epa.gov</a>	(202) 272-0167
FAA	Federal Aviation Administration <a href="http://www.faa.gov">www.faa.gov</a>	(866) 835-5322
FCC	Federal Communications Commission <a href="http://www.fcc.gov">www.fcc.gov</a>	(888) 225-5322
FDA	Food and Drug Administration <a href="http://www.fda.gov">www.fda.gov</a>	(888) 463-6332
GSA	General Services Administration <a href="http://www.gsa.gov">www.gsa.gov</a>	(800) 488-3111

HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
NCHR	National Cooperative Highway Research Program (See TRB)	
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Buildings Service (See GSA)	
PHS	Office of Public Health and Science www.osophs.dhhs.gov/ophs	(202) 690-7694
RUS	Rural Utilities Service (See USDA)	(202) 720-9540
SD	State Department www.state.gov	(202) 647-4000
TRB	Transportation Research Board <a href="http://gulliver.trb.org">http://gulliver.trb.org</a>	(202) 334-2934
USDA	Department of Agriculture www.usda.gov	(202) 720-2791
USPS	Postal Service www.usps.com	(202) 268-2000

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from U.S. Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080
CFR	Code of Federal Regulations Available from Government Printing Office www.gpoaccess.gov/cfr/index.html	(866) 512-1800 (202) 512-1800





SECTION 01 45 29 - TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for laboratory testing services.

1.3 GENERAL REQUIREMENTS

- A. Contractor shall employ and pay for the services of one or more Independent Testing Laboratories to perform specified testing of work and materials at the Project Site or at point of manufacture.
  - 1. Contractor shall cooperate with the testing laboratories to facilitate the execution of its required services.

1.4 QUALIFICATIONS OF LABORATORIES

- A. Meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
- B. Comply with the following requirements, as applicable:
  - 1. ANSI/ASTM D3740: Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
  - 2. ANSI/ASTM E329: Standard Recommended Practice for Inspection and Testing for Concrete, Steel, and Bituminous Materials as Used in Construction.
- C. Licensed to operate in the Commonwealth of Massachusetts.
- D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.
- E. Testing Equipment:
  - 1. Calibrated at reasonable intervals by devices of accuracy traceable to either:
    - a. National Bureau of Standards.
    - b. Accepted values of natural physical constants.
- F. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

#### 1.5 LABORATORY DUTIES

- A. Cooperate with Engineer and Contractor; provide qualified personnel after due notice from Contractor.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
  - 1. Comply with specified standards.
  - 2. Ascertain compliance of materials with requirements of Contract Documents.
- C. Promptly notify Engineer and Contractor of observed irregularities or deficiencies of work or products.
- D. Promptly submit written report of each test and inspection: one (1) copy each to Engineer, and Contractor. Each report shall include:
  - 1. Date issued
  - 2. Project title and number
  - 3. Testing laboratory name, address and telephone number
  - 4. Name and signature of laboratory inspector
  - 5. Date and time of sampling or inspection
  - 6. Record of temperature and weather conditions
  - 7. Date of test
  - 8. Identification of product
  - 9. Location of sample or test in the Project
  - 10. Type of inspection or test
  - 11. Results of tests and compliance with Contract Documents
  - 12. Interpretation of test results, when requested by Engineer
- E. Perform additional tests as required by the Engineer or Owner.

#### 1.6 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
  - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
  - 2. Approve or accept any portion of the Work.
  - 3. Perform any duties of the Contractor.
  - 4. Stop the Work.

#### 1.7 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate, together with laboratory personnel, will provide access to the point/location of the Work, and to manufacturer's operations.

- B. Secure and deliver to laboratory at designated location(s) adequate quantities of representational material proposed to be used and which require testing together with applicable proposed design mixes.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other material mixes which required control by the testing laboratory.
- D. Furnish copies of Product test reports to the Engineer as required.
- E. Furnish incidental labor and facilities:
  - 1. To provide access to Work to be tested.
  - 2. To obtain and handle samples at the Project Site or at the source of the product to be tested.
  - 3. To facilitate inspections and tests.
  - 4. For storage and curing of test samples.
- F. Notify laboratory 24 hours in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
  - 1. When tests or inspections cannot be performed after such notice, reimburse owner for laboratory personnel and travel expenses incurred due to Contractor's negligence on inability to perform the Work at the scheduled time.
- G. Make arrangements with laboratory and pay for services to perform inspections, sampling and testing required:
  - 1. When not specified to be paid by the Owner.
  - 2. For the Contractor's convenience.
  - 3. When the initial tests or inspections indicate Work does not comply with Contract Documents (i.e., re-tests).

#### 1.8 SOURCE OF MATERIALS

- A. Source of supply of each of materials required shall be acceptable to Engineer before delivery is started.
- B. Representative samples shall be used for inspection or tests.
- C. Engineer or Owner may test materials proposed to be used at any time during preparation and use.
- D. If it is found that sources of supply, which have been approved, do not furnish product of uniform quality, or if product from any source proves unacceptable at any time, Contractor shall furnish approved material from another source without additional cost to Owner or delay in completion date.

#### 1.9 IDENTIFICATION

- A. Required samples submitted by Contractor shall be properly labeled for identification.
- B. Materials and/or equipment that have been inspected and/or tested shall be stored in a controlled area with suitable identification referencing tests and certifications.

- C. Continuous inventory shall be kept of all items in this area controlled by log in and log out with receiving and disbursing signatures.
- D. Copies of receiving or disbursing actions shall be sent to Engineer on a daily basis.
- E. Disbursing records shall show final destination and installation.

1.10 MATERIAL STORAGE

- A. Materials shall be stored to ensure preservation of their quality and fitness for Work.

1.11 SCHEDULE OF INSPECTIONS AND TESTS

- A. Refer to each individual Section of the Project Manual for specific testing requirements, or as otherwise required by Contract Documents or applicable regulatory agency.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

## SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Division 1 Section "Summary" for limitations on work restrictions and utility interruptions.
  - 2. Division 2 Section "Subsurface Dewatering" for disposal of ground water at Project site.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, staging areas, and parking areas for construction personnel.

#### 1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

#### 1.5 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts

and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide concrete or galvanized-steel bases for supporting posts.

- B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.

## 2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
  - 1. Store combustible materials apart from field offices.

## 2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Locations of such facilities shall be approved by Engineer and/or Owner. Relocate and modify facilities as required by progress of the Work.
  - 1. Locate facilities to limit site disturbance as specified in the Contract Drawings.

### 3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
  - 2. Coordinate with the Utility Companies for temporary pole line and relocation of overhead wiring.
- B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- C. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

### 3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
  - 1. Provide construction for temporary offices and sheds located within construction area that is noncombustible according to ASTM E 136. Comply with NFPA 241.
  - 2. Maintain support facilities until Engineer schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction and Division 1 Section "Traffic Control."
  - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  - 2. Maintain access for fire-fighting and emergency equipment.
- C. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
  - 2. Remove snow and ice as required to minimize accumulations.
- E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
  - 1. Identification Signs: Provide Project identification signs as indicated on Drawings.
  - 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and visitors.
  - 3. Maintain and touchup signs so they are legible at all times.
- F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Division 1 Section "Execution Requirements."
- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
  - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- H. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- I. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.



### 3.4 SAFETY

- A. The Contractor shall comply with all requirements of the most recent version of the Occupational Safety and Health Act (OSHA.)
- B. When any support system is used that required design by an engineer, copies of the design stamped by a Professional Engineer registered in Massachusetts shall be submitted to the Engineer.
- C. The Contractor has full responsibility to comply with all federal, state and local regulations and laws concerning Occupational Safety and Health. Any fines levied against the Contractor for violations shall be the Contractor's responsibility.

### 3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Contractor shall at all times take reasonable and proper precautions to protect and safeguard the Town's, public and private property, including their own work and all materials of every description both before and after use in the work, from damage or injury or loss in connection with this contract. Contractor shall also (at all times) take reasonable and proper precautions to protect and safeguard persons and animals, and must maintain public safety during execution of this contract.
  - 1. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
    - a. ."
- B. Contractor shall assume full responsibility for the protection of all public or private buildings, structures and utilities in the streets, gas pipes, water pipes, hydrants, sewers, drains and electric and telephone cables, whether or not they are shown on the Drawings.
- C. Contractor shall carefully support and protect all such structures and utilities from damage of every description and any such damage thereto shall be repaired or otherwise made good by the Contractor, at his expense, in a manner acceptable to the Engineer.
- D. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. Contractor shall, at the Contractor's own option and expense, provide suitable and safe bridges and other crossings for accommodating travel by its and its subcontractor's employees. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits of disturbance depicted on the Contract Drawings.
- E. Contractor shall proceed with caution when performing excavation of any kind so that the exact location of underground structures, both known and unknown, may be determined so as to not damage or disturb existing underground or above ground utilities.
  - 1. Contractor shall protect and support all utilities during execution of the work. There may be above ground and underground utilities in the designated work area; existing lines may not be shown on the plans. The approximate position of certain underground utilities is shown on the plans for information only.
- F. Contractor shall locate these and other possible unknown utility lines by use of Dig Safe, an electronic pipe finder, test pits, or other means deemed acceptable by Owner and Engineer. Contractor shall then excavate and expose all existing underground lines in advance of any excavation work under this contract. When the Contractor has located all utilities, it shall be

responsible for planning and coordinating the required work around the existing utilities, including any temporary or permanent removal and resetting of such utilities.

- G. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- H. Comply with work restrictions specified in Division 1 Section "Summary Barricades, Warning Signs, and Lights: Comply with Contract Drawings and the requirements of the Town of Truro, OSHA, and the MassDOT for erecting highly visible, structurally adequate barricades, including warning signs and lighting.
- I. Site Enclosure Fence: Before construction operations begin and prior to commencing earthwork, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering the Construction Access and Staging Area as depicted on the Contract Drawings.
  - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
  - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.
- J. Access: Maintain access from existing public roadways as indicated and as required by authorities having jurisdiction. Contractor shall, as far as practical and consistent with good construction, permit access to private and public property and leave utilities, catch basins, driveways, adjoining roads, etc., free from encumbrances.
- K. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

### 3.6 TEMPORARY UTILITY INSTALLATION

- A. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- B. Temporary Use of Permanent Roads: Construction activities shall be limited to the areas depicted on the Contract Drawings. The existing parking area shall be closed the public throughout construction.
  - 1. Any temporary soil stockpile areas or equipment storage shall occur only on the closed portion of the roadway surface impacted by construction. Temporary soil stockpiles and equipment shall not be stored on private or other properties unless approved in writing by the property owner. Perimeter erosion/sedimentation controls shall be provided around all such stockpiles.
- C. Waste Management: All waste materials will be collected on site, and transported and stored in securely covered containers. The containers will meet all local and state solid waste management regulations and shall be sized to adequately handle wastes from construction operations. All contractors will utilize the services of a licensed solid waste management company.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been

delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
- E. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."
- F. Contractor shall restore, replace or make good at its own expense, unless such was caused directly by errors contained in the Contract, by the Town, or its duly authorized representatives, any and all damage, loss, or injury to persons, animals, and/or property caused by any negligence of omission or commission on his part or on the part of its agent, including sidewalks, curbing, sodding, pipes, conduits, sewers, buildings, fences, retaining walls, tanks, power lines, or any other private or public property to a condition of equal or better comparison to the condition of the property when it entered upon the work.
- G. In case of failure on the part of the Contractor to restore such property or make good such damage, the Owner may upon forty-eight (48) hours' notice proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof will be deducted from any money due or which may become due under this contract.
- H. Contractor shall indemnify and hold harmless the Owner and the Engineer acting in behalf of the Owner from all suits and actions that may be brought against it by reason of any injury, or alleged injury, to the person or property of another resulting from negligence or carelessness in the execution of the work, or on account of any negligent act or omission, or improper methods or means of construction on the part of the Contractor, its representatives, or employees.

END OF SECTION

## SECTION 01 55 26 – TRAFFIC CONTROL

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. All traffic controls for construction and maintenance operations shall comply with the most recent version of the “Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition”, and Supplemental Specifications (March 31, 2024); MassDOT’s “Standard Details and Drawings for the Development of Temporary Traffic Control Plans”; and the “Manual on Uniform Traffic Control Devices” latest edition, Part VI.

#### 1.2 SUMMARY

- A. This Section includes, but is not limited to, operations necessary to maintain vehicular, bicycle and pedestrian traffic flow on public and private access ways and roads to the satisfaction of the Marshfield Department of Public Works, MassDOT, the Engineer and the Marshfield Fire and Police Departments.
  1. The Contractor shall be responsible for the erection, location and maintenance of suitable signs, barricades, lighting and other devices necessary to afford adequate protection to their workers, Town personnel and consultants assigned to the project and to the traveling public in accordance with the project plans and specifications and further in accordance with the provisions of the Manual on Uniform Traffic Control Devices. In lieu of any provisions of Section 7.09 of the Standard Specifications to the contrary, payment for all costs (including Police Details and Roadway Flaggers) incurred in maintaining the flow of traffic and protecting the public during construction shall be considered as included in the designated allowance, and no additional payment will be allowed therefor.
- B. This Section includes, but is not limited to, requirements for temporary traffic controls, including support facilities and security/protection facilities. Support and security/protection facilities include, but are not limited to, the following:
  1. Temporary fencing and barricades
  2. Temporary lighting
  3. Safety signage and signaling to inform the general public of hazards during construction of the Work and changed traffic patterns.
- C. Traffic controls include, but are not limited to, the following:
  1. Furnishing, erecting, removing, resetting and dismantling temporary barriers, temporary impact attenuators, breakaway barricades, temporary protective fencing, reflectorized drums, traffic cones and safety signing to inform and protect the general public of hazards and to control and maintain traffic through the work zones during construction.
  2. Providing portable temporary traffic signals as shown on the Contract Drawings.

3. Application and removal of temporary pavement markings at locations shown on the Contract Drawings.

### 1.3 QUALITY ASSURANCE

- A. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).

### 1.4 SUBMITTALS

- A. Detours: Submit to the Engineer, proposed detour plan for all portions of the Work, at least fourteen (14) days prior to commencing construction.
  1. Notify Town of Marshfield DPW, police and fire officials five (5) business days in advance of any change in normal or temporary detour traffic patterns.
  2. Notify MassDOT two weeks in advance of changes in traffic patterns affecting Route 6.
- B. Prepare, submit and provide approval for any and all permits required by the Owner and MassDOT for installation and maintenance of traffic detour signage.
- C. Oversized Loads: Submit a formal notification to the local Police Department at least 72 hours before oversized loads will be transported to the site. Any fee for police detail or transporting such material shall be paid under the relevant allowance.
- D. Manufacturer's catalog cut sheet of the selected temporary impact attenuator from the MassDOT qualified traffic control equipment list. Submittal shall indicate the manufacture, product name or model number for review.
- E. Manufacture's catalog cut sheet of the selected temporary portable traffic signal unit from the MassDOT qualified traffic control equipment list. Submittal shall indicate the manufacture, product name or model #, dimensions and features (radar and/or video detection, red clearance extension, remote monitoring, traffic control equipment).
- F. Protective fencing type, material and dimensions.

## PART 2 - PRODUCTS

### 2.1 TRAFFIC CONTROL DEVICES

- A. Barricade Warning Lights: See MassDOT Standard Specifications Section 850.46
- B. Reflectorized Drums: See MassDOT Standard Specifications Section 850.46.
- C. Traffic Cones for Traffic Management: See MassDOT Standard Specifications Section 850.42.
- D. Portable Breakaway Barricades Type III: See MassDOT Standard Specifications Section 850.51.

- E. Temporary Barrier: See MassDOT Standard Specifications Section 850.49.
- F. Temporary Impact Attenuator: See MassDOT Standard Specifications Section 628.42. These temporary impact attenuators shall also conform to MassDOT Standard Specification M9.18.1 for Redirective Impact Attenuators. Attenuators shall meet the requirements of NCHRP 350 Report TL-3 and shall be a product listed within MassDOT's Item 628 of Section 600 Traffic Control Devices from the Qualified Traffic Control Equipment (QTCE) list.
- G. Safety Signing for Traffic Management: See MassDOT Standard Specifications Section 850.43.
  - 1. Prior to using the construction signs and their portable supports, the Contractor shall submit to the Engineer a copy of the Letter of Acceptance issued by the FHWA to the manufacturer documenting that the devices (both sign and portable support tested together) conform to NCHRP Report 350 (TL-3).
  - 2. Portable sign supports shall be designed and fabricated so that the signs do not blow over or become displaced by the wind from passing vehicles. Portable sign supports shall be accepted by the Engineer before they are used.
  - 3. Mounting height of signs on portable sign supports shall be a minimum of 1 foot and a maximum of 2 feet, measured from the pavement to the bottom of the sign.
  - 4. The following types of construction signs shall not be used: mesh, non-rigid, roll-up.
  - 5. The following portable sign support systems or equivalent systems that meet the above requirements may be used:
    - a. Korman Model #SS548 flexible sign stand with composite aluminum sign substrate (APOLIC)
    - b. Traffix "Little Buster" dual spring folding sign stand with corrugated polyethylene (0.4 in. thick) sign substrate (InteCel)
- H. Temporary Pavement Markings: See MassDOT Standard Specifications Section 850.44.
- I. Temporary Portable Traffic Signals: New or used units in good working condition and accepted by the Engineer prior to use.
  - 1. MassDOT qualified portable traffic signals: [Section 850 :Traffic Controls for Construction and Maintenance Activities \(mass.gov\)](#)

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. All work shall conform to the MassDOT Standard Specifications and Contract Drawings.
- B. Coordinate with local authorities for closing of roadway within the work area. Do not barricade streets or detour traffic without prior approval of local authorities. Keep closings to as brief a period as possible.

- C. Emergency access shall be maintained at all times. Operations must be scheduled and executed so as to minimize delays to vehicles and pedestrians.
- D. Reasonable access to the various residential and commercial properties shall be possible at all times adjacent to project site.
  - 1. Conduct operations in such a manner that residents will be provided reasonable access to and from their homes and that emergency vehicles, school buses and town-contracted solid waste removal vehicles will not be blocked. Segments of the road may be closed during work hours, but only with suitable detours (as shown in the Contract Drawings as a minimum) and only to the extent that access can still be provided as described above.

### 3.2 TRAFFIC CONTROL DEVICES

- A. Furnish, erect, maintain, move, reset and dismantle temporary traffic control devices as necessary, to protect the Work and provide for public safety, as required by the Owner or Engineer, and in accordance with the requirements of MassDOT's "Standard Details and Drawings for the Development of Temporary Traffic Control Plans" and the "Manual on Uniform Traffic Control Devices" latest edition, Part VI and the Contract Drawings.
- B. Temporary Barrier: Furnishing, install, maintain and final removal of temporary barriers, including delineation, for traffic control or work zone protection in construction zones
- C. Temporary Protective Fence: Furnish and install, maintain and final removal in close conformance with the locations shown on the contract drawing or as indicated by the Engineer.
- D. Temporary Impact Attenuator: Furnish, install, maintain, remove, reinstall and final removal of temporary impact attenuators in conformance with the specifications of the manufacturer and in close conformance with the locations, lines, and grades shown on the Contract Drawings or as indicated by the Engineer.
- E. Safety Signing for Traffic Management: Deploy temporary safety signage, permitting signage, and other signs in sizes indicated within the Contract Drawings or issued permits. Install safety signs where indicated or as directed by the Owner or Engineer, to prevent public and persons seeking entrance to the site from both ends of the Project Site throughout construction.
  - 1. Coordinate with utility owner(s) for power and remote monitoring (if land-based communication is required vs. wireless communication).
- F. Reflectorized Drums: Install portable plastic drums and maintain in good condition throughout construction in accordance with the MassDOT Standard Specifications Section 850 and Contract Drawings.
- G. Traffic Cones: Install traffic cones in sufficient number to adequately control traffic on roadways during construction and maintain in good condition in accordance with the Standard Specifications.
- H. Portable Breakaway Type III Barricades: Erect breakaway barricades to close the roadway to traffic and to prevent traffic from entering the construction area in accordance with the MassDOT Standard Specification and Contract Drawings.

- I. Temporary Portable Traffic Signal: Install signal units in accordance with the manufacturer's instructions at the location indicated on the Contract Drawings or as directed by the Engineer.

3.3 TRAFFIC CONTROL SYSTEM REMOVAL

- A. Remove all temporary traffic control devices after final all requirements for opening of the permanent bridge and roadway are complete and accepted by the Engineer and authorities having jurisdiction.

END OF SECTION



SECTION 01 56 30 – ENVIRONMENTAL PROTECTION AND EMERGENCY RESPONSE

PART 1 - GENERAL

1.1 SUMMARY

- A. This section consists of procedures to be followed in preventing any release of oil and hazardous materials (OHM) which include but are not limited to petroleum fuel products containing hydrocarbons including petroleum, petroleum derivatives, hydraulics and like products at or adjacent to the project site, including requirements for handling material contaminated by spillage (including leaks) from vehicles and equipment.
- B. Leaks and spillage may occur when using mechanical equipment. Equipment generated or lubricated with petroleum products, are prone to leaks or spillages, therefore proper management of “spillage incidents” is essential especially when working adjacent to public drinking water supply reservoirs and sensitive wetland resources, as is to occur for work under this project.
- C. Spillage or leakage of petroleum fuel products shall be immediately remediated by the Contractor using applicable and appropriate procedure(s). Whenever such spillage or leakage occurs, the Contractor shall immediately contact the Owner and implement the appropriate corrective actions as required.
- D. The Contractor shall fully clean up any release or spill in full at its own expense.
- E. Where Contractor is identified within this section, it shall include all its subcontractors, suppliers, representatives and agents. The requirements under this section apply to the Contractor, which shall provide for execution of all appropriate and required actions in response to a release of OHM whether a result of the Contractor’s own forces or its subcontractors, suppliers, representatives or other agents. All activities occurring within the project site during the performance of work under this contract shall be the responsibility of the Contractor, who shall take all necessary, appropriate and required actions to ensure protection of the water supply, public health and quality of wetland resources throughout the period of construction.
- F. Work under this Section, without limiting the generality thereof, consists of the furnishing and installing all materials, labor, testing, transportation facilities, and all operations and adjustments required for the complete installation as indicated on the drawings, stipulated in the specifications and as reasonably implied by either or both. This includes, but is not limited to the following items.
  - 1. The Contractor’s requirements for responding to releases or spills of OHM including:
    - a. The following actions, at a minimum:
      - 1) Immediate notification of Marshfield Fire and Rescue Department (MFRD) and the MassDEP Bureau of Waste Site Cleanup (MassDEP).
      - 2) Immediate response to halt the continued release of OHM.
      - 3) Immediate response to apply absorbent and containment measures at the OHM spill or release location.
      - 4) Full containment of the OHM to protect wetland resources within no more than one-half (1/2) hour from the time of release of OHM.

- b. Work to be performed by the Contractor's On-Call Hazardous Materials Emergency Response Contractor (ERC) under this Section, without limiting the generality thereof, consists of furnishing all materials, equipment, and labor required for the execution of work as stipulated in the specifications and as reasonably implied. This includes but is not limited to the following:
  - 1) The Contractor's ERC shall provide all labor, materials and equipment for emergency response to OHM spills due to the Contractor's activities at the Contractor's expense. Contractor's ERC shall coordinate its activities in full with the MFRD, MassDEP and other emergency response agencies (e.g., EPA) and private emergency response/cleanup contractors to responding civil agencies.
  - 2) In the event of a spill or release, the Contractor shall retain a Massachusetts Licensed Site Professional (LSP) who shall be responsible for preparing all verbal and written notifications and other relevant documentation concerning reportable releases of OHM to MassDEP, EPA and other relevant agencies within the prescribed report notification time frames, to the extent required by applicable laws, statutes and regulations.
  - 3) The Contractor shall be responsible for selecting, managing and executing in full the appropriate disposal/recycling options for the OHM wastes resulting from spills or releases. The disposal/recycling option will be subject to the approval by the Owner. The Contractor shall be responsible for transporting and disposing/recycling of these OHM wastes to approved facilities in accordance with applicable state and federal laws and regulations.

- G. Incidental materials and activities necessary for the completion of this work in accordance with good practice and applicable laws and regulations shall be furnished, installed and provided, whether or not specifically mentioned herein.

## 1.2 RESPONSIBILITY OF THE CONTRACTOR

- A. The Contractor shall comply with all prevailing federal, state, and local environmental protection ordinances and codes governing and having application to any discharges, intentional or accidental, which may cause water pollution, harm public health or wetland resources, or constitute a nuisance, aesthetic or otherwise.
- B. The Contractor shall be responsible for adhering to regulations, specifications and recognized standard practices related to the execution of emergency response activities. The Owner or its agents shall not be responsible at any time for the Contractor's violation of pertinent regulations or endangerment of its work, personnel, equipment, materials, public water supply and environmental resources, members of the public, private property or for any other damages resulting from a spill or release of OHM.
- C. The Contractor shall post the Emergency Response Contact List in areas readily accessible to Supervisors and all other Contractor personnel who have the authority to initiate emergency response activities. The Emergency Response Contact List shall be posted in all construction trailers and all other appropriate locations.
- D. The Contractor's emergency response activities must not adversely or otherwise affect any Owner, Town of Marshfield operations associated with protecting adjacent waters, land areas, or infrastructure.

- E. The Engineer, Town of Marshfield or their agents shall not be held negligent or liable for any spills or releases of OHM caused by the Contractor nor inadequacies or deficiencies in the Contractor's implementation of the emergency response activities.

### 1.3 SUBMITTALS

- A. The Contractor shall submit the following no less than two (2) weeks prior to the start of construction.
  - 1. Emergency Contact List.
  - 2. The name of a qualified on-call ERC who will provide emergency response services for this project.
    - a. The ERC shall have experience with conducting emergency response activities for projects of similar nature, duration and magnitude, as this Project requires. The ERC shall demonstrate familiarity with applicable Federal and state regulations regarding emergency response activities. The ERC shall be certified to conduct emergency response activities within Massachusetts.
  - 3. The name of the LSP who will provide emergency response services for this project, if needed.
- B. The Contractor shall submit to the Engineer, a summary of all ERC personnel, equipment and materials used, copies of all field logs including time spent on-site, mobilization, demobilizations, manifests, and a summary report suitable to be used for cost recovery that may be undertaken by the Authority. All documentation shall be submitted to the Engineer within five (5) days from completing the response action(s).

### 1.4 EMERGENCY RESPONSE NOTIFICATION

- A. In the event of a release or spill regardless of quantity, the Contractor is required to immediately contact the MFRD by calling 911 and MassDEP's Emergency Response Center at 888-304-1133.
  - 1. If the spill is too large to be cleaned up by Contractor personnel, the Contractor shall immediately contact its Emergency Response Contractor for cleanup.
  - 2. Upon contacting MassDEP, the Contractor shall provide the following information:
    - a. Date and Time of Spill
    - b. Project name
    - c. The precise location of the spill
    - d. Contact person, telephone number and mailing address
    - e. Description of the spill (estimated quantity; type of material released)
    - f. Name of Contractor's ERC
    - g. Response Actions taken (has containment been done, has cleanup been initiated)
    - h. The names of other entities/agencies notified (i.e., National Park Service, etc.)

## PART 2 - PRODUCTS

### 2.1 ABSORBENT AND CONTAINMENT MATERIALS

- A. Contractor shall equip crews and/or provide machinery with the most efficient type of petroleum absorbent materials. These materials are available at petroleum equipment suppliers and must be readily accessible so that spillages can be quickly contained and prevented from becoming greater incidents.
- B. Absorbent “pigs”, pillows, pads, and/or other fiber materials, as well as sand or absorbent granular material (e.g., cat litter) may be used as an absorbent material.
- C. Floating containment booms shall be stocked on site capable of extending to encompass an area no less than 50-feet along the impoundment shoreline, or otherwise along or across the moat channel.
- D. Sufficient quantity of absorbent and containment materials capable of absorbing at least 50 gallons of OHM shall be stocked at the job site at all times at no less than four (4) locations (quantity indicated is for each location) in order to implement an INITIAL response to mitigate and contain a spill or release:
  - 1. Contractor staging area shown on contract drawings
  - 2. Other locations if accepted by the Engineer prior to construction.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. The Contractor shall provide all necessary Emergency Response training to its own personnel at all levels to ensure the proper implementation of Emergency Response. The Contractor shall be able to demonstrate through written documentation that appropriate Emergency Response training has been performed for all personnel working on site. ERC shall provide all crew training and Health and Safety equipment as required by 29 CFR 1910 for any level of clean-up required. Personnel handling waste materials must have a minimum of 40 hours training as defined in 29 CFR 1910.120 and in accordance with the certified OSHA course.
- B. The Contractor or ERC shall be responsible for placing contaminated materials or liquids in appropriately labeled and marked DOT-approved containers for the -site transport and disposal of waste materials. It is the Contractor’s responsibility to provide off-site transport and disposal of all remediation waste associated with any OHM release incident.
- C. Contaminated waste materials generated during emergency response activities shall be temporarily stored by the Contractor in a designated area approved by the Engineer until an off-site receiving facility has accepted the shipment.
- D. The Contractor shall identify a legal receiving facility for the disposal of the cleanup wastes. The receiving facility must be approved by the Owner prior to offsite transport and disposal of the material by the Contractor’s ERC. A copy of the chain of custody and disposal documents shall be provided to the Owner after the waste is disposed.
- E. The Contractor's LSP shall prepare all written documents that are required in relation to any and all releases, to the extent required by applicable laws and regulations. Copies of all documents must be submitted to the Owner at the time the documents are transmitted to the relevant agencies.

### 3.2 PROCEDURES

- A. Perform work as specified herein and in accordance with the applicable provisions of MassDEP and any National Park Service spill prevention countermeasures and control requirements.
- B. No payment will be made to the Contractor for the cost of any response or handling and disposing of leaks, spillages and materials contaminated by such leaks or spillages.
- C. The steps outlined below are minimum requirements and are only presented as guidelines for a spill or release of ANY quantity of OHM. They do not constitute a complete compliance or notification procedure:

#### 1. STEP 1

- a. If a spill or release is discovered, determine the origin of that leak or spillage. Stop the spillage or leak and positively contain it, and then use absorbents to collect discharged liquid.

Immediately notify the MFRD, MassDEP and the Engineer.

#### 2. STEP 2

- a. Deploy containment booms and other absorbent materials to prevent migration of spillage and/or seepage below ground.

Once containment and absorption of spilled fuels is complete, the impacted (Contaminated) absorbent materials shall be stored in 55-gallon steel drums (100-150 lbs.). If leaked or spilled fuel has been absorbed into the soils, excavate and containerize the impacted (contaminated) soils. Soils may be stored in sealed 55-gallon steel drums.

#### 3. STEP 3

- a. The contaminated materials must be collected, containerized and otherwise properly stored and labeled prior to transport to a pre-approved storage, disposal or treatment facility.

All drums used to store impacted (contaminated) absorbent material and/or contaminated soils shall be properly sealed and labeled with the following information.

Name of Company (Contractor)  
Contract or Project No.:  
Location of origin:  
Type of contents:  
Type of containment:  
Quantity: (e.g. 1 of 1)  
Date:  
Containerized by:  
Labeled by:

END OF SECTION

## SECTION 01 57 13 – TEMPORARY EROSION AND SEDIMENTATION CONTROL

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes furnishing, placing, and maintaining erosion and sedimentation control measures as shown on the Contract Drawings, as directed by the Engineer, and where necessary to reduce sediment content of runoff. Measures include the following:

1. Biodegradable Fiber Roll
2. Catch Basin Inlet Protection (i.e. Silt Sacks)
3. Long-Term Erosion Control Blanket
4. Temporary Construction Access Route
5. Temporary Construction Dewatering Basin
6. Dust Control

#### 1.3 SUBMITTALS

- A. Product Data and Installation/Maintenance Instructions

1. Biodegradable Fiber Roll
2. Catch Basin Inlet Protection
3. Temporary Construction Dewatering Basin
4. Long-Term Erosion Control Blanket
5. Dust Control
6. Crushed Stone
7. Geotextile Fabric

#### 1.4 QUALITY ASSURANCE

- A. Standard Specifications: Shall mean the most recent version of the “Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition”, and Supplemental Specifications (March 31, 2024).

- B. Sedimentation and erosion control measures shall be installed and maintained in accordance with the "Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas (2003)."

1.5 DEFINITIONS

- A. Control System: Single or group of practices that prevent detachment and interrupt the transport of soil by rainfall, stormwater runoff, melting snow or ice.

PART 2 - PRODUCTS

2.1 All products shall be furnished, installed and maintained in accordance with the Massachusetts Erosion and Sediment Control Guidelines.

2.2 Biodegradable Fiber Roll

- 1. Shall be 12" diameter cylinders of fully biodegradable material and shall meet the requirements of Filtrexx® BioWattles or approved equal.
- 2. Plastic Mesh and wire end ties shall not be permitted.

B. Catch Basin Inlet Protection

- 1. Shall be a grate-mounted device consisting of a woven polypropylene fabric that meets or exceeds the following specifications.

a.	Properties	Requirement	Unit
b.	Grab Tensile Strength	ASTM D-4632	300 Lbs
c.	Grab Tensile Elongation	ASTM D-4632	20 Percent
d.	Puncture	ASTM D-4833	120 Lbs
e.	Mullen Burst	ASTM D-3786	800 Psi
f.	Trapezoid Tear	ASTM D-4533	120 Lbs
g.	UV Resistance	ASTM D-4355	80 Percent
h.	Apparent Opening Size	ASTM D-4751	40 US Sieve
i.	Flow Rate	ASTM D4491	40Gal/Min/Sq. Ft.
j.	Permittivity	ASTM D-4491	0.55 / sec

- 2. Product and Manufacturer: Siltsack® as manufactured by Geo-Synthetics, LLC, or approved equal.

C. Temporary Construction Dewatering Basin

- 1. Dewatering Bag: As specified on Contract Drawings.
- 2. Geotextile Filter Fabric: Temporary non-woven geotextile fabric as specified on Contract Drawings.
- 3. Impermeable Liner: As specified on Contract Drawings.
- 4. Riprap: As specified on Contract Drawings.

5. Precast Portable Concrete Barrier: As specified on Contract Drawings
- D. Temporary Construction Entrance
1. Crushed Stone: As specified on Contract Drawings
  2. Geotextile Fabric: As specified on Contract Drawings
- E. Long-Term Erosion Control Blanket
1. Shall be provide erosion protection and assist with vegetation establishment for up to 18-24 months for steep slope and shoreline applications. The erosion control blanket shall be 100% biodegradable and shall meet or exceed the following specifications.

	Properties	Requirement	Unit
a.	Tensile Strength – MD	ASTM D-6818	206.4 lbs/ft
b.	Elongation – MD	ASTM D-6818	15.3 Percent
c.	Tensile Strength – TD	ASTM D-6818	145.2 lbs/ft
d.	Elongation – TD	ASTM D-6818	12.9 Percent
e.	Biomass Improvement	ASTM D-7322	473 Percent
f.	Water Absorbency	ASTM D-1117	365 Percent
g.	Unvegetated Shear Stress		2.35 lbs/sq. ft.
h.	Unvegetated Velocity		10.0 ft./ sec.
  2. Product and Manufacturer: BioNet C125BN® as manufactured by Tensar International Corporation or approved equal.

Stakes used to secure erosion control blanket shall also be 100% biodegradable and be capable of maintaining holding power for over 18 months before completely biodegrading. Stakes shall be GreenStake® as manufactured by US Construction Fabrics, LLC, or approved equal.
- F. Dust Control
1. Water: Potable.
  2. Crushed Stone: MassDOT Section M.2.01.1.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Minimize environmental damage during construction. Prevent exposure of fuel, oil, lubricants, other fluids, and construction debris.
- B. Install erosion and sediment control measures prior to clearing, demolition or construction.
- C. Implement and maintain the erosion and sediment control notes on the Contract Drawings. Inform parties engaged on the construction site of the requirements and objectives of the plan.



- D. Construct erosion and sediment control measures in accordance with the Standard Specifications, the Massachusetts Erosion and Sedimentation Control Guidelines, and as indicated on the Contract Drawings.
  - 1. Attend a preconstruction meeting with the Engineer, to review permit conditions and construction methods.
  - 2. Construct erosion and sediment control measures in accordance with all project permits.
  - 3. Provide additional sedimentation and erosion controls if deemed necessary by the Engineer, Town, or State to address field conditions.
  - 4. Inspect site weekly and prior to any anticipated rain event. Ensure that erosion controls are properly maintained and functioning.
  - 5. Supply a 24-hour contact name and number as part of the erosion control plan.
- E. Install additional control measures, if deemed necessary by the regulatory agencies, other authorities having jurisdiction, or the Engineer.
- F. Protect catch basins as indicated on the Contract Drawings with grate-mounted catch basin inlet protection devices until disturbed areas are stabilized.
  - 1. Remove and dispose sediment from control structures.
- G. Control dust and wind erosion. Control dust to prevent a hazard to traffic on adjacent roadways. Dust control includes, but is not limited to, controlled application of water and/or crushed stone on exposed soils and roads.
  - 1. Dust control shall be provided daily or more often by the application of water. Care shall be taken to prevent over-watering, which may result in runoff or erosion. Care shall be taken to spray additional areas of exposed soil as necessary during windy periods. Only the minimum amount of water shall be used; no runoff erosion or damage shall result from this practice.
- H. Do not discharge sediment-laden pumped water directly into wetlands or watercourses where dewatering is necessary. Discharge into temporary dewatering basins prior to wetlands or watercourse. Utilize methods and devices as indicated on the Contract Drawings and as permitted by authorities having jurisdiction and appropriate regulations to minimize and retain suspended solids.
  - 1. If pumping operation results in turbidity problems, stop pumping until means of controlling turbidity are determined and implemented.
- I. Within 14 days of completing slope construction, stabilize slopes with vegetation to minimize exposure.
- J. Stockpiles
  - 1. Side Slopes: 2:1 maximum.
  - 2. Surround stockpiles by a sediment barrier.
  - 3. Stabilize stockpiles left bare for more than 15 days with temporary vegetation or mulch.
- K. Final Grading

1. If final grading is delayed for more than 14 days, and is not expected to resume within 21 days after land disturbances ceases, stabilize soils with temporary vegetation.

L. Planting Season for Temporary Vegetation

1. April 1 through November 15 for mixture consisting of 40% annual ryegrass and 60% perennial ryegrass; and November 15 to March 31 for winter ryegrass.

3.2 CONTROL SYSTEM

A. Biodegradable Fiber Roll

1. Fiber roll shall be installed by the Contractor as indicated on the Contract Drawings. A row of weighted fiber rolls shall also be installed around any soil stockpile areas established by the Contractor in paved areas.
2. Install fiber rolls and indicated on the Contract Drawings and by the manufacturer's written instructions.
3. Ends of adjacent fiber rolls shall be tightly butted or overlapped so that no opening exists for water to pass through. Fiber rolls shall be free of damage or defects when delivered to the shipper. No vehicles shall be driven over rolls.
4. Maintain compost filter soils as recommended by the manufacturer.

B. Catch Basin Inlet Protection

1. Install catch basin inlet protection in accordance with the manufacturer's written instructions and as indicated on the Contract Drawings.

C. Temporary Construction Dewatering Basin

1. Dewatering basin structures shall be installed by the Contractor as indicated in the Contract Drawings and in accordance with the Massachusetts Erosion and Sediment Control Guidelines.
2. Install dewatering bag so incoming water flows downhill through the filter without creating erosion. Place dewatering bag on 6" crushed stone layer placed atop impermeable liner.
3. Dispose of dewatering bag when it can no longer efficiently filter sediment or pass water at a reasonable rate.
4. Dewatering basin structures shall be completely removed and the installation area restored to pre-construction condition or better following completion of construction.

D. Long-Term Erosion Control Blanketing

1. Install as indicated and in accordance with the manufacturer's recommendations.

E. Dust Control

1. Apply water and crushed stone uniformly over the surface when dust becomes a nuisance or when directed by the Engineer.

3.3 MAINTENANCE

A. Control System

1. Erosion control measures shall be inspected and maintained as indicated on the Contract Drawings. In general, the control system shall be inspected immediately after each rainfall and daily during prolonged rainfall. At minimum, control system shall be inspected at least once every seven (7) calendar days. Make repairs immediately.
2. Remove and dispose of accumulated sediments when sediment reaches approximately one-third the height of the structure, as instructed by the control system manufacturer or when directed by the Engineer. All sediment must be disposed of legally offsite.
3. Remove and dispose concrete washout solids legally off-site following settlement in the basin.
4. Replace control system promptly if fabric or other materials decomposes or system becomes ineffective prior to the expected usable life.
5. Maintain or replace system until no longer necessary for the intended purpose.
6. Maintain catch basin inlet protection in accordance with the manufacturer's written instructions.

#### 3.4 REMOVAL

- A. Remove and dispose of control systems immediately after adjacent areas are satisfactory stabilized with vegetation, or as directed by the Engineer.

END OF SECTION

## SECTION 01 60 00 - PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Sections:
  - 1. Division 01 Section "References" for applicable industry standards for products specified.

#### 1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

#### 1.4 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
  2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Engineer will notify Contractor of acceptance or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
    - a. Form of Acceptance: As specified in Division 01 Section "Submittal Procedures."
    - b. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.
  - B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.
- 1.5 QUALITY ASSURANCE
- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
    1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
    2. If a dispute arises between contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.
- 1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING
- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
  - B. Delivery and Handling:
    1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
    2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
    3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
    4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
    5. Coordinate delivery of oversized objects with the Marshfield Police Department as indicated in Section 01 55 26 "Traffic Control."
  - C. Storage:
    1. Store products to allow for inspection of quantity or counting of units.

2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

#### 1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
  3. Refer to Divisions 2 through 16. Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

### PART 2 - PRODUCTS

#### 2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
  1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Engineer will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain acceptance for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Engineer's sample", provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 1 Section "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

## 2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of engineers and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION



## SECTION 01 70 00 - EXECUTION REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout
  - 2. Construction of the Work
  - 3. Progress cleaning
  - 4. Protection of constructed features
  - 5. Correction of the Work
- B. Related Sections:
  - 1. Division 01 Section "Project Management and Coordination"
  - 2. Division 01 Section "Submittal Procedures"
  - 3. Division 01 Section "Closeout Procedures"

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Engineer for the visual and functional performance of in-place materials.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site Work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
    - a. Description of the work
    - b. List of detrimental conditions, including substrates
    - c. List of unacceptable installation tolerances
    - d. Recommended corrections
  - 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 3. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Contract Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Engineer according to requirements in Division 01 Section "Project Management and Coordination."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Contract Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- C. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and

duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

### 3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### 3.5 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a. Utilize containers intended for holding waste materials of type to be stored.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate. Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

- D. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### 3.6 PROTECTION OF CONSTRUCTED FEATURES

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

### 3.7 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
  - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

END OF SECTION

## SECTION 01 77 00 - CLOSEOUT PROCEDURES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures
  - 2. Final completion procedures
  - 3. Final cleaning
- B. Related Sections:
  - 1. Division 01 Section "Execution Requirements"
  - 2. Division 01 Section "Project Record Documents"
  - 3. Divisions 02 through 35

#### 1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with a request for additional time to produce and transmit.
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Prepare and submit Project Record Documents, operation and maintenance manuals (OMM), final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
    - a. Operation and maintenance manuals for each manufactured mechanical and electrical product shall be compiled in an organized binder with accompanying completed Equipment Record Forms inserted before each associated OMM.

6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
  7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  8. Complete startup testing of systems.
  9. Submit test/adjust/balance records.
  10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  11. Advise Owner of status of coordination with public utility owners.
  12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  13. Complete final cleaning requirements, including touchup painting.
  14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

#### 1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
  2. Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit pest-control final inspection report and warranty.
  5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

#### 1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
  1. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
  2. Include the following information at the top of each page:
    - a. Project name.
    - b. Date.
    - c. Name of Engineer.
    - d. Name of Contractor.
    - e. Page number.
  3. Submit list of incomplete items in the following format:
    - a. PDF electronic file.
    - b. Electronic copy of product schedule or list, unless otherwise indicated.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

### PART 3 - EXECUTION

#### 3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Comply with manufacturer's written instructions.
  1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

- a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove spills, stains, and other foreign deposits.
  - c. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - d. Remove labels that are not permanent.
- C. Construction Waste Disposal: Dispose of all waste material legally.

END OF SECTION

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## SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Maintenance manuals for the care and maintenance of products, materials, finishes, systems, and equipment.
5. Test and inspection reports generated during startup and testing on standard manufacturer's forms.

- B. Related Sections include the following:

1. Division 01 Section "Submittal Procedures."
2. Division 01 Section "Closeout Procedures."
3. Division 01 Section "Project Record Documents."
4. Divisions 02 through 35

#### 1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

#### 1.4 SUBMITTALS

- A. Initial Submittal: Submit two draft paper copies, with accompanying PDF format facsimile digital files, of each manual at least fifteen days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Engineer will return one copy of draft and mark whether general scope and content of manual are acceptable.

- B. Final Submittal: Submit one paper copy, with accompanying PDF format facsimile digital files, of each manual in final form at least fifteen days before final inspection. Engineer will return copy with comments within fifteen days after final inspection.
  - 1. Correct or modify each manual to comply with Engineer's comments. Submit three copies of each corrected manual within fifteen days of receipt of Engineer's comments.

## 1.5 COORDINATION

- A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

## PART 2 - PRODUCTS

### 2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
  - 1. List of documents.
  - 2. List of systems.
  - 3. List of equipment.
  - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with the same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

### 2.2 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
  - 1. Title page.

2. Table of contents.
  3. Manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
1. Subject matter included in manual.
  2. Name and address of Project.
  3. Name and address of Owner.
  4. Date of submittal.
  5. Name, address, and telephone number of Contractor.
  6. Name and address of Engineer.
  7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
    - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
  2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch, 20-lb/sq. ft. white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
  - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
  - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

## 2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
  1. Type of emergency.
  2. Emergency instructions.
  3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
  1. Fire.
  2. Flood.
  3. Power failure.
  4. System, subsystem, or equipment failure.
  5. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
  1. Instructions on stopping.
  2. Shutdown instructions for each type of emergency.
  3. Operating instructions for conditions outside normal operating limits.
  4. Required sequences for electric or electronic systems.

5. Special operating instructions and procedures.

## 2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

- B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

- C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.

2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

## 2.5 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
1. Product name and model number.
  2. Manufacturer's name.
  3. Color, pattern, and texture.
  4. Material and chemical composition.
  5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
  2. Types of cleaning agents to be used and methods of cleaning.

3. List of cleaning agents and methods of cleaning detrimental to product.
  4. Schedule for routine cleaning and maintenance.
  5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

## 2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in the manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
1. Standard printed maintenance instructions and bulletins.
  2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
  3. Identification and nomenclature of parts and components.
  4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
  2. Troubleshooting guide.
  3. Precautions against improper maintenance.
  4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  5. Aligning, adjusting, and checking instructions.

6. Demonstration and training videotape, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
  2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent if they have been agreed to in writing by the Owner prior to final completion.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

### PART 3 - EXECUTION

#### 3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
  2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.



- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
1. Do not use original Project Record Documents as part of operation and maintenance manuals.
  2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."
- G. Comply with Division 1 Section "Closeout Procedures" for the schedule for submitting operation and maintenance documentation.

END OF SECTION

## SECTION 01740 – WARRANTIES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section specified general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.
  - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
  - 2. General closeout requirements are included in section 01 77 00 "Closeout Procedures."
  - 3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions 02 through 49.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

#### 1.3 DEFINITIONS

- A. Standard Products Warranties: Preprinted written warranties published by individual manufacturers for particular products specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties: Written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

#### 1.4 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of the warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor

shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented the entities required to countersign such commitments are willing to do so.

## 1.5 SUBMITTALS

- A. Submit written warranties to the Engineer prior to the date certified for Substantial Completion. If the Certificate of Substantial Completion designated a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Engineer.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of that designated portion of the Work

- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.

1. Refer to individual Sections of Divisions 02 through 49 for specific content requirements, and particular requirements for submittal of special warranties.

- C. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name, and the name of the Contractor.
3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.6 FORM OF GUARANTEE/WARRANTIES

- A. The General Contractor will furnish to Engineer the foregoing documents in the following manner:
  - 1. All guarantees/warranties shall reference the project name and number as indicated in the Contract Documents.
  - 2. All guarantees/warranties supplied by subcontractors or manufacturers shall be countersigned by the General Contractor.
- B. All work shall be covered by the standard one (1) year guarantee as set forth in the General Conditions. The Contractor shall visit the project site at 11 months into the guarantee period to determine the scope of any required guarantee work. The Contractor shall contact the Owner prior to this visit so that the Owner may attend.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

## SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. As-Built Survey
  - 2. Record Drawings
  - 3. Record Specifications
  - 4. Record Product Data
  - 5. Miscellaneous project record documentation
- B. Related Sections:
  - 1. Division 01 Section "Execution Requirements"
  - 2. Division 01 Section "Closeout Procedures"
  - 3. Divisions 02 through 35 Sections for specific requirements for project record documents of the Work in those Sections.

#### 1.3 SUBMITTALS

- A. As-Built Survey
  - 1. AutoCAD files of completed field topographic/bathymetric survey and locations of call constructed features.
- B. Record Drawings; for the Town's ownership, records and future use:
  - 1. Number of Copies: Submit copies of Record Drawings as follows:
    - a. Initial Submittal:
      - 1) Submit record digital data files and one set of plots.
      - 2) Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
    - b. Final Submittal:
      - 1) Submit PDF electronic files of scanned record prints and three sets of prints.

- 2) Print each drawing, whether or not changes and additional information were recorded.
- C. Record Product Data: Submit one paper copy and annotated PDF electronic files and directories of each submittal.
1. Where record Product Data are required as part of operation and maintenance manuals (OMM), submit duplicate marked-up Product Data and completed Equipment Record Form for manufactured mechanical and electrical components as accompanying documents with each OMM.
- D. Document Compilation Binder:
1. Compile all documents as hard copy and digital formats into folder sections corresponding to construction contract directive and each Division Section for all materials and products furnished and installed as part of the Work. These shall include, at a minimum, the following:
    - a. Request for Information responses
    - b. Issued Work Change Directives
    - c. Executed Field Orders
    - d. Executed Change Orders
    - e. Fully signed Payment Applications
    - f. Accepted submittals with accompanying product/material data
    - g. Material Certificates
    - h. Field and laboratory test reports
    - i. Testing agency field inspection records
    - j. Delegated design professional design documents and field inspection records
    - k. Equipment Record Forms
    - l. Operation and Maintenance Manuals
    - m. Warranty documentation
    - n. Testing and Commissioning records
    - o. Training documentation

## PART 2 - PRODUCTS

### 2.1 AS-BUILT SURVEY

- A. The Contractor shall prepare as-built conditions survey drawings to the Engineer for review at the time of Substantial Completion, prepared at a scale of 1" = 20'.
1. Detail of mapping shall include, but not be limited to, one (1) foot contour intervals, locations and elevations of all constructed features and existing features protected, annotations of existing and constructed features such as guardrails, signs, drainage structures

including access ports, rims, inverts, infiltration beds, locations and elevations of foundations, underdrains, underdrain outlets, and buried utilities, conduits and vaults.

2. Survey mapping data shall be collected and prepared on drawings by a licensed surveyor.
- B. Upon addressing the Engineer's comments to the draft copy, the Contractor shall then resubmit a final copy of the As-built Conditions drawings to the Engineer. An original certified fixed-lined mylar with three (3) paper copies, and USB media files in AutoCAD 2019 format with associated published files in PDF format.
1. As-Built Conditions files shall be furnished to the Engineer within thirty days of the date of receipt of Engineer's comments to the draft copy.

## 2.2 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.
1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Locations and depths of underground utilities.
    - d. Revisions to routing of piping and conduits.
    - e. Revisions to electrical circuitry.
    - f. Actual equipment locations.
    - g. Duct size and routing.
    - h. Locations of concealed internal utilities.
    - i. Changes made following Engineer's written orders.
    - j. Details not on the original Contract Drawings.
    - k. Field records for variable and concealed conditions.
    - l. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Engineer. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
  2. Format: AutoCAD 2019 DWG files
  3. Format: Annotated PDF electronic files
  4. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
  5. Refer instances of uncertainty to Engineer for resolution.
  6. Engineer will furnish Contractor one set of AutoCAD drawing files of the Contract Drawings for use in recording information.
    - a. Engineer makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.
    - b. Coordinate with Engineer for identification of object layer nomenclature and file XREF organization for markups and revisions to each drawing.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  2. Format: Annotated PDF electronic file.
  3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
  4. Identification: As follows:
    - a. Project name
    - b. Date
    - c. Designation "PROJECT RECORD DRAWINGS"
    - d. Name of Engineer



- e. Name of Contractor

## 2.3 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

## 2.4 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  - 3. Note related Change Orders and record Drawings where applicable.
- B. Format: Submit record Product Data as scanned PDF electronic file(s) of marked up paper copy of Product Data.
  - 1. Include record Product Data directory organized by specification section number and title, electronically linked to each item of record Product Data.

## 2.5 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file and one paper copy.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

## PART 3 - EXECUTION

### 3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean,

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dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Engineer's reference during normal working hours.

END OF SECTION

**DIVISION 02 – EXISTING CONDITIONS**

## SECTION 02 41 13 - SELECTIVE DEMOLITION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Selective demolition and removal of site elements.
- B. Related Sections include the following:
  - 1. Section 31 10 00 "Site Clearing" for site clearing and removal of above- and below-grade improvements.

#### 1.3 DEFINITIONS

- A. Remove and dispose: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.
- C. Remove and Reset: Detach items from existing construction and reset them in place upon completion of the project.

#### 1.4 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that specializes in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

#### 1.5 PROJECT CONDITIONS

- A. Notify Engineer of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- B. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Engineer and Owner. Owner will remove hazardous materials under a separate contract.
- C. Storage or sale of removed items or materials on-site is not permitted.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

3.2 UTILITY SERVICES

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
  - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 2. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  - 3. Maintain adequate ventilation when using cutting torches.
  - 4. Remove decayed or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

5. Dispose of demolished items and materials promptly and legally.

B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition.

### 3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn demolished materials.

### 3.6 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

**DIVISION 03 – CONCRETE**

## SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
  - 1. Cast-in place concrete, including formwork, reinforcement, concrete materials, mix design requirements, placement procedures, and finishes.
- B. Related Sections:
  - 1. Section 33 37 00 – Flow Control Structures
  - 2. Section 35 10 70 – Control of Water

#### 1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Qualification Data: For Testing Agency and Installer.
- C. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Submit copies of test reports by independent test labs conforming to ASTM C 1077 showing that the mixture has been successfully tested to produce concrete with the properties specified.
  - 2. Do not add water to concrete during delivery, at Project site, or during placement, unless included in the mix design and approved by Engineer.
    - a. Procedure for adding and calculating amount of water to be added at the Project site shall be submitted with the mix design if water is to be added at the Project site.
- D. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.



1. Do not scale dimensions from structural drawings to determine lengths of reinforcing bars.
  - E. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
    1. Location of construction joints is subject to approval of the Engineer.
  - F. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
    1. Cementitious materials and aggregates.
    2. Form materials and form release agents.
    3. Steel reinforcement and reinforcement accessories.
    4. Admixtures.
    5. Waterstops.
    6. Curing materials.
    7. Bonding agents.
    8. Adhesives.
    9. Epoxy joint filler.
    10. Joint-filler strips.
  - G. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
  - H. cating compliance with requirements:
    1. Aggregates.
  - I. Field quality-control reports.
- 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
  1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
  1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
  2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency

laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
  - 1. ACI 301, "Specification for Structural Concrete."
  - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
  - 3. ACI 305R, "Hot Weather Concreting"
  - 4. ACI 306.1, "Standard Specifications for Cold Weather Concreting"
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- G. Pre-installation Conference: Conduct conference at Project site with Owner and Engineer.
  - 1. Before submitting design mixes, review concrete mix design and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
    - a. Contractor's superintendent.
    - b. Concrete subcontractor.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle steel reinforcement to prevent bending and damage. Protect from contaminants such as grease, oil, and dirt. Ensure materials can be accurately identified after bundles are broken and tags are removed.
  - 1. Do not allow reinforcement to be stored directly on the ground. Support reinforcing bars with sections of dimensional lumber.

## PART 2 - PRODUCTS

### 2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
  - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

2. Comply with local regulations controlling use of volatile organic compounds (VOCs).
3. Available Products: GCC-100 FRW water based or approved equivalent.

D. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of the exposed concrete surface and have an integral water barrier plates.

## 2.2 STEEL REINFORCEMENT

A. Epoxy-Coated Reinforcing Bars: ASTM A 775 / A 775M and as follows:

1. Steel Reinforcement: ASTM A 615/A 615M, Grade 60, deformed.

## 2.3 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than cast-in-place concrete, and as follows:

1. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer coated wire bar supports.

B. Epoxy-Coated Joint Dowel Bars: ASTM A 775/A 775M, Grade 60 (Grade 420). Cut bars true to length with ends square and free of burrs.

## 2.4 CONCRETE MATERIALS

A. Acceptable materials include the following:

1. Portland Cement: ASTM C 150, Type I/II.
2. Blended Hydraulic Cement: ASTM C 595M, Type IS, Portland blast-furnace slag cement.
3. Blended Hydraulic Cement: ASTM C 595M, Type IP, Portland-pozzolan cement.
4. Silica Fume: ASTM C 1240, amorphous silica.

B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:

1. Class: Severe weathering region, but not less than 4S.
2. Nominal Maximum Aggregate Size: 3/4 inch.
3. Combined Aggregate Gradation: Well graded from coarsest to finest with not more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve and on No. 50 sieve, and less than 8 percent may be retained on sieves finer than No. 50.
4. Obtain all aggregates from one source.

C. Water: Potable and complying with ASTM C 94.

## 2.5 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

## 2.6 WATERSTOPS

- A. Flexible PVC Waterstops: CE CRD-C 572, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.
  - 1. Dimensions: 4 inches by 3/16 inch thick nontapered.
- B. Hydrophilic Waterstops: Manufactured rectangular or trapezoidal strip, sodium bentonite or other hydrophilic material for adhesive bonding to existing concrete or stone masonry or for use as directed by the Engineer.

## 2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

## 2.8 RELATED MATERIALS

- A. Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:
  - 1. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
    - a. Bonding agents shall be used at construction joints.
    - b. Bonding agents shall not be used at contraction joints.

## 2.9 CONCRETE MIXES

- A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
  - 1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.
- C. Concrete end block cutoff, pile cap and slab-on-grade for dry hydrant installation, and other structural elements shall be normal-weight concrete mix, proportioned to meet the following requirements:
  - 1. Compressive Strength (28 Days): 5,000 psi.
  - 2. Maximum Slump: 4 inches.
    - a. Slump tolerances shall comply with ACI 117.
    - b. Where an ASTM Type F or G admixture is used, the slump after the addition of the admixture shall be no greater than 8 inches.
  - 3. Chloride Ion Penetration: Concrete shall be proportioned to be below 750 coulombs when tested in accordance with ASTM C1202 at 28 days.
- D. Cementitious Materials: Proportion the mix design to provide a minimum of 710 lbs of cementitious material per C.Y. of concrete.
  - 1. Proportion the mix design to provide a minimum of 505 lbs of Portland Cement per C.Y. of concrete.
- E. Maximum Water-Cementitious Materials Ratio: 0.40
- F. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus 1 or minus 1.5 percent, unless otherwise indicated:
  - 1. Air Content: 6 percent for 3/4-inch- nominal maximum aggregate size.
- G. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

## 2.10 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## 2.11 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.

## PART 3 - EXECUTION

### 3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
  - 1. Gradual: Class B, 1/4 inch.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
  - 1. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
  - 1. 1" x 1" chamfer strips shall be used throughout.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### 3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 1. Install anchor bolts, accurately located, to elevations required.

### 3.3 REMOVING AND REUSING FORMS

- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:
  - 1. At least 50 percent of 28-day design compressive strength.
  - 2. Determine compressive strength of in-place concrete by testing representative field- or laboratory-cured test specimens according to ACI 301.
- C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.

### 3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Epoxy Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963 / D 3963M.

### 3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Contraction Joints:
  - 1. Form contraction joints by terminating the placement of concrete at a bulkhead or against formwork.
  - 2. Steel Reinforcement shall not pass through contraction joints.
  - 3. Install dowel sleeves and dowels or dowel bar and support assemblies at contraction joints.
    - a. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.
  - 4. Expansion joints shall have a hydrophilic waterstop installed
- C. Expansion Joints:
  - 1. Form contraction joints by terminating the placement of concrete at a bulkhead or against formwork.
  - 2. Steel Reinforcement shall not pass through expansion joints.
  - 3. Install dowel sleeves and dowels or dowel bar and support assemblies at expansion joints.
    - a. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.
  - 4. Install ½" expansion joint filler material over entire contact surface of concrete at expansion joints.
  - 5. Expansion joints shall have a hydrophilic waterstop installed
    - a. Profile: Ribbed with center bulb.
- D. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
  - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
  - 2. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
  - 3. Install hydrophilic waterstop at all construction joints
    - a. Profile: Ribbed without center bulb.

### 3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement, unless included in the mix design and approved by Engineer.



1. Do not add water to concrete after adding high-range water-reducing admixtures to mix.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.
- D. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.
- E. Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.
  1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
- F. Deposit and consolidate concrete for slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  2. Maintain reinforcement in position on chairs during concrete placement.
  3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  4. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- G. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
  2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
- H. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:
  1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature,

provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

### 3.7 FINISHING FORMED SURFACES

- A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch in height.
- B. Related Unformed Surfaces: Top of pile cap, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### 3.8 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

### 3.9 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:
  1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12

inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

### 3.10 CONCRETE SURFACE REPAIRS

- A. Patching Mortar: Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- B. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding

- with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.
- C. Repairing Unformed Surfaces: Test unformed surfaces, such as slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  2. After concrete has cured at least 14 days, correct high areas by grinding.
  3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  4. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of  $\frac{1}{4}$  inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least  $\frac{3}{4}$  inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
  6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- D. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.
- E. Repair materials and installation not specified above may be used, subject to Engineer's approval.

### 3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor shall engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix exceeding 2 cu. yd., but less than 10 cu. yd., plus one set for each additional 10 cu. yd. or fraction thereof.
    - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
  3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
  4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
  5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of five standard cylinder specimens for each composite sample.
    - a. Cast and field cure one set of five standard cylinder specimens for each composite sample.
  6. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days.
    - a. Test two field-cured specimens at 7 days and two at 28 days. Keep one specimen in reserve.
    - b. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.
- C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- E. Test results shall be reported in writing to the Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.
- F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
- G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not

been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Engineer.

END OF SECTION

**DIVISION 04 – MASONRY**

## SECTION 04 43 00 – STONE MASONRY

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section specifies the following:
  - 1. Repairing and reconstructing existing stone masonry retaining walls, Constructing new stone masonry retaining walls, laid in dry or mortared joints.
  - 2. Preliminary cleaning, including removing plant growth adjacent to and within stone masonry structures.
- B. Related Sections include the following:
  - 1. Section 31 20 00 "Earth Moving" for excavation and backfill.

#### 1.2 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed stone wall systems similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Stone masonry repairs shall incorporate stones location within immediately adjacent channel sections and be supplemented as required by imported stone matching the shape, texture, colors and patina of existing stones, be constructed with recessed mortar joints except where existing fully mortared joints exist (as determined from Pre-Construction Conference with the Engineer).
- B. Pre-Construction Conference: The Contractor shall conduct a preconstruction conference at the project site with the Engineer to review existing site conditions.
- C. Prevent water from entering the work area by utilizing cofferdams, sandbags, or other measures.

#### 1.4 SUBMITTALS

- A. Photographs. Submit photographs which indicate proposed limits of stone masonry reconstruction, and shape and size of existing stone structures.
- B. Shop Drawings:
  - 1. Work plan indication the general sequence of wall construction and repairs and intended methods and procedures.
  - 2. Replacement and salvaged stone, showing relation of existing to new units.
    - a. Provide locations within the site where the salvaged stone will be obtained.
    - b. Source of replacement stone, including photos of existing walls and photos of replacement stones for comparison and approval.



3. Mortar Mix Design and all associated products required to produce the mix.
- C. Mockups: Prepare mockups of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
1. Stone Repair: Prepare sample areas for each type of stone indicated to have repair work performed. If not otherwise indicated, size each mockup not smaller than approximately 48 inches in least dimension. Erect sample areas in existing structures unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:
    - a. Replacement stone: Incorporated at replacement stone into at least 20% of the mockup surface area.
    - b. Mortar: Incorporated into at least 20% of the mockup.
  2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
  3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- D. Qualification Data: For restoration specialists including field supervisors and restoration workers.

#### 1.5 QUALITY ASSURANCE

- A. Restoration Specialist Qualifications: Engage an experienced stone restoration firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry or new stone masonry is not sufficient experience for stone restoration work.
1. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that stone restoration and cleaning work is in progress. Supervisors shall not be changed during Project except for causes beyond control of restoration specialist firm.
  2. Restoration Worker Qualifications: Persons who are experienced and specialize in restoration work of types they will be performing.
- B. Restoration Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of restoration work including protection of surrounding materials and Project site.
- C. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used, protection of surrounding materials, and control of runoff during operations.
- D. Cleaning and Repair Appearance Standard: Cleaned and restored areas are to have an integral appearance with existing as viewed from 20 feet away by Engineer. Perform additional general cleaning, and spot cleaning of small areas that are noticeably different, so that surface blends smoothly into surrounding areas.

- E. Pre-Construction Conference: Conduct conference at the site.
  - 1. Review methods and procedures related to stone restoration and cleaning including, but not limited to, the following:
    - a. Construction Schedule: Verify availability of materials, Restoration Specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
    - b. Materials, material application, sequencing, tolerances, and required clearances.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver replacement stone units to Project site strapped together in suitable packs or pallets or in heavy-duty crates.

## 1.7 PROJECT CONDITIONS

- A. Weather Limitations for Stone Placement: Proceed with installation only when existing and forecasted weather conditions permit stone restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.
  - 1. For work requiring mortar, comply with the following:
    - a. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace stone masonry damaged by frost or freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
      - 1) Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
    - b. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
- B. Protection of Stone Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed stone masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
- C. Stain Prevention: Immediately remove mortar, concrete and soil to prevent them from staining the face of stone masonry.

## PART 2 - PRODUCTS

### 2.1 STONE MATERIALS

- A. Stone: Provide replacement stone of variety, color, texture, grain, veining, finish, size, and shape to match existing stone and is acceptable to the Engineer.
  - 1. Provide stone that is hard, durable, resistant to weathering action, reasonably fine grained, and free from structural defects that would impair its strength or durability. Capable of being cut to lines and surfaces, either plain or curved, as may be required.

2. Stone segments repaired with cement or other materials will be rejected.
  3. For existing stone that exhibits a range of colors, texture, grain, veining, finishes, sizes, or shapes, provide stone that proportionally matches that range rather than stone that matches an individual color, texture, grain, veining, finish, size, or shape within that range.
- B. Cutting New Stone: Avoid cutting stone to the greatest extent possible. Only cut stone when it is absolutely necessary to complete the work.
- C. Salvaged Stone: Obtain salvaged stone from the site.
1. Clean off residual soil, debris, and mortar if present.
- 2.2 MORTAR
- A. Furnish the following as needed for production mortar where needed for the restoration of existing mortared stone masonry
1. Portland cement and potable water. Unless the engineer allows an alternate, use either type I, IS, I(SM), or IP portland cement.
  2. Masonry cement conforming to ASTM C 91, type S.
  3. Hydrated lime conforming to ASTM C 207.
  4. Aggregate: ASTM C 144 and as follows:
    - a. For pointing mortar, use aggregate graded with 100 percent passing No. 16 sieve.
  5. Sand.
    - a. Use sand uniformly graded from coarse to fine conforming to the following gradation requirements:
- |                                 |            |
|---------------------------------|------------|
| SIEVE PERCENT PASSING BY WEIGHT |            |
| No. 8                           | 95-100     |
| No. 100                         | 25 maximum |
| No. 200                         | 10 maximum |
- B. Water: Potable.
- C. Use mortar for laying the stone and pointing composed of 3 parts sand for mortar and one part of any one of the following materials, by volume: masonry cement, a mixture of 50 percent portland cement and 50 percent masonry cement, or a mixture of 50 percent portland cement and 50 percent hydrated lime.
- D. Use a machine to mix the mortar unless the engineer allows otherwise. Prepare machine-mixed mortar in an engineer-approved mixer and mix not less than 1 1/2 minutes. If preparing hand-mixed mortar, mix the sand and cement thoroughly in a clean, tight mortar box until uniform in color, then add clean water in a quantity that forms a stiff paste. Do not use mortar mixed longer than 30 minutes or that develops its initial set. .
- E. Pigments: Provide pigment as needed to match the color of the existing mortar.
1. Use only pigments with a record of satisfactory performance in stone masonry mortar.

### 2.3 CLEANING MATERIALS

- A. Water: Potable.
- B. Stiff bristle brushes and brooms.

### 2.4 AGGREGATES

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.
- B. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.
- C. Fine Aggregate: ASTM D 1073, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
- D. Mineral Filler: ASTM D 242, rock or slag dust, hydraulic cement, or other inert material.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Repair, reconstruct or construct stone masonry structures in the location and to the dimensions indicated or as directed.

### 3.2 PREPARATION

- A. Check adjacent areas, and stream bed and downstream locations for any stones missing from the walls and structures. Inform Engineer of shaped stones that appear to have been displaced from existing stone masonry walls and structures.
  - 1. Upon approval of the Engineer, remove stones and check for size and fit in existing structures. Stones that will not be used must be returned to their original location.

### 3.3 STONE MASONRY STRUCTURE REMOVAL AND RECONSTRUCTION

- A. Remove stone masonry from the walls requiring restoration and reconstruction in a top down manner. Remove stone to the extent necessary to reconstruct or restore the wall.
  - 1. Salvage stones from structure and protect from damage during reconstruction.
  - 2. Do not remove stones from the site.
- B. Support and protect remaining stonework that surrounds or is adjacent to area of removed stone. Maintain adjoining construction in an undamaged condition.
- C. Notify Engineer of unforeseen detrimental conditions including voids, cracks, bulges, and loose units.
- D. Remove in an undamaged condition whole stone units.

1. Remove loose particles and soil from stone by cleaning with hand chisels, brushed, and water.
  2. Store stone for reuse. Store off ground, on skids, and protected from weather.
  3. Deliver cleaned stone not required for reuse to Owner.
- E. Inspect wall footings with Engineer when expose, prior to proceeding with wall construction.
1. Engineer to approve of wall footings prior to wall reconstruction.
- F. Clean stones before resetting in stone masonry structure. Reset stones to previous locations and in appropriate order.
1. Provide new stones where existing stones are missing. Replace damaged stone with other removed stone and salvaged stone in good quality, wherever possible, or with new replacement stone matching existing stone, including size.
- G. Lay stone to line and in courses to match existing. Use large, selected stones for bottom or foundation courses.
- 3.4 CLEANING
- A. Water Wash: Use cold potable water, brushes and brooms to remove soil and debris.
- 3.5 ADJUSTING AND CLEANING
- A. Remove damaged stones, defective joints, and stone that does not match approved samples.

END OF SECTION

**DIVISION 06 – WOODS, PLASTIC, COMPOSITES**

## SECTION 06 13 50 – TIMBER BRIDGE STRUCTURES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes, but is not limited to, the work required for removal and disposal of existing timber bridge structures, and design and construction of a replacement timber pedestrian bridge with timber railings.
- B. Bridge superstructures include, but are not limited to, the following:
  - 1. Timber framing
  - 2. Wood decking, handrails, pile caps, and abutments
  - 3. Miscellaneous steel hardware and fasteners
- C. Bridge substructures include, but are not limited to, the following:
  - 1. Connections to concrete piers and stone masonry abutments.
  - 2. Concrete Abutments

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: The contractor is responsible for the design of the timber bridge structures, including comprehensive engineering analysis by a qualified professional engineer licensed in the Commonwealth of Massachusetts, using performance requirements and design criteria indicated.
- B. Structural Performance: Provide timber pedestrian bridge design with framing and connections capable of withstanding, at a minimum, the following design loads within limits and under conditions indicated. The contractor's design engineer shall verify and revise, as appropriate, the above loads per current code requirements.
  - 1. Bridge Design Loads.
    - a. Pedestrian Live Load: 90 pounds per square foot.
    - b. Wind Load: 50 pounds per square foot.
  - 2. Railings Design Loads:
    - a. Uniform load of 50 lbf / ft. applied in any direction.
    - b. Concentrated load of 200 lbf applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  - 3. Other Loadings and Design Considerations:

- a. Hydraulic loadings during normal, storm and flood flows, as appropriate.
  - b. Debris dam and ice forces, as appropriate.
  - c. Configuration/Measures to exclude equipment from timber bridge structure.
  - d. Timber bridge configuration shall match the conceptual layout and configuration of railings depicted on the Contract Drawings.
  - e. Bridge deck shall match grade to stone dust approaches to be constructed at both ends of bridges.
  - f. Bridge detailing shall allow for proper drainage of water off the deck and structure.
- C. Railing and Handrails: Provide railings and handrails which comply with the following:
1. Massachusetts State Building Code (latest edition)
  2. International Building Code (latest edition)
  3. American Association of State and Highway Transportation Officials (AASHTO) Guide Specifications for Design of Pedestrian Bridges, August 1997
  4. Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities

#### 1.4 SUBMITTALS

- A. Delegated-Design Submittal: For timber pedestrian bridge structures indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- B. For Information Only.
1. Material Certificates: Certify all materials utilized for bridges, railings and approach ramps meet respective specification criteria.
  2. Provide comprehensive engineering analysis and delegated design of the bridge superstructure and substructure, including plans, sections and details, analysis data and calculations signed and sealed by a professional engineer registered in the State of Massachusetts certifying compliance with applicable design codes and ADA requirements.

#### 1.5 QUALITY ASSURANCE

- A. Design Requirements for Timber Pedestrian Bridge
1. American Association of Highway and Transportation Officials (AASHTO), Guide Specifications for Design of Pedestrian Bridges, August 1997.
  2. AASHTO LRFD Bridge Design Specifications, 9<sup>th</sup> Edition
- B. Source Limitations for Engineered Wood Products: Obtain each type of engineered wood product through one source from a single manufacturer.
- C. Pre-installation Conference: Conduct conference at Project site with Engineer.
- D. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).



## 1.6 PROJECT CONDITIONS

- A. Accuracy of line and grade of the Work is the Contractor's responsibility. Immediately report to the Engineer discrepancies or errors found in previous installations, surveys, plans, or specification, for correction or interpretation prior to proceeding with the Work.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Schedule delivery of lumber and timber to avoid extended on-site storage and to avoid delaying the Work.
- B. Store materials under cover and protected from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings. Stack lumber with surfaces that are to be exposed in the final work protected from exposure to sunlight.

## PART 2 - PRODUCTS

### 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency on end or back of each piece.
  - 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
  - 3. Provide dressed lumber, S4S, unless otherwise indicated.
  - 4. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2 inch nominal thickness or less, unless otherwise indicated.

### 2.2 TIMBER

- A. For timber of 5-inch nominal size and thicker, provide material complying with the following requirements:
  - 1. Species and Grade: Douglas fir-larch, Douglas fir-larch (north), or Douglas fir-south; No. 1 grade; NLGA, WCLIB, or WWPA.
  - 2. Species and Grade: Eastern hemlock, Eastern hemlock-tamarack, or Eastern hemlock-tamarack (north); No. 1 grade; NELMA or NLGA.
  - 3. Species and Grade: Hem-fir or Hem-fir (north), No. 1 grade; NLGA, WCLIB, or WWPA.
  - 4. Species and Grade: Southern pine, No. 1 grade; SPIB.
  - 5. Additional Restriction: All timbers shall be free of heart centers.
  - 6. Minimum Stress Rating: 1,300 psi.
  - 7. Marked: Grade marked after treatment by an agency certified by the American Lumber Standard Committee (ALSC).

## 2.3 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Application: Treat all wood framing and finish members, unless otherwise indicated
- B. Preservative Treatment by Pressure Process: AWWA C2 (lumber).
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and one of the following:
    - a. Ammoniacal, or amine, copper quat (ACQ).
- C. Kiln-dry material after treatment to a maximum moisture content of 25 percent for lumber. Do not use material that is warped or does not comply with requirements for untreated material.
- D. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

## 2.4 TIMBER CONNECTORS

- A. General: Unless otherwise indicated, fabricate from the following materials:
  - 1. Structural-steel shapes, plates, and flat bars complying with ASTM A 36 galvanized in accordance with ASTM A 153.
  - 2. Round steel bars complying with ASTM A 575, Grade M 1020 galvanized in accordance with ASTM A 153.

## 2.5 FASTENERS FOR BRIDGE STRUCTURES

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
  - 1. Provide fasteners with hot-dip zinc coating complying with ASTM A 153 or ASTM A 123.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: CABO NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- G. Plates and Hangers: ASTM A36 or ASTM A653 as applicable, galvanized in accordance with ASTM A153.

## 2.6 FASTENERS FOR RAILINGS

- A. Carriage Bolts: ASTM A325, Type 3, 120 ksi minimum tensile strength and 92 ksi minimum yield strength. Mark bolts with symbol "325". Corrosion resistant.
  - 1. Manufactured according to ANSI B18.5.

2. Threads: ANSI B1.1 for Class 2A.

## 2.7 CONCRETE

- A. Refer to Section 03 30 00 "Cast-in-Place Concrete".

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Protect existing site features to remain from damage during construction.
  1. Restore damaged features to their original condition, as acceptable to Owner.

### 3.2 PREPARATION

- A. Establish, protect and maintain benchmarks and survey control points from disturbance during construction.
  1. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each item. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

### 3.3 EXAMINATION

- A. Existing Conditions: The location of existing conditions and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the location of existing conditions affecting the Work.
- B. Examine substrates in areas to receive wood framing and precast concrete curbing, for compliance with requirements, installation tolerances, and other conditions affecting installation of structures.
  1. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.4 FRAMING INSTALLATION

- A. General: Erect lumber and timber true and plumb, with uniform, close-fitting joints. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.
- B. Install framing members with crown edge up and provide not less than 4 inches of bearing on supports. Provide continuous members, unless otherwise indicated; tie together over supports if not continuous.
- C. Apply field treatment complying with AWPAC M4 to cut surfaces of preservative-treated lumber.
- D. Rail Elements. Erect elements to produce a smooth continuous rail.

### 3.5 REPAIRS

- A. Clean and seal damaged or cut timbers with field applied wood preservative.

1. Treat field cuts, holes and other penetrations in accordance with AWWA M4.

### 3.6 CLEANING

- A. Site: Maintain Project site free of waste materials and debris, and legally dispose of off-site.
- B. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  1. Clean up work areas daily.
- C. During handling and installation, clean and protect construction in progress and adjoining materials already in place.

END OF SECTION

**DIVISION 26 – ELECTRICAL**

**SECTION 26 05 05**  
**SELECTIVE DEMOLITION FOR ELECTRICAL**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Electrical demolition.

**1.02 SUBMITTALS**

- A. See Section 01 33 00 - Submittal Procedures, for submittal procedures.

**PART 2 PRODUCTS**

**2.01 MATERIALS AND EQUIPMENT**

- A. Materials and equipment for patching and extending work: As specified in individual sections.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Beginning of demolition means installer accepts existing conditions.

**3.02 PREPARATION**

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.

**3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK**

- A. Remove, relocate, and extend existing installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- E. Repair adjacent construction and finishes damaged during demolition and extension work.
- F. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

**END OF SECTION**

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**SECTION 26 05 19**  
**LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES**

**PART 1 GENERAL**

**1.01 RELATED REQUIREMENTS**

- A. Section 26 05 05 - Selective Demolition for Electrical: Disconnection, removal, and/or extension of existing electrical conductors and cables.
- B. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 31 20 00 - Earth Moving.

**1.02 REFERENCE STANDARDS**

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).
- B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2023.
- C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).
- D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).
- E. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- H. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- I. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- J. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
- K. UL 493 - Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables; Current Edition, Including All Revisions.
- L. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

**1.03 SUBMITTALS**

- A. See Section 01 33 00 - Submittal Procedures, for submittal procedures.

**1.04 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

**PART 2 PRODUCTS**

**2.01 CONDUCTOR AND CABLE GENERAL REQUIREMENTS**

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.



- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- G. Conductor Material:
  - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
  - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
  - 3. Tinned Copper Conductors: Comply with ASTM B33.
- H. Minimum Conductor Size:
  - 1. Branch Circuits: 12 AWG.
  - 2. Control Circuits: 14 AWG.
- I. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- J. Conductor Color Coding:
  - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
  - 2. Color Coding Method: Integrally colored insulation.
    - a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
  - 3. Color Code:
    - a. 240/120 V, 1 Phase, 3 Wire System:
      - 1) Phase A: Black.
      - 2) Phase B: Red.
      - 3) Neutral/Grounded: White.
    - b. Equipment Ground, All Systems: Green.

## **2.02 SINGLE CONDUCTOR BUILDING WIRE**

- A. Manufacturers:
  - 1. Copper Building Wire:
    - a. Encore Wire Corporation: [www.encorewire.com/#sle](http://www.encorewire.com/#sle).
    - b. General Cable Technologies Corporation; \_\_\_\_\_: [www.generalcable.com/#sle](http://www.generalcable.com/#sle).
    - c. Southwire Company: [www.southwire.com/#sle](http://www.southwire.com/#sle).
- B. Description: Single conductor insulated wire.
- C. Conductor Stranding:
  - 1. Feeders and Branch Circuits:
    - a. Size 10 AWG and Smaller: Solid.
    - b. Size 8 AWG and Larger: Stranded.
  - 2. Control Circuits: Stranded.
- D. Insulation Voltage Rating: 600 V.
- E. Insulation:
  - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
    - a. Size 4 AWG and Larger: Type XHHW-2.
    - b. Installed Underground: Type XHHW-2.

### **2.03 UNDERGROUND FEEDER AND BRANCH-CIRCUIT CABLE**

- A. Manufacturers:
  - 1. Cerro Wire LLC: [www.cerrowire.com/#sle](http://www.cerrowire.com/#sle).
  - 2. Encore Wire Corporation: [www.encorewire.com/#sle](http://www.encorewire.com/#sle).
  - 3. Southwire Company: [www.southwire.com/#sle](http://www.southwire.com/#sle).
- B. Description: NFPA 70, Type UF multiple-conductor cable listed and labeled as complying with UL 493, Type UF-B.
- C. Provide equipment grounding conductor unless otherwise indicated.
- D. Conductor Stranding:
  - 1. Size 10 AWG and Smaller: Solid.
  - 2. Size 8 AWG and Larger: Stranded.
- E. Insulation Voltage Rating: 600 V.
- F. Cable Jacket: Listed and labeled as sunlight resistant.

### **2.04 WIRING CONNECTORS**

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

### **2.05 ACCESSORIES**

- A. Electrical Tape:
  - 1. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
- B. Cable Ties: Material and tensile strength rating suitable for application.

**END OF SECTION**

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**SECTION 26 05 26**  
**GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.
- D. Ground rod electrodes.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

**1.03 REFERENCE STANDARDS**

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2022.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

**PART 2 PRODUCTS**

**2.01 GROUNDING AND BONDING REQUIREMENTS**

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- D. Grounding Electrode System:
  - 1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
    - a. Provide continuous grounding electrode conductors without splice or joint.
    - b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
  - 2. Metal Underground Water Pipe(s):
    - a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet (3.0 m) at an accessible location not more than 5 feet (1.5 m) from the point of entrance to the building.
    - b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
    - c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
  - 3. Ground Rod Electrode(s):
    - a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.

- b. Space electrodes not less than 10 feet (3.0 m) from each other and any other ground electrode.
- E. Service-Supplied System Grounding:
  - 1. For each service disconnect, provide grounding electrode conductor to connect neutral (grounded) service conductor to grounding electrode system. Unless otherwise indicated, make connection at neutral (grounded) bus in service disconnect enclosure.
  - 2. For each service disconnect, provide main bonding jumper to connect neutral (grounded) bus to equipment ground bus where not factory-installed. Do not make any other connections between neutral (grounded) conductors and ground on load side of service disconnect.

## 2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
  - 1. Provide products listed, classified, and labeled as suitable for the purpose intended.
  - 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 260526:
  - 1. Use insulated copper conductors unless otherwise indicated.
    - a. Exceptions:
      - 1) Use bare copper conductors where installed underground in direct contact with earth.
      - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
  - 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
  - 2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
  - 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
- D. Ground Rod Electrodes:
  - 1. Comply with NEMA GR 1.
  - 2. Material: Copper-bonded (copper-clad) steel.
  - 3. Size: 3/4 inch (19 mm) diameter by 10 feet (3.0 m) length, unless otherwise indicated.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
- D. Make grounding and bonding connections using specified connectors.
  - 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
  - 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
  - 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.

4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
  5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- E. Identify grounding and bonding system components in accordance with Section 26 05 53.

**END OF SECTION**

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**SECTION 26 05 33.13  
CONDUIT FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Galvanized steel rigid metal conduit (RMC).
- B. Liquidtight flexible metal conduit (LFMC).
- C. Galvanized steel electrical metallic tubing (EMT).
- D. Rigid polyvinyl chloride (PVC) conduit.
- E. Liquidtight flexible nonmetallic conduit (LFNC).

**1.02 RELATED REQUIREMENTS**

- A. Section 07 84 00 - Firestopping.
- B. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Cable assemblies consisting of conductors protected by integral metal armor.
- C. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- D. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- E. Section 26 05 33.16 - Boxes for Electrical Systems.
- F. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

**1.03 REFERENCE STANDARDS**

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2020.
- B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2020.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2020.
- E. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2017.
- F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- G. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2020.
- H. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2021.
- I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- K. UL 360 - Liquid-Tight Flexible Metal Conduit; Current Edition, Including All Revisions.
- L. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- M. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.
- N. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.
- O. UL 1660 - Liquid-Tight Flexible Nonmetallic Conduit; Current Edition, Including All Revisions.
- P. UL 2419 - Outline of Investigation for Electrically Conductive Corrosion Resistant Compounds; Current Edition, Including All Revisions.

**1.04 SUBMITTALS**

- A. See Section 01 33 00 - Submittal Procedure for submittals procedures.



- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.
- C. Project Record Documents: Record actual routing for conduits installed underground, conduits embedded within concrete slabs, and conduits 2-inch (53 mm) trade size and larger.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

## **PART 2 PRODUCTS**

### **2.01 CONDUIT APPLICATIONS**

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.
- C. Underground:
  - 1. Under Slab on Grade: Use galvanized steel rigid metal conduit (RMC), galvanized steel electrical metallic tubing (EMT), or rigid PVC conduit.
  - 2. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit (RMC) or rigid PVC conduit.
  - 3. Exterior, Embedded Within Concrete: Use galvanized steel rigid metal conduit (RMC) or rigid PVC conduit.
  - 4. Where rigid polyvinyl chloride (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC) where emerging from underground.
- D. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel electrical metallic tubing (EMT).

### **2.02 CONDUIT - GENERAL REQUIREMENTS**

- A. Comply with NFPA 70.
- B. Provide conduit, fittings, supports, and accessories required for complete raceway system.
- C. Provide products listed, classified, and labeled as suitable for purpose intended.
- D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

### **2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)**

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- B. Fittings:
  - 1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
  - 2. Material: Use steel or malleable iron.
  - 3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

### **2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)**

- A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- B. Fittings:

1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.
  - a. Do not use die cast zinc fittings.

#### **2.05 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)**

- A. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- B. Fittings:
  1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  2. Material: Use steel or malleable iron.
  3. Connectors and Couplings: Use compression/gland or set-screw type.
    - a. Do not use indenter type connectors and couplings.

#### **2.06 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT**

- A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.
- B. Fittings:
  1. Manufacturer: Same as manufacturer of conduit to be connected.
  2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

#### **2.07 LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT (LFNC)**

- A. Description: NFPA 70, Type LFNC liquidtight flexible nonmetallic conduit listed and labeled as complying with UL 1660.
- B. Fittings:
  1. Manufacturer: Same as manufacturer of conduit to be connected.
  2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B; suitable for type of conduit to be connected.

#### **2.08 ACCESSORIES**

- A. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.
- B. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.
- C. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf (5.6 kN).
- D. Foam Conduit Sealant:
  1. Removable, two-part, closed-cell foam, specifically designed for sealing conduit openings against water, moisture, gases, and dust.
  2. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
  3. Rated to hold minimum of 10 ft (3.0 m) water head pressure.
- E. Conduit Mechanical Seals:
  1. Listed as complying with UL 514B.
  2. Specifically designed for sealing conduit openings against water, moisture, gases, and dust.
  3. Suitable for sealing around conductors/cables to be installed.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

### **3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in accordance with NECA 1.
- C. Galvanized Steel Rigid Metal Conduit (RMC): Install in accordance with NECA 101.
- D. Rigid Polyvinyl Chloride (PVC) Conduit: Install in accordance with NECA 111.
- E. Liquidtight Flexible Nonmetallic Conduit (LFNC): Install in accordance with NECA 111.
- F. Conduit Routing:
  - 1. Unless dimensioned, conduit routing indicated is diagrammatic.
- G. Conduit Support:
  - 1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 260529.
  - 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- H. Connections and Terminations:
  - 1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
  - 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
  - 3. Use suitable adapters where required to transition from one type of conduit to another.
  - 4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
  - 5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
  - 6. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
  - 7. Secure joints and connections to provide mechanical strength and electrical continuity.
- I. Penetrations:
  - 1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
  - 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
  - 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
  - 4. Conceal bends for conduit risers emerging above ground.
  - 5. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
  - 6. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
  - 7. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 078400.
- J. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected

equipment. This includes, but is not limited to:

1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
3. Where conduits are subject to earth movement by settlement or frost.

K. Conduit Sealing:

1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
  - a. Where conduits enter building from outside.
  - b. Where service conduits enter building from underground distribution system.
  - c. Where conduits enter building from underground.
  - d. Where conduits may transport moisture to contact live parts.
2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
  - a. Where conduits pass from outdoors into conditioned interior spaces.
  - b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

L. Provide grounding and bonding; see Section 260526.

**3.03 FIELD QUALITY CONTROL**

- A. See Section 014000 - Quality Requirements for additional requirements.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective conduits.

**3.04 CLEANING**

- A. Clean interior of conduits to remove moisture and foreign matter.

**3.05 PROTECTION**

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

**END OF SECTION**

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**SECTION 26 05 33.16**  
**BOXES FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Outlet and device boxes up to 100 cubic inches (1,650 cu cm), including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches (1,650 cu cm).
- C. Boxes and enclosures for integrated power, data, and audio/video.
- D. Underground boxes/enclosures.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- B. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- C. Section 26 05 33.13 - Conduit for Electrical Systems:
  - 1. Conduit bodies and other fittings.
- D. Section 26 27 26 - Wiring Devices:
  - 1. Wall plates.

**1.03 REFERENCE STANDARDS**

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- E. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013 (Reaffirmed 2020).
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- I. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.
- J. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

**1.04 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.

**PART 2 PRODUCTS**

**2.01 BOXES**

- A. General Requirements:
  - 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
  - 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
  - 3. Provide products listed, classified, and labeled as suitable for the purpose intended.

4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
  5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches (1,650 cu cm), Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
  2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
  3. Use suitable concrete type boxes where flush-mounted in concrete.
  4. Use suitable masonry type boxes where flush-mounted in masonry walls.
  5. Use raised covers suitable for the type of wall construction and device configuration where required.
  6. Use shallow boxes where required by the type of wall construction.
  7. Do not use "through-wall" boxes designed for access from both sides of wall.
  8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
  9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
  10. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
  11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
  12. Wall Plates: Comply with Section 262726.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
  2. NEMA 250 Environment Type, Unless Otherwise Indicated:
  3. Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
    - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Box Supports:
  1. Secure and support boxes in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
  2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
- E. Install boxes plumb and level.
- F. Flush-Mounted Boxes:

1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch (6 mm) or does not project beyond finished surface.
  2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
  3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch (3 mm) at the edge of the box.
- G. Install boxes as required to preserve insulation integrity.
- H. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- I. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- J. Close unused box openings.
- K. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- L. Provide grounding and bonding in accordance with Section 260526.

**END OF SECTION**



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**SECTION 26 05 53**  
**IDENTIFICATION FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL**

**1.01 RELATED REQUIREMENTS**

- A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

**1.02 REFERENCE STANDARDS**

- A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

**1.03 SUBMITTALS**

- A. See Section 01 33 00 -Submittal Procedures, for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

**1.04 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.

**PART 2 PRODUCTS**

**2.01 IDENTIFICATION REQUIREMENTS**

- A. Identification for Equipment:
  - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
    - a. Panelboards:
      - 1) Identify power source and circuit number. Include location when not within sight of equipment.
      - 2) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
      - 3) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
    - b. Enclosed switches, circuit breakers, and motor controllers:
    - c. Time Switches:
    - d. Enclosed Contactors:
  - 2. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70 including but not limited to the following.
    - a. Service equipment.
    - b. Industrial control panels.
    - c. Motor control centers.
    - d. Elevator control panels.
    - e. Industrial machinery.
- B. Identification for Conductors and Cables:
  - 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 260519.
  - 2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

**2.02 IDENTIFICATION NAMEPLATES AND LABELS**

- A. Identification Nameplates:

1. Materials:
    - a. Indoor Clean, Dry Locations: Use plastic nameplates.
  2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch (1.6 mm); engraved text.
  3. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch (25 mm) high; Four, located at corners for larger sizes.
- B. Identification Labels:
1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
  2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

### **2.03 WARNING SIGNS AND LABELS**

- A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
- B. Warning Signs:
1. Materials:
  2. Minimum Size: 7 by 10 inches (178 by 254 mm) unless otherwise indicated.
- C. Warning Labels:
1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
  2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
  3. Minimum Size: 2 by 4 inches (51 mm by 102 mm) unless otherwise indicated.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
1. Surface-Mounted Equipment: Enclosure front.
  2. Flush-Mounted Equipment: Inside of equipment door.
  3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
  4. Elevated Equipment: Legible from the floor or working platform.
  5. Branch Devices: Adjacent to device.
  6. Interior Components: Legible from the point of access.
  7. Conductors and Cables: Legible from the point of access.
- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
- E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
- F. Mark all handwritten text, where permitted, to be neat and legible.

### **3.02 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.

- B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

**END OF SECTION**

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**DIVISION 31 – EARTHWORK**

## SECTION 31 10 00 - SITE CLEARING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Removing existing trees and other vegetation within the limits of disturbance where required for construction activities, including temporary staging/equipment storage area, and placement of proposed materials.
  - 2. Protecting existing vegetation to remain.
  - 3. Clearing and grubbing.
  - 4. Temporary erosion- and sedimentation-control measures.
  - 5. Debris removal.
- B. Related Sections include the following:
  - 1. Division 01 Section "Temporary Facilities and Controls"
  - 2. Division 01 Section "Temporary Erosion and Sedimentation Control"
  - 3. Division 01 Section "Execution Requirements"

#### 1.2 DEFINITIONS

- A. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.
- B. Existing Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other non-soil materials.
- C. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.
- D. Remove: Detach items to be removed from existing structures to remain and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- E. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

#### 1.3 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain Owner's property, excess cleared materials shall become Contractor's property and shall be removed from Project site.

#### 1.4 SUBMITTALS

- A. Product Data: Sealant to prevent regrowth of cut vegetation.
- B. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
  - 1. Use sufficiently detailed photographs or videotape.
  - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

#### 1.5 QUALITY ASSURANCE

- A. Preconstruction Meeting: Conduct meeting with Engineer and on-site supervisor and review the following:
  - 1. Clearing limits.
  - 2. Protection of vegetation to remain.

#### 1.6 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, walks, and other adjacent occupied or used facilities during site-clearing operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated or as directed by Owner.
- C. Remove and Reset Existing Site Improvements. Remove, store, and protect items required to be reset upon completion of proposed construction. Clean and restore items to existing condition or better prior to resetting.
  - 1. Restore items promptly during construction; do not leave until end of construction.
- D. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- E. Do not commence site clearing operations until temporary erosion and sedimentation control measures, and measures to protect existing trees and vegetation to remain, are in place.
- F. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.
- G. Restore items and surfaces damaged by construction operations to existing condition or better.



## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Sealant: Shall be formulated and directed for use to prevent regrowth of vegetation from when promptly applied to cut ends, and shall not require application by a licensed herbicide technician.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and protect trees and vegetation to remain.
- C. Protect existing site improvements to remain from damage during construction.
  - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

### 3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### 3.3 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation where indicated.
  - 1. Do not remove trees, shrubs, and other vegetation outside the limits shown on the Contract Drawings.
  - 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
  - 3. Remove all trees, shrubs, and vegetation other than grass. Remove stumps, rootballs, and roots larger than 1/2-inch in diameter. Clean rootball cavities. Backfill with properly placed and compacted soil backfill.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

### 3.4 DEBRIS REMOVAL

- A. Remove all surface debris from within the project limits shown on the Contract Drawings.

### 3.5 DISPOSAL

- A. Remove cleared and grubbed material and legally dispose of them off Owner's property.

1. Tree trunks and branches may be chipped with approval of the Engineer. Chipped material shall be removed from the site.
2. Under no circumstances will burning be permitted.

- B. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

### 3.6 RESTORATION

- A. Repair or restore existing site improvements and vegetation to remain, which is damaged by construction operations, to existing condition or better as determined by the Engineer, at no additional cost to the Owner.

END OF SECTION

## SECTION 31 20 00 – EARTH MOVING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
  - 1. Preparing subgrades for slabs-on-grade, walks, pavements, turf and grasses, and plants.
  - 2. Subbase course and backfill for roads, walks, and pavements.
  - 3. Excavating and backfilling for structures.
  - 4. Base course for hot mix asphalt paving (including berms).
  - 5. Base course for permeable gravel parking areas and walkways.
  - 6. Excavating and backfilling trenches for utilities and pits for buried utility structures.
  - 7. Disposal of unsuitable material.
  - 8. Disposal of surplus suitable material, if required.
- B. Related Sections include the following:
  - 1. Section 01 50 00 "Temporary Facilities and Controls"
  - 2. Section 03 30 00 "Cast-in-Place Concrete"
  - 3. Section 31 10 00 "Site Clearing"
  - 4. Section 32 92 00 "Wetland and Site Restoration"
  - 5. Section 35 10 70 "Control of Water"

#### 1.3 DEFINITIONS

- A. Backfill: Soil materials used to fill trench, structure or pit excavations.
  - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Layer placed between the subbase course and hot mix asphalt and porous paving.
- C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe, drainage structures, stone revetment slope protection, soil-filled stone armor slope protection, and sediment-filled channel scour protection.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.

- E. Excavation: Removal of material encountered above subgrade elevations.
- F. Fill: Soil materials used to raise existing grades.
- G. Native Clean Backfill: On-site satisfactory soil meeting the requirements of this specification.
- H. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material. Class A material exceeds 1 cubic yard including cement concrete pavement and masonry structures and Class B material exceeds 1 cubic yard.
- I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- J. Subbase Course: Layer or layers placed between the subgrade and base course for hot mix asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.
- K. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or loam materials.
- L. Utilities include on-site underground pipes, conduits, ducts, and cables.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:
  - 1. Geotextiles.
  - 2. Controlled low-strength material, including design mixture.
  - 3. Warning tapes.
- B. Samples for Verification: For the following products, in sizes indicated below:
  - 1. Geotextile: 12 by 12 inches (300 by 300 mm).
  - 2. Warning Tape: 12 inches (300 mm) long; of each color.
- C. Qualification Data: For qualified testing agency.
- D. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
  - 1. Classification according to ASTM D 2487 or AASHTO M 145.
  - 2. Laboratory compaction curve according to ASTM D 1557 or AASHTO T 180.
- E. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.

#### 1.5 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to

ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548, or AASHTO R 18.

- B. Standard Specifications: Shall mean the most recent version of the “Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition”, and Supplemental Specifications (March 31, 2024).

## 1.6 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Engineer not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Engineer's written permission.
  - 3. Contact DigSafe at 811 before beginning any excavation work.. Proceed with excavation only after utility locator service completes marking of utility locations.
- B. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- C. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures, specified in Division 01 Section "Temporary Erosion and Sedimentation Control" are in place.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials meeting the requirements of Subsection M1.01.0 of the Standard Specifications when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Meeting the requirements of Subsection M1.01.0 of the Standard Specification for borrow material
- C. Backfill and Fill: Meeting the requirements of Subsection M1.03.0 of the Standard Specification for backfill material.
  - 1. Initial Backfill: Meeting the requirements of Subsection M1.03.0, Gravel Borrow, Type d, of the Standard Specifications.
  - 2. Final Backfill: Initial Backfill: Meeting the requirements of Subsection M1.03.0, Gravel Borrow, Type b, of the Standard Specifications.

- D. Crushed Stone: Shall comply with Section M2.01.0 of the Standard Specifications.
- E. Subbase/Subgrade: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand meeting the requirements of Subsection M1.02.0 of the Standard Specification for subbase or subgrade material or Subsection M1.03.1 of the Standard Specifications for processed gravel for subbase.
- F. Dense Graded Crushed Stone: Shall comply with Section M2.01.7 of the Standard Specifications.
- G. Gravel Borrow: Shall comply with Section M1.03.0 of the Standard Specifications.
- H. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940 or AASHTO M 283; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- I. Bedding Material: 3/4" crushed stone in accordance with M2.01.4 of the Standard Specifications.
- J. Sand Bedding: ASTM C 33 or AASHTO M 6/M 80; fine aggregate.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state; meeting the requirements of Subsection M.1.08.0 of the Standard Specifications.
- L. Unsatisfactory Soils: Soil Classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

## 2.2 GEOTEXTILES

- A. Geotextile Filter Fabric: Meeting the requirements of Subsection M9.50.0 of the Standard Specification. The fabric furnished shall be nonwoven meeting the requirements of Table I, Table II, Table III or Table IV as specified for each use within the Contract Documents.

## 2.3 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
  - 1. Red: Electric.
  - 2. Yellow: Gas, oil, steam, and dangerous materials.
  - 3. Orange: Telephone and other communications.
  - 4. Blue: Water systems.
  - 5. Green: Sewer systems.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways as indicated in Division 01 Section "Temporary Erosion and Sedimentation Control."

#### 3.2 DEWATERING

- A. Comply with Division 31 Section "Dewatering" and Division 35 Section "Control of Water."
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding or damaging Project site and surrounding area.
- C. Protect excavations, backfills, fills and subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches. Provide positive drainage of backfill and fill.
  - 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain dewatering until structures, pipes and appurtenances will not be damaged by surface or ground water. Maintain until dewatering is no longer required.
- D. Obtain discharge permit for water discharging into storm drainage system or waterway. Remove particulate matter from pumped or drained water which discharges or flows into storm drainage system or waterway.

#### 3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

#### 3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
  - 2. Do not excavate rock until it has been classified and cross-sectioned by Engineer. Upon approval by Engineer, remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:

- a. 24 inches outside of concrete forms other than at footings.
  - b. 12 inches outside of concrete forms at footings.
  - c. 6 inches outside of minimum required dimensions of concrete cast against grade.
  - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
  - e. 6 inches beneath bottom of concrete slabs-on-grade.
  - f. 6 inches beneath pipe in trenches, and the greater of 24 inches (600 mm) wider than pipe or 36 inches wide.
- B. Classified Excavation: Excavation to subgrade elevations classified as earth and rock. Rock excavation will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.
1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
  2. Rock excavation includes removal and disposal of rock. Do not excavate rock until it has been classified and cross-sectioned by Engineer. Upon approval by Engineer, Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions:
    - a. 24 inches outside of concrete forms other than at footings.
    - b. 12 inches outside of concrete forms at footings.
    - c. 6 inches outside of minimum required dimensions of concrete cast against grade.
    - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
    - e. 6 inches beneath bottom of concrete slabs-on-grade.
    - f. 6 inches beneath pipe in trenches, and the greater of 24 inches (600 mm) wider than pipe or 36 inches wide.

### 3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus one inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
  2. Excavation for Underground Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.
- B. Excavations at Edges of Tree- and Plant-Protection Zones:



1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Cut and protect roots according to requirements in Division 2 Section "Site Clearing."

### 3.6 EXCAVATION FOR STONE SLOPE AND CHANNEL PROTECTION

- A. For slope protection, excavate slope area to a depth such that the finish grade of the installed stone will correspond to the finish grade shown on the Drawings. Remove all unsatisfactory material shape sub-grade accordingly.
- B. For channel protection, excavate channel bottom to a depth such that the finish grade of the installed stone will correspond to the finish grade shown on the Drawings. Remove all unsatisfactory material shape sub-grade accordingly.
- C. Install geotextile fabric, bedding, and stone for slope and channel protection in accordance with Division 35 Section "Nature-like Fishway."

### 3.7 EXCAVATION FOR WALKS, PAVEMENTS, REINFORCED PERVIOUS ADA-ACCESSIBLE WALKWAY

- A. Excavate surfaces under walks, pavements, reinforced pervious ADA-accessible walkway to indicated cross sections, elevations, and grades.
- B. Prepare subbase for the reinforced pervious ADA-accessible walkway in accordance with Division 32 Section "Site and Wetland Restoration."

### 3.8 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform as indicated on the Drawings. Excavate trench walls vertically from trench bottom to trench surface.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
  1. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
  2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
  3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
  4. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

### 3.9 EXCAVATION, STORAGE AND TRANSPORT OF CHANNEL SEDIMENT

- A. Sediment will be excavated, stored and transported and disposed in accordance with the project permits and local, state, and federal guidelines.

### 3.10 APPROVAL OF SUBGRADE

- A. Notify Engineer when excavations have reached required subgrade.
  - 1. Notify Engineer when excavations for fishway structure have reached required subgrade. Bottom of excavation must be surveyed prior to construction of proposed fishway structures.
- B. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
  - 1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.
  - 1. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Engineer, and replace with compacted backfill or fill as directed.
- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

### 3.11 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Engineer.
  - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Engineer.

### 3.12 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Prevent windblown dust. Provide erosion control measures.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.13 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  - 1. Construction below finish grade.
  - 2. Surveying locations of underground utilities for record documents.

3. Inspecting and testing underground utilities.
  4. Removing concrete formwork.
  5. Removing trash and debris.
  6. Removing temporary shoring and bracing, and sheeting.
  7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place and compact final backfill of satisfactory soil material to final subgrade.
- C. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- D. Place and compact fill material in layers to required elevations as follows:
1. Under grass and planted areas outside of fishway structure excavation limits, use satisfactory soil material.
  2. Under reinforce pervious ADA-Accessible walkway, use gravel borrow base course material.
  3. Under inlet/outlet structure slabs, use crushed stone.
- E. Place soil fill and backfill on subgrades free of mud, frost, snow, or ice. Shape subbase course and base course to required crown elevations and cross-slope grades for driveway applications.

#### 3.14 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 03 Section "Cast-in-Place Concrete."
- D. Backfill voids with satisfactory soil while removing shoring and bracing.
- E. Place and compact initial backfill of select, satisfactory soil free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit as indicated on the Drawings.
1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- F. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- G. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

### 3.15 SOIL FILL

- A. Preparation: Remove vegetation, loam, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.
- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 3 horizontal so fill material will bond with existing material.
- C. Place and compact fill material in layers to required elevations.
- D. Place soil fill on subgrades free of mud, frost, snow, or ice.

### 3.16 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

### 3.17 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557 or AASHTO T 180:
  - 1. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 95 percent.
  - 2. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
  - 3. Under unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.
  - 4. For utility trenches, compact each layer of initial and final backfill soil material at 95 percent.

### 3.18 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  - 1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water river and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.
2. Walkways: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.
4. Slope and Channel Protection: Plus or minus 1 inch.

### 3.19 BASE COURSES UNDER PAVEMENTS AND WALKWAYS

A. Place base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place base course under pavements and walkways as indicated on the Drawings and as follows:

1. Place base course material over subgrade.
2. Compact base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557 or AASHTO T 180.
  - a. Place material to indicated thickness within 3/4 inch, plus or minus.
3. Shape base to required crown elevations and cross-slope grades.
4. When thickness of compacted base course is 6 inches or less, place materials in a single layer.
5. When thickness of compacted base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

### 3.20 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Engineer.

D. Testing agency will test compaction of soils in place according to ASTM D 1556 (AASHTO T 191), ASTM D 2167 (AASHTO T 205), ASTM D 2922 (AASHTO T 310), and ASTM D 2937 (AASHTO T 204-90), as applicable.

1. Reinforce pervious ADA-Accessible Walkway: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. (186 sq. m) or less of area to receive

walkway, but in no case fewer than one test per area.

2. Structural Backfill for inlet/outlet structures: At each compacted backfill layer, at least one test for every 100 feet (30 m) or less of perimeter wall length, but no fewer than two tests.
3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet (46 m) or less of trench length, but no fewer than two tests.

- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

### 3.21 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

### 3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION

## SECTION 31 23 19 –DEWATERING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes, but is not limited to, construction dewatering.
- B. Related Sections:
  - 1. Division 01 Section “Temporary Erosion and Sediment Control”
  - 2. Division 31 Section “Excavation Support and Protection”
  - 3. Division 31 Section “Earth Moving”
  - 4. Division 35 Section “Control of Water”

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Dewatering Performance: Furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
  - 1. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, that excavation does not flood, and that damage to subgrades and permanent structures is prevented.
  - 2. Prevent surface water from entering excavations by grading, dikes, or other means.
  - 3. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
  - 4. Remove subsurface dewatering system when no longer required for construction.
  - 5. Monitor utilities and structures for signs of settlement. Settlement of any utilities or structures is not permitted.

#### 1.4 SUBMITTALS

- A. Delegated-Design Submittal: The Contractor shall submit to the Contracting Officer for approval, a minimum of twenty-one (21) business days prior to the start of this work, a subsurface dewatering plan with calculations prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts with a minimum of five (5) years of experience in the design of similar subsurface dewatering systems. The submittal shall include plans showing all equipment, proposed procedures and sequences of construction to be used to dewater work areas to a minimum depth of two (2) feet below the lowest elevation of the proposed excavations. The subsurface dewatering system shall be designed in conjunction with the Water Control System (for

surface water) and excavation support system(s) to be employed at the site. The subsurface dewatering system shall include the anticipated arrangement, locations, and details of sump pumps and pits, risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.

1. Include a written plan for subsurface dewatering operations including control procedures to be adopted if dewatering problems arise.
2. Dewatering shall be accomplished with the use of sump pump and sump pits, well points, or by other suitable methods as determined by the Contractor and transmitted to the Contracting Officer.
3. The capacity of the designed system shall be sufficient to dewater the excavation as required herein.
4. Design may refer borehole logs have been included as an exhibit to the Contract Documents, included as an exhibit to the Contract Documents, but shall not rely on such data in designing, installing or operating the dewatering system. Contractor shall conduct its own investigation, testing and evaluation of subsurface soils and area geology to independently design and operate the dewatering system meeting the project's performance requirements.

B. Qualification Data: The Installer of the dewatering system shall submit a Statement of Qualifications to the Contracting Officer for approval, a minimum of twenty-one (21) business days prior to the start of the work. The installer shall have a minimum of five (5) years of experience of installing and operating dewatering systems of similar size and type for this project.

C. Field quality-control reports.

D. Other Informational Submittals:

1. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by dewatering operations.

## 1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer that has specialized in dewatering work.

B. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to dewatering including, but not limited to, the following:
  - a. Inspection and discussion of condition of site to be dewatered including coordination with temporary erosion control measures and temporary controls and protections.
  - b. Geotechnical report.
  - c. Proposed site clearing and excavations.
  - d. Existing utilities and subsurface conditions.
  - e. Coordination for interruption, shutoff, capping, and continuation of utility services.
  - f. Construction schedule. Verify availability of Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - g. Testing and monitoring of dewatering system.



## 1.6 PROJECT CONDITIONS

- A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by Contracting Officer or others unless permitted under the following conditions and then only after coordination with Contracting Officer, managers of impacted facilities and businesses, utilities and arranging to provide temporary utility according to requirements indicated:
  - 1. Notify Contracting Officer no fewer than two days in advance of proposed interruption of utility.
  - 2. Do not proceed with interruption of utility without Contracting Officer's written permission.

## PART 2 - PRODUCTS

### 2.1 TEMPORARY CONSTRUCTION DEWATERING BASIN

- A. Refer to Division 01 Section "Temporary Erosion and Sedimentation Control" for temporary construction dewatering basin materials.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.
  - 1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site and surrounding area.
  - 2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.
- B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
- C. Provide temporary grading to facilitate dewatering and control of surface water.
- D. Monitor dewatering systems continuously.
- E. Promptly repair damages to adjacent facilities caused by dewatering.

### 3.2 INSTALLATION

- A. Install temporary construction dewatering basins in locations indicated on the Contract Drawings and in accordance with Division 01 Section "Temporary Erosion and Sedimentation Control."
- B. Install dewatering system utilizing sumps, sump pits, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
  - 1. Space sump pits and sumps, well points, or similar methods at intervals required to provide sufficient dewatering.
  - 2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

- C. Before excavating below ground-water level, place system into operation to lower water to specified levels. Operate system continuously until structures have been constructed and fill materials have been placed or until dewatering is no longer required.
- D. Provide an adequate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Install sufficient dewatering equipment to drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.
  - 1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
- E. Establish and maintain reduced hydrostatic head in water-bearing strata below subgrade elevations of excavations for duration of work activities requiring such lowered water conditions.
- F. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Handle and dispose of water and sediment in a manner that avoids inconvenience to others. Provide sumps, sedimentation tanks, and other flow-control and treatment devices as indicated on the Contract Drawings and required by authorities having jurisdiction.
- G. Provide standby equipment on site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, restore damaged structures and foundation soils at no additional expense to Government.
  - 1. Remove dewatering system from Project site on completion of dewatering. Plug or fill sump or sump pit holes with compacted controlled fill materials being used below and adjacent to proposed structures on the project.
- H. Damages: Promptly repair damages to adjacent facilities caused by dewatering operations.

### 3.3 FIELD QUALITY CONTROL

- A. Observation Wells: Provide, take measurements, and maintain at least the minimum number of observation wells or piezometers indicated; additional observation wells may be required the Contracting Officer to assure performance of the dewatering system and protection of the work and adjacent structures.
  - 1. Observe and record daily elevation of ground water and piezometric water levels in observation wells.
  - 2. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.
  - 3. Fill observation wells, remove piezometers, and fill holes when dewatering is completed.
- B. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.

END OF SECTION

## SECTION 31 23 23 – COMPACTED CLAY LINER

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
  - 1. Constructing compacted clay liner
- B. Related Sections include the following:
  - 1. Section 31 20 00 "Earth Moving"
  - 2. Section 35 10 70 "Control of Water"

#### 1.3 REFERENCES

- A. The following are complete titles of references cited in this Section. The date of the standard is that in effect as of the certification date, unless noted otherwise.
  - 1. American Society for Testing and Materials (ASTM)
    - a. ASTM D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.
    - b. ASTM D2488 - Standard Practice for Description and Identification of Soils (Visual Manual Procedures).

#### 1.4 DEFINITIONS

- A. Native Mineral Sediment: Native sand and gravel excavated from the lagoon or river channel.

#### 1.5 SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Product Data:
  - 1. Non-woven geotextile separation fabric.
- C. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
  - 1. Classification according to ASTM D 2487 or AASHTO M 145.
  - 2. Laboratory compaction curve according to ASTM D 1557 or AASHTO T 180.

## 1.6 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548, or AASHTO R 18.
- B. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).

## 1.7 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Engineer not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Engineer's written permission.
  - 3. Contact DigSafe at 811 before beginning any excavation work.. Proceed with excavation only after utility locator service completes marking of utility locations.

## PART 2 - PRODUCTS

### 2.1 COMPACTED CLAY LINER

- A. Compacted Clay Liner shall be inorganic soil meeting the following requirements:
  - 1. Classified as CL, CH, or CL/CH by the Unified Soil Classification System. Some SC/CL soils may be acceptable if hydraulic conductivity criterion is met.
    - a. Shall have a minimum of 15% passing the #200 sieve.
  - 2. Hydraulic Conductivity: Maximum of  $1 \times 10^{-5}$  cm/s, when compacted to 95% standard Proctor maximum dry density at a moisture content 0 to 5 percentage points wet of optimum.
  - 3. Maximum particle size: 3/4 inch (gravel); soil clods shall be pulverized prior to placement and compaction.
- B. Compacted Clay Liner may require pulverizing, screening, moisture conditioning, and reworking in order to meet the requirements of the Specifications. Such operations shall be conducted as part of the performance of the Work and the cost of such operations shall be at no additional cost.

### 2.2 NON-WOVEN GEOTEXTILE SEPERATION FABRIC

- 1. Shall be in accordance with Section 31 20 00 "Earth Moving".

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways as indicated in Division 01 Section "Temporary Erosion and Sedimentation Control."

#### 3.2 DEWATERING

- A. Comply with Division 31 Section "Subsurface Dewatering" And Division 35 Section "Control of Water."
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding or damaging Project site and surrounding area.
- C. Protect excavations, backfills, fills and subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches. Provide positive drainage of backfill and fill.
  - 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain dewatering until structures, pipes and appurtenances will not be damaged by surface or ground water. Maintain until dewatering is no longer required.
- D. Obtain discharge permit for water discharging into storm drainage system or waterway. Remove particulate matter from pumped or drained water which discharges or flows into storm drainage system or waterway.

#### 3.3 APPROVAL OF SUBGRADE

- A. Notify Engineer when excavations have reached required subgrade.
- B. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
  - 1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer.

### 3.4 STORAGE OF CLAY MATERIALS

- A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Prevent windblown dust. Provide erosion control measures.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.5 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

### 3.6 COMPACTED CLAY LINER

- A. Compacted Clay Liner Subgrade:
  - 1. Scarify, disc, and compact the upper 6-inches of Compacted Clay Liner Subgrade materials to minimum 95% of standard Proctor maximum dry density (ASTM D698) before placing the initial lift of the Compacted Clay Liner.
- B. Compacted Clay Liner material shall be placed for composite liner construction as long as the daily average temperature is above 40 degrees Fahrenheit and the Contractor can demonstrate that compacted clay liner construction meets construction specifications detailed in this section. Contractor must obtain approval from Owner or Owner's On-Site Representative prior to placement of compacted clay liner material.
- C. Compacted Clay Liner material shall have a water content of 0 to 5 percentage points over optimum moisture content at the time of placement and compaction. If moisture conditioning of the Compacted Clay Liner is necessary prior to compaction, such conditioning shall be performed so that the soil is mixed with uniform moisture content.
- D. Over-wetted Select Clay shall not be used for construction of the compacted clay liner. Compacted Clay Liner shall be determined to be over-wetted if displacement occurs under the weight of vehicle traffic or if the required compaction cannot be achieved with a reasonable number of passes with compaction equipment.
- E. Place Compacted Clay Liner in maximum 8-inch loose lifts, or thinner, so that each compacted lift is not greater than 6-inches thick. Compact each lift to at least 95 percent standard Proctor maximum dry density (ASTM D698). The water content specified above shall be maintained throughout compaction work. Compaction shall be performed with sheepfoot compactors.
- F. Compacted Clay Liner lifts shall be constructed in an approximately horizontal orientation.

- G. Stagger edge joints in overlying lifts. Joints shall be offset at least 15 feet.
- H. The surface of each Compacted Clay Liner lift shall be kept moist until the next lift is placed. If the Compacted Clay Liner surface becomes dry, apply water and rework the surface with a sheepsfoot compactor, disc, scarifier, or other suitable equipment to thoroughly remoisten the material. The Compacted Clay Liner surface from the previous day's construction shall be scarified and wetted prior to beginning compacted clay liner construction every day.
- I. Roll the finished Compacted Clay Liner surface with a smooth drum roller.
- J. Remove all particles larger than 1/2 inch in the largest dimension exposed above the subgrade surface.
- K. The finished clay liner surface shall be maintained in a moist condition until covered by native mineral sediment to prevent desiccation and deep cracking.
- L. Native mineral sediment shall be placed over the top of the compacted clay liner in a uniform thickness.

### 3.7 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  - 1. Provide a smooth transition between adjacent existing grades and new grades.
  - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

### 3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D 1556 (AASHTO T 191), ASTM D 2167 (AASHTO T 205), ASTM D 2922 (AASHTO T 310), and ASTM D 2937 (AASHTO T 204-90), as applicable.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

### 3.9 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

### 3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION



## SECTION 31 32 40 – CONTROLLED LOW STRENGTH MATERIAL

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section specifies Controlled Low Strength Material for the following applications:
  - 1. Beddings and encasement for pipe.
  - 2. General backfill for walls.
  - 3. Backfilling areas requiring over excavation due to existing unsuitable material.
- B. Related Sections include the following:
  - 1. Division 31 Section "Earth Moving"
  - 2. Division 33 Section "Flow Control Structures"
  - 3. Division 3 Section "Cast-In-Place Concrete"

#### 1.3 DEFINITIONS

- A. Controlled Low Strength Material (CLSM): Self-compacted, low-cementitious backfill mix used in place of compacted backfill, with a compressive strength of 800 - 1,200 psi after 28 days. CLSM is also known as flowable fill, controlled-density fill, lean-mix backfill, and flowable mortar.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Non-Excavatable CLSM:
  - 1. 28 Day Compressive Strength: 800 - 1200 psi maximum.

#### 1.5 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
  - 1. Cementitious materials and aggregates.
  - 2. Admixtures.
  - 3. Certified test results by testing agency for CLSM design mix proposed for use on the project, indicating conformance with performance criteria.

- C. Field Test Reports. Submit test results in writing to Engineer, manufacturer, and Contractor within 48 hours of testing.
  - 1. Compressive-strength tests. Include Project identification name and number, date of placement, name of concrete testing and inspecting agency, design compressive strength at 28-days, mix proportions and materials, and compressive breaking strength.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  - 1. A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
  - 2. Minimum of one (1) year experience in the production of CLSM mixes.
- B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- C. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).
- D. Source Limitations: Obtain each type of cement of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- E. Comply with ACI 304, "Specification for Structural Concrete," including the following, unless modified by the requirements of the Contract Documents.
  - 1. General requirements, including submittals, quality assurance, acceptance of structure, and protection of in-place concrete.
  - 2. Concrete mixtures.
  - 3. Handling, placing, and constructing concrete.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and handle in compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Provide Controlled Low Strength Material manufactured by a ready-mix concrete producer experienced in the design and control of flowable mixtures.

### 2.2 MATERIALS

- A. Complying with Section 603.02 of the Standard Specifications for Class IV CLSM (non-excavatable, fluid lean concrete).

### 2.3 ADMIXTURES

- A. Complying with Section 603.02 of the Standard Specifications for Class IV CLSM (non-excavatable, fluid lean concrete).

### 2.4 MIXES

- A. Prepare design mixes, determined by either laboratory trial mix or field test data bases, that results in a flowable product at time of placement which does not require manual means to move into place, and the following:
  - 1. Provide mix designed to be non-excavatable at any time after placement.
  - 2. Provide mix that meets the following strength, when tested in accordance with ASTM D4382.
    - a. Minimum Compressive Strength (28 Days): 800 psi.
  - 3. Flowability: ASTM D6103.
- B. Provide flow and set time characteristics to meet project conditions.
- C. Yield and Dry Unit Weight: ASTM D6023.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions of substrates and other conditions under which work is to be performed and notify Owner, in writing, of circumstances detrimental to the proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
- B. Do not place CLSM on frozen ground.

### 3.2 PLACEMENT

- A. Delivery, mixing and placement shall be in accordance with Section 603.03 of the Standard Specifications.
- B. Discharge CLSM material directly from mixer into space to be backfilled. Place material when ambient temperature is at least 40 degrees F and rising. Deposit material within 2 hours of initial mixing.
- C. Secure tanks, pipes, and other members to be encased in CLSM to prevent displacement during placement.

### 3.3 FIELD QUALITY CONTROL

- A. Testing Services: Test samples of CLSM according to ASTM D 4832 and the following requirements:
  - 1. Compressive Strength: Obtain six samples for each 30 cu. yd. or fraction thereof of each mix placed each day. Test three laboratory-cured specimens at 28 days.

- a. For less than 30 cu. yd., obtain three samples for each 15 cu. yd. or fraction thereof. Test two laboratory-cured specimens at 28 days.
- B. Additional Tests: Testing and inspecting agency shall make additional tests when test results indicate that compressive strengths, or other requirements have not been met, as directed by Engineer.

#### 3.4 PROTECTION

- A. Protect CLSM from load application until sufficient strength has been achieved for further construction operations.

END OF SECTION

## SECTION 31 50 00 - EXCAVATION SUPPORT AND PROTECTION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes temporary excavation support and protection systems.
- B. Related Sections:
  - 1. Division 01 Section "Temporary Facilities and Controls"
  - 2. Division 31 Section "Subsurface Dewatering"

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Design, furnish, install, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting soil and hydrostatic pressure and superimposed and construction loads.
  - 1. Delegated Design: Design excavation support and protection system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
  - 2. Prevent surface water from entering excavations by grading, dikes, or other means.
  - 3. Install excavation support and protection systems without damaging existing buildings, structures, and site improvements adjacent to excavation.
  - 4. Monitor vibrations, settlements, and movements.

#### 1.4 SUBMITTALS

- A. Shop Drawings: For excavation support and protection system.
- B. Delegated-Design Submittal: For excavation support and protection system indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Qualification Data: For qualified professional engineer.
- D. Other Informational Submittals:
  - 1. Photographs: Show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by the absence of, the installation of, or the performance of excavation support and protection systems. Submit before Work begins.

2. Record Drawings: Identifying and locating capped utilities and other subsurface structural, electrical, or mechanical conditions.
  - a. Note locations and capping depth of wells and well points.

#### 1.5 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site.
  1. Review methods and procedures related to excavation support and protection system including, but not limited to, the following:
    - a. Geotechnical report.
    - b. Existing utilities and subsurface conditions.
    - c. Proposed excavations.
    - d. Proposed equipment.
    - e. Monitoring of excavation support and protection system.
    - f. Working area location and stability.
    - g. Coordination with waterproofing.
    - h. Removal of excavation support and protection system.
- B. Standard Specifications: Shall mean the most recent version of the “Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition”, and Supplemental Specifications (March 31, 2024).

#### 1.6 PROJECT CONDITIONS

- A. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  1. Notify Engineer not less than two days in advance of proposed utility interruptions. Notify Utility Company in accordance with their requirements for advance notice.
  2. Do not proceed with utility interruptions without Utility Company's written permission.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. General: Provide materials that are either new or in serviceable condition.
- B. Structural Steel: ASTM A 36/A 36M (AASHTO M 183M/M 183), ASTM A 690/A 690M, or ASTM A 992/A 992M.AASHTO M 169, or AASHTO M 270M/M 270
- C. Steel Sheet Piling: In accordance with MassDOT Standard Specifications M8.05.4.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.
  - 1. Shore, support, and protect utilities encountered.
- B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- C. Locate excavation support and protection systems clear of permanent construction so that forming and finishing of concrete surfaces are not impeded.
- D. Monitor excavation support and protection systems daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or other evidence of movement to ensure that excavation support and protection systems remain stable.
- E. Promptly repair damages to adjacent facilities caused by installing excavation support and protection systems.

#### 3.2 SHEET PILING

- A. Sheet piling shall be installed as per MassDOT Standard Specification 950.60 and 950.61.
- B. Cutoff disposal shall be as specified in MassDOT Standard Specifications 950.64.

#### 3.3 REMOVAL AND REPAIRS

- A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.
  - 1. Fill voids immediately with approved backfill compacted to density specified in Division 2 Section "Earthwork."
  - 2. Repair or replace, as approved by Engineer, adjacent work damaged or displaced by removing excavation support and protection systems.

END OF SECTION

**DIVISION 32 – EXTERIOR IMPROVEMENTS**



## SECTION 32 11 13 – SUBGRADE MODIFICATIONS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, and Sections 170 of the latest version of the MassDOT Standard Specifications for Highways and Bridges and supplemental specifications apply to this Section.

#### 1.2 SUMMARY

- A. This work includes preparing areas as necessary to allow construction of new structures, placement of backfill and other support materials to dimensions and limits indicated on the Contract Drawings. Areas upon which all materials are constructed shall be known as subgrade in this section. This work includes the adequate preparation and proper compaction of all subgrade areas.
- B. Related Sections
  - 1. Division 31 Specification “Earth Moving.”

#### 1.3 DEFINITIONS

- A. Subgrade: Surface or elevation remaining/exposed after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or loam materials.

#### 1.4 QUALITY ASSURANCE

- A. Standard Specifications: Shall mean the most recent version of the “Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition”, and Supplemental Specifications (March 31, 2024).

### PART 2 - PRODUCTS (None Used)

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Before placing any fill materials, compact the exposed surface in 5 overlapping pressures using a smooth roller with a minimum contact pressure of 60 psi or a fully loaded dump truck with a minimum tire pressure of 120psi to identify soft pockets and areas of excess yielding. During compaction, if the subgrade moves or “pumps”, place and spreads the pumping area, and 5 feet from all sides  $\frac{3}{4}$ ” size 6” thick crushed stone. Roll/shear crushed stone into the subgrade using a vibratory roller until the pumping stops. If pumping is continued add more crushed stone and repeat the process until the pumping stops.

1. The test shall be a single pass with the passing criteria of a 1" deflection Do not proof roll wet or saturated subgrades
  2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Engineer, and replace with compacted backfill or ¾" size stone as directed.
- B. Notify Engineer when excavations have reached required subgrade.
- C. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer.
- E. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- F. Before access drive surfacing or base course materials are spread, the subgrade shall be shaped to a true surface conforming to the proposed cross section of the access drive and compacted in accordance with the provisions of Subsections 150.60 and 150.62 of the Standard Specifications. All depressions and high spots shall be filled with suitable material or removed and such areas again compacted until the surface is smooth and satisfactorily compacted. A tolerance of ½ inch above or below the finished subgrade will be allowed provided that this ½ inch above or below grade is not maintained for a distance longer than 50 feet and that the required crown is maintained in the subgrade. Any portion of the subgrade which is not accessible to a roller shall be thoroughly compacted with trench-compactors, plate compactors or by other adequate methods approved as satisfactory to the Engineer.
- G. Compact subgrade soil within a moisture range based on the results of the proctor tests that will allow for compaction to not less than 95% of maximum dry unit weight according to ASTM D 1557 or AASHTO T180.
- H. For compacting subgrade, use equipment specifically designed for compaction purposes, and which provides satisfactory results as approved by the Engineer.
- I. All soft and yielding material and other portions of the subgrade which will not compact readily when rolled, vibrated or tamped shall be improved as discussed in Section 3.1.A above after removing all organic matter and replaced with suitable material in accordance with Subsection 170.60 of the Standard Specifications.
- J. The surface shall be compacted uniformly by methods that do not disturb or damage adjacent existing structures. When more than one compacting unit is used, the unit exerting the greatest compaction effort shall be used to make the initial compaction. Any portion of the subgrade which is not accessible to a roller or other compacting unit shall be compacted thoroughly with hand tampers or with approved mechanical vibrators.
- K. The rolling vibrating or tamping shall be continued until the entire subgrade is uniformly and thoroughly compacted.

- L. The Contractor shall protect all exposed subgrade areas from damage by exercising such precautions as the Engineer may deem necessary. At all times, subgrade surfaces shall be kept in such condition that they will drain readily and correctly. Subgrade areas will be checked and approved before any material is placed thereon.

END OF SECTION

## SECTION 32 30 51 – TIMBER FENCE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes wood rail elements fastened to posts and terminal ends as indicated.
  - 1. Posts: Wood.
  - 2. Rails: Wood.
- B. Related Sections include the following:
  - 1. Division 31 Section "Earth Moving"

#### 1.3 SUBMITTALS

- A. Product Data: For preservative-treated wood products. Include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
- B. Material Certificates:
  - 1. For preservative-treated wood products. Indicate type of preservative used and net amount of preservative retained. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- C. Certificates of Inspection: Issued by lumber grading agency for exposed wood products not marked with grade stamp.

#### 1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Where referenced, comply with the following.
- B. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials under cover and protected from weather and contact with damp or wet surfaces. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Lumber: Shall conform to Voluntary Product Standard PS-70 and be certified according to applicable standard grading and dressing rules and shall bear the official grade and/or trademark of the association under whose rules it is produced.
- B. Wood:
  - 1. All wood shall be #2 Southern Yellow Pine (Southern Pine Inspection Bureau Grading), having a stress grade of at least 1,500 psi, or equal. All wood to be new, solid, sound and surface dry with a maximum moisture content of 19%. All wood shall be clearly marked with the official grading information and shall conform to AASHTO M168.
  - 2. Treatment: All wood shall be 0.40 pressure treated with Koppers Wolman CCA Salt Treatment to AWWA C14.
  - 3. Rails shall match the size of the existing timber rail fence located on the peninsula.
  - 4. Posts shall match the size of the existing timber rail fence located on the peninsula.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Set posts in holes dug in thoroughly compacted soil and the bottom of the hole shall be thoroughly rammed so that the posts will have a stable foundation.
- B. Remove rock or boulders, if encountered during excavation, in order to provide a hole of sufficient size to set the posts to the normal depth as indicated on the Drawing.
- C. Space posts as indicated on the Drawings. Set plumb and normally with the front face at a uniform distance from the edge of the travel way.
- D. Backfill post hole excavations with an approved material and thoroughly compact.
- E. Mount the fence rail on the post as indicated on the Drawings.
  - 1. Cut rail members accurately so as to provide even bearing over entire surface of joints.
  - 2. No shimming of any kind will be allowed in making joints nor will open joints be accepted.

3. All exposed edges of member shall be chamfered.
- F. Install timber fence posts with a through check, shake, or end split in the same plane as, or a plane parallel to the bolt hole and extending from the top of the post to within 3-inches of the bolt hole, will be rejected.
  - G. Anchorages, Channels, Terminal Sections and Fittings. Install as indicated.
    1. Backfill anchorage excavations with suitable material and compact in 6-inch layers.
  - H. Furnish extra length posts at transition areas or where field conditions warrant to maintain indicated embedment depth.
- 3.2 CLEAN UP
- A. Remove and dispose of surplus and unsuitable backfill material immediately after completion of installation.

END OF SECTION

SECTION 32 92 00 – SITE AND WETLAND RESTORATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- B. Finish Grade: Elevation of finished surface of topsoil.
- C. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- D. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- E. Native Organic Sediment: Surface layer found along the banks of the existing river that is composed of decayed leaves, detritus and silty material.
- F. Planting Area: Areas to be planted.
- G. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
- H. Topsoil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- I. Subgrade: Top surface of a fill or backfill immediately beneath topsoil.
- J. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- K. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.3 SUBMITTALS

- A. Product Data:
  - 1. Topsoil

2. Tree, Plug, and Plotted Plantings
    - a. State common and scientific names, source, and schedule and procedures for transport and storage prior to installation at the site.
    - b. State salinity measurement at the site (including date/time and location) and description of the procedure by the plantings supplier/nursery to harden off plug plantings to environmental conditions at the Project site (including duration before delivery), prior to delivery and installation.
  3. Seeding
    - a. Conservation Seed Mix
    - b. Wetland Seed Mix
    - c. Riparian/Woodland Seed Mix
    - d. Park Seed Mix
    - e. State common and scientific names, source, and schedule and procedures for transport and storage prior to installation at the site.
  4. Biodegradable Erosion Control Blanketing and anchor stakes, with manufacturer's written installation instructions
  5. Biodegradable Coir Blanketing and anchors stakes, with manufacturer's written installation instructions
  6. Biodegradable Fiber Roll/Vegetated Coir Fascine and anchor stakes
  7. Live Stakes, indicating scientific names, source and schedule/procedures for transport and storage prior to installation at the site.
  8. Reinforced Pervious ADA-Accessible Walkway including steel edging and material certificates for base course and sandy fill material.
    - a. Submit a 10" x 10" section of Reinforced Pervious ADA-Accessible Walkway for review. Reviewed and accepted samples will be returned to the Contractor.
- B. Material Certificate:
1. Stating that any imported topsoil meets specification requirements
- C. Qualification Data: For qualified landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
- D. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before start of required maintenance periods.
- E. Warranty: Sample of special warranty.
- 1.4 QUALITY ASSURANCE
- A. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).



- B. Installer Qualifications: The Work shall be completed under the supervision of a qualified supervisor demonstrating a background in seeding and landscape operations and whose work has resulted in successful vegetative establishment.
- C. The planting shall be done by horticulturally skilled workers, trained and experienced in accepted nursery practices. The Work shall be done under the supervision of a qualified planting supervisor demonstrating a background in landscape operations.
- D. Soil-Testing Laboratory Qualifications: An independent or university laboratory recognized by the State Department of Agriculture, such as the University of Massachusetts Amherst (UMass Extension) Soil Testing Laboratory or equivalent, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- E. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.
- F. Plant Material Observation: Engineer may observe plant material either at place of growth or at the site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Engineer retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected plug plantings, trees and/or shrubs immediately from Project site.
  - 1. Notify Engineer of sources of planting materials seven days in advance of delivery to the site.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. All seed, plantings and products/materials shall be delivered, stored, and handled according to the supplier's/manufacturers' written instructions.
- B. Seed: Deliver in original sealed, labeled, and undamaged containers.
- C. Live Stakes:
  - 1. Protect all plants and products from weather or other damaging or deteriorating conditions.
  - 2. All live stakes cut from local sources shall be planted within 24 hours of cutting. Live stakes shall be kept moist during transport to the site and be promptly protected upon arrival at the site. Protection at the site shall provide continuous shade, must be sheltered from the wind, and must be continuously protected from drying out by either being heeled into moist soil or stored in uncontaminated water.
  - 3. Live stakes obtained from a local nursery shall have been harvested while dormant and stored to properly maintain dormancy. The materials retrieved from cold storage shall be shipped moist and shall be rehydrated by soaking prior to installation.
- D. Plant stock shall be covered and kept moist during transport and promptly protected upon arrival to the site.
  - 1. Protection shall provide continuous shade, be sheltered from the wind, and must be continuously protected from drying out by either being heeled into moist soil or stored in uncontaminated water.

2. Keep plants moist, fresh, and protected against exposure to sun, wind, and freezing temperatures whether in the receiving yard, in transit, while being handled, or at the job site awaiting planting.
  3. Plant materials shall be installed within 72 hours of removal from the nursery storage.
- E. Plants which have been damaged or have deteriorated in transit or storage are not acceptable.
- F. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing vegetated areas or plants.
  2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
  3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.
- G. Protect Reinforced Pervious ADA-Accessible Walkway units and accessories from damage during delivery and store under tarp when time from delivery to installation exceeds one week.
- H. Deliver bare-root stock plants freshly dug. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.
- I. Handle planting stock by root ball.
- J. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
1. Heel-in bare-root stock. Soak roots that are in dry condition in water for two hours. Reject dried-out plants.
  2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
  3. Do not remove container-grown stock from containers before time of planting.
- Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.

#### 1.6 WARRANTY

- A. Special Warranty: Warrant the following exterior plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.
1. Warranty Period: One year from date of Substantial Completion.

#### 1.7 MAINTENANCE

- A. Provide full maintenance by skilled employees under the supervision of a qualified supervisor demonstrating a background in seeding and landscape operations and whose work has resulted in

successful establishment of vegetation. Begin maintenance immediately after each area is planted and continue until acceptable vegetation is established but for not less than the following periods:

1. Seeded Areas, Plug and Potted Plantings: One year from date of Substantial Completion.
  - a. When initial maintenance period has not elapsed before end of planting season, or if vegetation is not fully established, continue maintenance during next planting season.
2. Live Stakes: Maintain for the following maintenance period by pruning, cultivating, watering, weeding, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings.
  - a. Maintenance Period: One year from date of Substantial Completion.

## 1.8 PROJECT CONDITIONS

- A. Do not use frozen materials or materials mixed or coated with frost when installing Reinforced Pervious ADA-Accessible Walkway. Be careful in handling rolls of Reinforced Pervious ADA-Accessible Walkway in temperatures below 50°F, as product connectors can become stiff and can separate, and the individual units will retain the roll curl until warmed to room temperature (aided by placement in sun for 15 to 20 minutes). If cold weather is anticipated, the Reinforced Pervious ADA-Accessible Walkway can be shipped in flat sheets that measure 1-meter (40") square.
- B. Do not construct Reinforced Pervious ADA-Accessible Walkway on frozen or wet, saturated or muddy subgrade.
- C. Protect Reinforced Pervious ADA-Accessible Walkway against damage from other construction traffic when work is in progress and until seeding above system has been satisfactorily established.

## 1.9 SCHEDULING

- A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.
- B. Planting Restrictions: Plant during one of the following periods.
  1. Spring Planting: March 21 through June 15.
  2. Fall Planting: October 1 through December 1.

## PART 2 - PRODUCTS

### 2.1 TOPSOIL

- A. The material to be furnished in accordance with Section M1.05.0 of MassDOT's Standard Specifications and shall consist of screened loose, friable, fine sandy loam or sandy loam, as defined by the USDA's Soil Conservation Service in the Soil Survey Manual issued in 1993, free of subsoil, refuse, stumps, roots, rocks, cobbles, stones, brush, noxious weeds, litter and other materials which are larger than 1/2-inch in any dimension and which will prevent the formation of a suitable seed bed.

1. Organic matter shall constitute not less than 5 percent nor more than 10 percent of the loam as determined by loss-on-ignition of oven dried samples that have been drawn by the Engineer, unless otherwise specified or directed.
2. The topsoil shall have an acidity range of 5.5 pH to 7.0 pH. The Contractor shall notify the Engineer of the intended source of topsoil to be employed at least two weeks prior to the intended time of use to allow time for sampling.

## 2.2 TREES, PLUG AND POTTED PLANTINGS

- A. Species shall be as indicated on the Contract Drawings.
- B. Plants to be used in salt marsh restoration areas shall be hardened off to the local salinity (to be measured and confirmed by the Contractor) by the plant supplier/nursery prior to transport to the site.
- C. Antidesiccant shall be provided for potted plantings as recommended by the plant supplier/nursery.

## 2.3 SEEDING

- A. Seed mixes shall meet requirements indicated on the Contract Drawings.

## 2.4 BIODEGRADABLE EROSION CONTROL BLANKETING

- A. Biodegradable Erosion Control Blanketing shall meet requirements indicated on the Contract Drawings.

## 2.5 BIODEGRADABLE COIR BLANKETING

- A. Biodegradable Coir Blanketing shall meet requirements indicated on the Contract Drawings.

## 2.6 MISCELLANEOUS PRODUCTS

- A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.
- B. Biodegradable Stakes: Shall meet requirements indicated on the Contract Drawings.
- C. Burlap: Non-synthetic, biodegradable.

## 2.7 LIVE STAKES

- A. Live Stake Species: As specified on the Contract Drawings.
- B. Live stakes and other plant stock shall be obtained from a nursery supplier located in the same planting zone or cut from approved local sources.

## 2.8 HAY MULCH

- A. Hay mulch shall be from fresh, dry hay bales.

## 2.9 GEOCELLULAR REINFORCEMENT PAD MATERIALS

- A. Reinforced Pervious ADA-Accessible Walkway: Reinforced Pervious ADA-Accessible Walkway shall be as specified on the Contract Drawings.

- B. Gravel Base Course: Compacted sandy gravel base Sandy Gravel material from local sources commonly used for road base construction, passing the following sieve analysis:

Sieve	%Passing
1"	100
3/4"	90-100
3/8"	70-80
#4	55-70
#10	45-55
#40	25-35
#200	3-8

- C. Gravel Surface Fill: Shall be grey and as specified on the Contract Drawings.
- D. Steel Edging: Standard commercial-steel edging, rolled edge, fabricated in sections of standard lengths of 16 feet, with loops stamped from or welded to face of sections to receive stakes.
1. Steel Edging: As specified on the Contract Drawings.
  2. Edging Size: 3/16 inch wide by 4 inches deep.
  3. Stakes: Tapered steel, a minimum of 15 inches long.
  4. Accessories: Standard tapered ends, corners, and splicers.
  5. Finish: Powder coated, baked on enamel supplied in black.

## 2.10 MISCELLANEOUS PRODUCTS

- A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.
- B. Wooden Stakes: Shall meet requirements indicated on the Contract Drawings.
- C. Burlap: Non-synthetic, biodegradable.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to be seeded or receive plants for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.
1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
  2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
  3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
  4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

- C. If contamination by foreign or deleterious material or liquid is present in soil within a seeding area, remove the soil and contamination as directed by Engineer and replace with new planting soil.

### 3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by seeding operations.
  - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
  - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out individual tree and shrub locations and areas for multiple plantings within stormwater planters. Stake locations, outline areas, adjust locations when requested, and obtain Engineer's acceptance of layout before excavating or planting. Make minor adjustments as required.
- D. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.
- E. Restore site access routes, staging and storage areas or other areas within the limit of disturbance used by the Contractor during the project by raking, removing and disposing of all debris.

### 3.3 PLACEMENT

- A. Areas to receive erosion control blanketing, coir blanketing, trees, plug/plotted plantings, seeding and live stakes are to be field-directed by the Engineer, as required based on observed conditions along riverbanks upgradient of the project site, following removal of the temporary cofferdam(s) and water bypass conveyances and restoration of normal river flows through the project site.
- B. Blanketing and matting are to be installed in accordance with manufacturer's written instructions.
- C. Spread topsoil where shown on the drawings to meet finish grades after light rolling and natural settlement. Do not spread if topsoil or subgrade is frozen, muddy, or excessively wet.
  - 1. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
  - 2. Restore areas if eroded or otherwise disturbed after final restoration and before seeding.
- D. Live stakes shall be installed in accordance with the following requirements and as instructed by the Engineer as to specific installation placement and intermixing of species within the areas to be planted:
  - 1. Set or tamp the live stakes into the slope soil material. A water jet stinger, probes, driving caps or other staking aids may be used to make a pilot hole in the soil.
  - 2. Four-fifths of the length of the live stake shall be installed in the ground and soil firmly packed around it after installation.
  - 3. Set the live stakes into the slope with buds oriented upward. At least 2 bud or bud scars shall extend above the finished grade.

3.4 PREPARATION AND INSTALLATION OF REINFORCED PERVIOUS ADA-  
ACCESSIBLE WALKWAY

- A. Reduce subgrade elevation soil to allow for thickness of reinforced pervious ADA-accessible walkway and base course.
- B. Examine subgrade and base course installed conditions prior to installation of reinforced pervious ADA-accessible walkway. Do not start installation of system until unsatisfactory conditions are corrected. Check for poor drainage, improperly compacted trenches, debris, and improper gradients. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Engineer for resolution.
- C. Install base course as recommended by paving-material manufacturer for site conditions; comply with details shown on Drawings. Compact according to paving-material manufacturer's written instructions. Base course shall be installed over prepared subbase to grades shown on Drawings, in lifts not to exceed six inches, compacting each lift separately to 95% Modified Proctor. Leave one inch below finish grade for accommodation of reinforced pervious ADA-accessible walkway and decorative gravel fill.
- D. Check for porosity of base course with water. Water should readily flow into the base and away.
- E. Install reinforced pervious ADA-accessible walkway and fasten according to material manufacturer's written instructions. Before seeding, fill cells with gravel surface fill and compact according to manufacturer's written instructions.

3.5 TOPSOIL

- A. The Contractor shall submit a sample for testing prior to the placement of topsoil. The sample will be taken from material furnished by the Contractor or from the removed and stockpiled material on site. The sample shall be approved by the Engineer prior to the placement. Topsoil which does not meet the requirements shall be rejected.
- B. Prior to the placement of topsoil the Contractor shall prepare the surface to receive the loam. All roots, sod, weeds, cobbles or stone with any dimension greater than 1/2 inch shall be removed and legally disposed of.
  - 1. Topsoil shall be placed on surfaces which are true to the lines, grades, and cross-sections shown on the Drawings or established by the Engineer.
  - 2. Topsoil shall be placed and spread to the required depth; the minimum thickness shall be as indicated on the Drawings and/or in the Proposal.
  - 3. The topsoiled surface shall be graded, and all roots, sods, weeds, cobbles or stones with any dimension greater than 1/2 inch shall be removed and legally disposed of. After shaping and grading, all trucks and other equipment not required to perform seeding, mulching or mowing operations shall be excluded from the loamed areas.
  - 4. Work under this item shall be performed only with the permission of the Engineer. The Engineer may suspend work when he determines soil or weather conditions are unsuitable for spreading and/or grading topsoil. The Contractor may resume work when directed by the Engineer.

5. All topsoiled areas shall be seeded no more than two weeks after spreading the topsoil.
- C. Topsoiled areas shall be maintained, free from erosion until acceptance of the project.
- 3.6 TREES, PLUG AND POTTED PLANTINGS
  - A. Trees, Plug and Potted Plantings shall be installed as indicated on the Contract Drawings.
- 3.7 SEEDING
  - A. Seed shall be installed as indicated on the Contract Drawings.
- 3.8 BIODEGRADABLE EROSION CONTROL BLANKETING
  - A. Biodegradable Erosion Control Blanketing shall be installed as indicated on the Contract Drawings.
- 3.9 BIODEGRADABLE COIR BLANKETING
  - A. Biodegradable Coir Blanketing shall be installed as indicated on the Contract Drawings.
- 3.10 CLEANUP AND PROTECTION
  - A. Promptly remove soil and debris created by work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
  - B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
  - C. Remove any non-degradable erosion-control measures after vegetative establishment period.
  - D. Monitor completed construction immediately following work during varying river flows, particularly flood flows where water levels rise to higher elevations along the riverbank where seed and plug planting vegetation has not yet been completely established through a full growing season, to identify areas of settlement or erosion, and promptly repair/stabilize such areas to protect finished work and support establishment of vegetation with stabilization measures aligned and intact as depicted on the Contract Drawings.

END OF SECTION



**DIVISION 33 – UTILITIES**

## SECTION 33 37 00 – FLOW CONTROL STRUCTURES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Aluminum Stop Logs and Frames
  - 2. Aluminum Gate and Frame
  - 3. Manual Operators
- B. Related Sections include the following:
  - 1. Division 03 Section “Cast-in-Place Concrete”
  - 2. Division 31 Section “Earth Moving”

#### 1.3 SUBMITTALS

- A. Delegated-Design Submittal: For aluminum stop log and frame structures and aluminum gate and frame structure indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  - 1. Provide the following to confirm compliance with this specification for the aluminum stop log and frames:
    - a. Complete description of all materials including the material thickness of all structural components of the stop logs, guide frames and stop log lifter.
    - b. Installation drawings showing all details of construction, details required for installation, dimensions and anchor bolt locations.
    - c. Maximum bending stress and deflection of the stop logs under the maximum design head.
    - d. The location of the company headquarters and the location of the principal manufacturing facility. Provide the name of the company that manufactures the equipment if the supplier utilizes an outside source.
  - 2. Provide the following to confirm compliance with this specification for the aluminum gates and frames:
    - a. Complete description of all materials including the material thickness of all structural components of the frame and slide.

- b. Installation drawings showing all details of construction, details required for installation, dimensions and anchor bolt locations.
    - c. Maximum bending stress and deflection of the slide under the maximum design head.
    - d. The location of the company headquarters and the location of the principal manufacturing facility. Provide the name of the company that manufactures the equipment if the supplier utilizes an outside source.
  - B. Product Data:
    1. Aluminum stop logs and frames (including all fittings and hardware appurtenances)
    2. Aluminum gate and frame (including manual operators and other hardware appurtenances)
    3. Manual operator
  - C. Shop Drawings; Include plans, elevations, details, loading calculations, and attachments for the following:
    1. Aluminum stop logs and frames
    2. Aluminum gate and frame
    3. Manual operators
  - D. Manufacturer's qualifications
  - E. For Information Only.
    1. Material Certificates: Certify all materials utilized for gate, stop logs and frames meet respective specification criteria.
    2. Provide comprehensive engineering analysis and delegated design of the aluminum gates, stop logs, and frames; including plans, sections and details, analysis data and calculations signed and sealed by a professional engineer registered in the Commonwealth of Massachusetts.
- 1.4 QUALITY ASSURANCE
  - A. Qualifications:
    1. All of the equipment specified under this Section shall be furnished by a single manufacturer with a minimum of 20 years experience designing and manufacturing water control gates. The manufacturer shall have manufactured water control gates for a minimum of 100 projects.
    2. All of the equipment specified under this Section shall be furnished by a single manufacturer with a minimum of 20 years experience designing and manufacturing stop logs. The manufacturer shall have manufactured stop logs for a minimum of 100 projects.
  - B. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not store structures in direct sunlight.
- B. Protect all products and materials from dirt and damage.
- C. Handle structures according to manufacturer's written rigging instructions.

1.6 PROJECT CONDITIONS

- A. Notify Engineer not less than 7 days in advance of construction of gate, stop logs and frames and installation.

PART 2 - PRODUCTS

2.1 ALUMINUM STOP LOGS AND FRAMES

- A. Aluminum stop logs and frame structures shall be Series 500 aluminum stop logs as manufactured by Whipps, or approved equal.

B. GENERAL

- 1. Stop log assemblies shall be as specified herein and have the characteristics and dimensions shown on the Contract Drawings.
- 2. Leakage shall not exceed 0.05 gpm/ft of wetted seal perimeter.
- 3. The stop logs shall be provided with a continuous resilient seal along the bottom and both sides. The guide frames shall not incorporate seals.
- 4. Stop logs shall be of the height as shown in the Contract Drawings and they shall be designed to function properly when stacked in any order.
- 5. Stop logs shall be designed to drop into place under their own weight without any downward pressure necessary. Stacking stop plates are not acceptable in lieu of stop logs.
- 6. All structural components of the stop logs shall be fabricated of aluminum and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.
- 7. All structural components of the guide frames shall be fabricated of aluminum and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.
- 8. All welds shall be performed by welders with AWS certification.
- 9. Finish: Mill finish on aluminum. All aluminum in contact with concrete shall be field coated with a heavy coat of bitumastic paint. Welds on aluminum shall be cleaned to provide a uniform finish.
- 10. Materials:
  - a. Frame Guides and Invert: 6061-T6 Aluminum
  - b. Stop Logs: 6061-T6 Aluminum

- c. Lip Seal: Urethane, EPDM or Neoprene ASTM D-2000
- d. Anchor Studs, Fasteners and Nuts: Stainless Steel, Type 316, ASTM A276

C. FRAME GUIDES

- 1. The frame guides or grooves and invert member shall be constructed of extruded aluminum with a minimum thickness of 1/4-inch.
  - a. Frame design shall allow for embedded mounting with stainless steel anchor bolts and grout.
  - b. An invert member shall be provided across the bottom of the guides. The invert member shall be of the flushbottom type.
  - c. Frame mounted seals are not acceptable.

D. STOP LOGS

- 1. The stop logs shall be constructed of extruded aluminum shapes with a minimum thickness of 5/16-inch.
  - a. Each stop log shall be 6 inches tall unless otherwise indicated on the Contract Drawings.
  - b. Maximum bending stress shall not exceed 7600 psi at the maximum operating head.
  - c. Adequate drainage shall be provided for each stop log.
  - d. Two slots shall be provided in the top of each stop log for removal and installation via the stop log lifter.
  - e. Each stop log shall be outfitted with an identification tag indicating the manufacturer, width of the opening and maximum head rating at a minimum. Additional tags shall be included on each stop log that indicate "dry side" and "wet side". Tags shall be welded to each log.

E. SEALS

- 1. Each stop log shall be outfitted with a continuous resilient lip seal along the bottom and both sides to restrict leakage in accordance with the requirements listed in this specification.
  - a. The continuous lip seal shall be constructed of urethane or rubber and shall be mechanically retained to the stop log.
  - b. The lip seal shall be activated by a combination of the weight of the stop log and the differential water pressure, which pushes the seal against the inside of the groove assembly.
  - c. Stop logs that utilize rubber "J" seals or "P" seals are not acceptable.

F. LIFTER

- 1. One stop log lifter shall be provided for each different guide frame width.
  - a. The lifter shall be constructed of aluminum and shall be outfitted with UHMW guide bars and stainless steel fasteners.

- b. The lifter shall be provided with lifting hooks designed to engage the slots in the top of the stop logs. A lanyard release will be incorporated into the design.
- c. The lifter shall be capable of installing and removing all stop logs of the same width whether they are installed or at the operating floor level.

G. ANCHOR BOLTS

1. Anchor bolts shall be provided by the stop log manufacturer for mounting the guide frames.
  - a. Quantity and location shall be determined by the stop log manufacturer.
  - b. If epoxy type anchor bolts are provided, the stop log manufacturer shall provide the studs and nuts.
  - c. Anchor bolts shall have a minimum diameter of 1/2-inch.

2.2 ALUMINUM GATE AND FRAME

- A. Aluminum gate and frame structure shall be Series 800 aluminum gate as manufactured by Whipps, or approved equal.

B. GENERAL

1. Gates shall be as specified herein and have the characteristics and dimensions shown on the Contract Drawings.
2. Leakage shall not exceed 0.1 gpm/ft of wetted seal perimeter in seating head and unseating head conditions.
3. The gate shall utilize self-adjusting seals. Gates that utilize adjustable wedges or wedging devices are not acceptable.
4. All structural components of the frame and slide shall be fabricated of aluminum having a minimum thickness of 1/4-inch and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.
5. All welds shall be performed by welders with AWS D1.2 certification.
6. Finish: Mill finish on aluminum. All aluminum shall be field coated with a heavy coat of bitumastic paint. Welds shall be cleaned to provide a uniform finish. All iron and steel components shall be properly prepared and shop coated with a primer.
7. Materials:
  - a. Frame Guides, Yoke and Invert Member: 6061-T6 Aluminum
  - b. Slide and Stiffeners: 6061-T6 Aluminum
  - c. Stem: Stainless Steel, Type 304, ASTM A276
  - d. Anchor Studs, Fasteners and Nuts: Stainless Steel, Type 316, ASTM A276
  - e. Invert Seal: Neoprene ASTM D-2000 or EPDM
  - f. Seat/Seal and Facing: Ultra-High Molecular Weight Polyethylene ASTM D4020
  - g. Lift Nuts: Bronze ASTM B584
  - h. Pedestal: 6061-T6 Aluminum

- i. Operator Housing: Cast aluminum

C. FRAME

1. The frame guides, invert member and yoke members shall be constructed of extruded aluminum shapes with a minimum thickness of 1/4-inch.
  - a. Frame design shall allow for embedded mounting or mounting directly to a wall with stainless steel anchor bolts and grout. Mounting style shall be as shown on the Contract Drawings.
  - b. The frame guides shall have a minimum weight of 3 lbs per foot for embedded.
  - c. The frame guides shall extend to accommodate the entire height of the slide when the slide is in the fully opened position on upward opening slide gates.
  - d. On self-contained gates, a yoke shall be provided across the top of the frame guides. The yoke shall be formed by two structural members affixed to the top of the guides to provide a one-piece rigid frame. The yoke shall be designed to allow removal of the slide.
  - e. A rigid extruded aluminum invert member shall be provided across the bottom of the opening. The invert member shall be of the flush bottom type on upward opening gates and shall have a minimum weight of 3 lbs per foot for embedded.
  - f. A rigid extruded aluminum top seal member shall be provided across the top of the opening on gates designed to cover submerged openings.

D. SLIDE

1. The slide and reinforcing stiffeners shall be constructed of aluminum plate with a minimum thickness of 1/4-inch.
  - a. The slide shall not deflect more than 1/360 of the span or 1/16 inch, whichever is smaller, under the maximum design head.
  - b. The portion of the slide that engages the frame shall have a minimum material thickness of 1/2-inch.
  - c. Reinforcing stiffeners shall be welded to the slide and mounted horizontally. Two vertical stiffeners shall be welded on the outside of the horizontal stiffeners for additional reinforcement.
  - d. The stem connector shall be constructed of two angles or plates. The stem connector shall be welded to the slide. A minimum of two bolts shall connect the stem to the stem connector.

E. SEALS

1. All gates shall be provided with a self-adjusting seal system to restrict leakage in accordance with the requirements listed in this specification.
  - a. All gates shall be equipped with UHMW polyethylene seat/seals to restrict leakage and to prevent metal to metal contact between the frame and slide.
  - b. The seat/seals shall extend to accommodate the 1-1/2 x the height of the slide when the slide is in the fully closed or fully opened position.

- c. All upward opening gates shall be provided with a resilient seal to seal the bottom portion of the gate. The seal shall be attached to the invert member of the frame or the bottom of the slide.
- d. The seal system shall be durable and shall be designed to accommodate high velocities and frequent cycling without loosening or suffering damage.
- e. The seals shall be mounted so as not to obstruct the water way opening.
- f. Gates that utilize rubber "J" seals or "P" seals are not acceptable.

#### F. STEM

1. A threaded operating stem shall be utilized to connect the operating mechanism to the slide. On rising stem gates, the threaded portion shall engage the operating nut in the manual operator. On non-rising stem gates, the threaded portion shall engage the nut on the slide.
  - a. The threaded portion of the stem shall have a minimum outside diameter of 1-1/2 inches. Stem extension pipes are not acceptable.
  - b. The stem shall be constructed of solid stainless steel bar for the entire length, the metal having a tensile strength of not less than 75,000 psi.
  - c. The stem shall be threaded to allow full travel of the slide unless the travel distance is otherwise shown on the Contract Drawings.
  - d. Maximum L/R ratio for the unsupported part of the stem shall not exceed 200.
  - e. In compression, the stem shall be designed for a critical buckling load caused by a 40 lb effort on the crank or handwheel with a safety factor of 2, using the Euler column formula.
  - f. The stem shall be designed to withstand the tension load caused by the application of a 40 lb effort on the crank or handwheel without exceeding 1/5 of the ultimate tensile strength of the stem material.
  - g. The threaded portion of the stem shall have machine rolled threads of the full Acme type with a 16 microinch finish or better. Stub threads are not acceptable.
  - h. Stems of more than one section shall be joined by stainless steel or bronze couplings. The coupling shall be bolted to the stems.
  - i. Stems, on manually operated gates, shall be provided with adjustable stop collars to prevent over closing of the slide.

#### G. STEM GUIDES

1. Stem guide shall be provided when necessary to ensure that the maximum L/R ratio for the unsupported part of the stem is 200 or less.
  - a. Stem guide brackets shall be constructed of aluminum with a minimum thickness of 1/4-inch and shall be outfitted with UHMW or bronze bushings.
  - b. Adjustable in two directions.

#### H. MANUAL OPERATORS



1. Unless otherwise shown on the Drawings, gates shall be operated by a manual handwheel or a manual crank-operated gearbox. The operator shall be mounted on the yoke of self contained gates or on the pedestal of non-self contained gates.
  - a. The gate manufacturer shall select the proper gear ratio to ensure that the gate can be operated with no more than a 40 lb effort when the gate is in the closed position and experiencing the maximum operating head.
  - b. An arrow with the word "OPEN" shall be permanently attached or cast onto the operator to indicate the direction or rotation to open the gate.
  - c. Handwheel operators shall be fully enclosed and shall have a cast aluminum housing.
    - 1) Handwheel operators shall be provided with a threaded cast bronze lift nut to engage the operating stem.
    - 2) Handwheel operators shall be equipped with roller bearings above and below the operating nut.
    - 3) Positive mechanical seals shall be provided above and below the operating nut to exclude moisture and dirt and prevent leakage of lubricant out of the hoist.
    - 4) The handwheel shall be removable and shall have a minimum diameter of 15 inches.
  - d. Crank-operated gearboxes shall be fully enclosed and shall have a cast aluminum housing.
    - 1) Gearboxes shall have either single or double gear reduction depending upon the lifting capacity required.
    - 2) Gearboxes shall be provided with a threaded cast bronze lift nut to engage the operating stem.
    - 3) Bearings shall be provided above and below the flange on the operating nut to support both opening and closing thrusts.
    - 4) Gears shall be steel with machined cut teeth designed for smooth operation.
    - 5) The pinion shaft shall be stainless steel and shall be supported on ball or tapered roller bearings.
    - 6) Positive mechanical seals shall be provided on the operating nut and the pinion shafts to exclude moisture and dirt and prevent leakage of lubricant out of the hoist.
    - 7) The crank shall be cast aluminum with a revolving nylon grip.
    - 8) The crank shall be removable.
  - e. All gates having widths in excess of 72 inches and widths greater than twice their height shall be provided with two gearboxes connected by an interconnecting shaft for simultaneous operation.
    - 1) Interconnecting shafting shall be constructed of aluminum or stainless steel.
    - 2) Flexible couplings shall be provided at each end of the interconnecting shaft. Couplings shall be stainless steel or non-metallic.

- 3) One crank shall be provided to mount on the pinion shaft of one of the gearboxes.
- 4) If the operating assembly is motorized, a stainless steel enclosure shall be provided over the interconnecting shaft to comply with OSHA regulations.
- f. An extended operator system utilizing chain and sprockets shall be furnished by the manufacturer when the centerline of the crank or handwheel, on a non-gear operator, is located over 48 in above the operating floor. Chain wheels are not acceptable.
  - 1) A removable aluminum cover shall be provided to enclose chain and sprockets.
  - 2) The extended operator system shall lower the centerline of the pinion shaft to 36 in above the operating floor.
  - 3) A handwheel may be utilized in conjunction with a gearbox in lieu of the extended operator system if the centerline of the pinion shaft is 60-in or less above the operating floor.
- g. Pedestals shall be constructed of aluminum or stainless steel.
  - 1) The pedestal height shall be such that the handwheel or pinion shaft on the crank-operated gearbox is located approximately 36 in above the operating floor.
  - 2) Wall brackets shall be used to support floor stands where shown on the Drawings and shall be constructed of aluminum.
  - 3) Wall brackets shall be reinforced to withstand in compression at least two times the rated output of the operator with a 40 lb effort on the crank or handwheel.
  - 4) The design and detail of the brackets and anchor bolts shall be provided by the gate manufacturer. The gate manufacturer shall supply the bracket, anchor bolts and accessories as part of the gate assembly.
- h. Operators shall be equipped with fracture resistant clear butyrate or lexan plastic stem covers.
  - 1) The top of the stem cover shall be closed.
  - 2) The bottom end of the stem cover shall be mounted in a housing or adapter for easy field mounting.
  - 3) Stem covers shall be complete with indicator markings to indicate gate position.

#### I. ANCHOR BOLTS

1. Anchor bolts shall be provided by the gate manufacturer for mounting the gates and appurtenances.
  - a. Quantity and location shall be determined by the gate manufacturer.
  - b. If epoxy type anchor bolts are provided, the gate manufacturer shall provide the studs and nuts.
  - c. Anchor bolts shall have a minimum diameter of 1/2-inch.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

##### A. Aluminum Stop Logs and Frame Structures

1. Installation of the stop logs, guide frames and appurtenances shall be done in a workmanlike manner. It shall be the responsibility of the Contractor to handle, store and install the equipment specified in this Section in strict accordance with the manufacturer's recommendations.
2. The Contractor shall review the installation drawings and installation instruction prior to installing the guide frames.
3. The guide frames shall be installed in a true vertical plane, square and plumb.

##### B. Aluminum Gate and Frame Structure

1. Installation of the gates and appurtenances shall be done in a workmanlike manner. It shall be the responsibility of the Contractor to handle, store and install the equipment specified in this Section in strict accordance with the manufacturer's recommendations.
2. The Contractor shall review the installation drawings and installation instruction prior to installing the gates.
3. The gate assemblies shall be installed in a true vertical plane, square and plumb.

#### 3.2 FIELD TESTING

##### A. Aluminum Stop Logs and Frame Structures

1. After installation, all stop logs shall be field tested in the presence of the Engineer to ensure that all items of equipment are in full compliance with this Section. The stop logs shall be inserted into the guide frames to confirm that they operate in accordance with the specification. Each stop log assembly shall be water tested by the Contractor, at the discretion of the Engineer, to confirm that leakage does not exceed the specified allowable leakage.

##### B. Aluminum Gate and Frame Structure

1. After installation, all gates shall be field tested in the presence of the Engineer to ensure that all items of equipment are in full compliance with this Section. Each gate shall be cycled to confirm that they operate without binding, scraping, or distorting. The effort to open and close manual operators shall be measured, and shall not exceed the maximum operating effort specified above. Each gate shall be water tested by the Contractor, at the discretion of the Engineer, to confirm that leakage does not exceed the specified allowable leakage.

END OF SECTION

## SECTION 33 40 00 – WATER BYPASS PIPPING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, MassDOT Standard Specifications for Highways and Bridges, and Division 1 Specification Sections apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Pipes and fittings.
  - 2. Precast Concrete Structures.
- B. Related Sections:
  - 1. Division 2 Section "Site Clearing"
  - 2. Division 2 Section "Temporary Erosion and Sediment"
  - 3. Division 3 Section "Earth Moving"

#### 1.3 DEFINITIONS

- A. FRP: Fiberglass-reinforced plastic.
- B. HDPE: High-density polyethylene plastic.
- C. RCP: Reinforced concrete pipe.
- D. PVC: Polyvinyl chloride.

#### 1.4 QUALITY ASSURANCE

- A. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).

#### 1.5 SUBMITTALS

- A. Product Data/Certificates: For each type of product indicated.
  - 1. Pipes and fittings.
  - 2. Precast concrete structures
    - a. Lagoon outlet control structure

- b. Precast concrete inlet structure
      - c. Precast concrete outlet structure
    - 3. Castings.
  - B. Shop Drawings:
    - 1. All precast concrete structures: Include plans, elevations, sections, details, frames, covers, and grates.
  - C. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.
  - D. Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5 feet. Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. Do not store plastic pipe, fittings, and structures in direct sunlight.
  - B. Protect pipe, pipe fittings, and seals from dirt and damage.
  - C. Handle precast overflow structures and manholes according to manufacturer's written rigging instructions.
- 1.7 PROJECT CONDITIONS
- A. Site Information: Research public utility records and verify existing utility locations prior to construction.

## PART 2 - PRODUCTS

### 2.1 HDPE PIPE AND FITTINGS:

- A. AASHTO M294 (for pipes 12-inches and larger), Type S, with smooth interior and annular exterior corrugations for couplings.
  - 1. Water-tight Couplings: AASHTO M294, corrugated, matching pipe and fittings to form water-tight joints.
  - 2. All appurtenances shall be provided by the same manufacturer and designed for the application and pipe that is installed.
  - 3. Pipe shall be joined using an integral bell & gasketed spigot joint meeting AASHTO M294. The joint shall be water-tight and gaskets shall meet the requirements of ASTM D3212. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.

4. Fittings shall conform to ASTM F2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the water-tight joint performance requirements of ASTM 2306.

## 2.2 PVC PIPE AND FITTINGS

1. Pipe: ASTM D 1785, [Schedule 80 PVC, with plain ends for solvent-cemented joints.
2. Fittings: ASTM D 2467, Schedule 80 PVC, socket type.

## 2.3 DUCTILE -IRON PIPE AND FITTINGS

### A. Mechanical-Joint Piping:

1. Pipe: AWWA C151, with bolt holes in bell.
2. Standard Fittings: AWWA C110, ductile or gray iron, with bolt holes in bell.
3. Compact Fittings: AWWA C153, with bolt holes in bells.
4. Glands: Cast or ductile iron, with bolt holes and high-strength, cast-iron or high-strength, low-alloy steel bolts and nuts.
5. Gaskets: AWWA C111, rubber, of shape matching pipe, fittings, and glands.

## 2.4 GATE VALVE

### A. AWWA, Cast-Iron Gate Valves:

1. Nonrising-Stem, Resilient-Seated Gate Valves:
  - a. Description: Gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.
    - 1) Standard: AWWA C515.
    - 2) Minimum Pressure Rating: 200 psig.
    - 3) End Connections: Mechanical joint.
    - 4) Interior Coating: Complying with AWWA C550.

### B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.

1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

## 2.5 LAGOON OUTLET CONTROL STRUCTURE

### A. Shall be 2' x 4' drop inlet, Model SRP-DI24, as manufactured by Scituate Companies or approved equal

1. Stop Logs: As specified on the Contract Drawings.

2. Cover/Grate: Aluminum access hatch, Model H24481507 by ECJO or approved equal.
3. Steps: Individual FRP, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of structure to finished grade is less than 48 inches.
4. Resilient Pipe Connectors: ASTM C 923, cast or fitted into manhole walls, for each pipe connection.

## 2.6 PRECAST CONCRETE INLET STRUCTURE

A. Structure: Shall be as shown on the Contract Drawings and meet the following requirements

1. Description: ASTM C 913; designed according to ASTM C 890 for A-16 (AASHTO HS20-44), heavy-traffic, structural loading; of depth, shape, and dimensions indicated, with provision for sealant joints.
2. Ballast: Increase thickness of one or more precast concrete sections or add concrete to manhole as required to prevent flotation.
3. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
4. Resilient Pipe Connectors: ASTM C 923, cast or fitted into manhole walls, for each pipe connection.
5. Steps: Individual FRP, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than 60 inches.
6. Grate: 5'x5' double door aluminum hatch, Model H60601701 by EJCO or approved equal.
7. Primary Debris Screen: Model LSQ-48 by trashrack.com or approved equal.
8. Stainless Steel Perforated Screen: McHichols perforated metal screen with 3/8" diameter holes or approved equal.

## 2.7 PRECAST CONCRETE OUTLET STRUCTURE

A. Structure: Shall be as shown on the Contract Drawings and meet the following requirements

1. Description: ASTM C 913; designed according to ASTM C 890 for A-16 (AASHTO HS20-44), heavy-traffic, structural loading; of depth, shape, and dimensions indicated, with provision for sealant joints.
2. Ballast: Increase thickness of one or more precast concrete sections or add concrete to manhole as required to prevent flotation.
3. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
4. Resilient Pipe Connectors: ASTM C 923, cast or fitted into manhole walls, for each pipe connection.

5. Steps: Individual FRP, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than 60 inches.
6. Grate: Round pond skimmer grate (model LFR-48 by trashrack.com or approved equal)

### PART 3 - EXECUTION

#### 3.1 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Division 02 Section "Earth Moving."

#### 3.2 PIPES AND FITTINGS

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.
- D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- E. Install gravity-flow, non-pressure drainage piping according to the following:
  1. Install piping pitched down in direction of flow.
  2. Install HDPE piping according to ASTM D 2321.
  3. Install PVC cellular-core piping according to ASTM D 2321 and ASTM F 1668.
  4. Install ductile-iron piping and special fittings according to AWWA C600 or AWWA M41.

#### 3.3 PIPE JOINT CONSTRUCTION

- A. Join gravity-flow, nonpressure drainage piping according to the following:
  1. Join ductile-iron piping and special fittings according to AWWA C600 or AWWA M41.
  2. Join corrugated PE piping according to ASTM D 3212 for push-on joints.
  3. Join PVC cellular-core piping according to ASTM D 2321 and ASTM F 891 for solvent-cemented joints.



### 3.4 PRECAST CONCRETE STRUCTURES

- A. General: Install complete with appurtenances and accessories indicated.
- B. Install Precast Concrete Structures in accordance with Section 201 of the MassDOT Standard Specifications.
  - 1. Install in locations and to the lines, grades, dimensions, and design indicated on the Contract Drawings.
  - 2. Set atop a layer of compacted gravel borrow as indicated on the Contract Drawings.
- C. Set covers and grates to the elevations indicated on the Contract Drawings. Set covers and grates of precast structures in full mortar beds.
- D. This work shall be performed under dry conditions when there is no flow being conveyed through the pipes and when no rain is forecasted to occur throughout the duration of installation.

### 3.5 VALVE INSTALLATION

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.

### 3.6 FIELD QUALITY CONTROL

- A. Drainage Piping and Structures:
  - 1. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.
  - 2. In large, accessible piping, brushes and brooms may be used for cleaning.
  - 3. Place plug in end of incomplete piping at end of day and when work stops.
  - 4. Flush piping between structures to remove collected debris, if required by authorities having jurisdiction.
  - 5. Defects requiring correction include:
    - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
    - d. Infiltration: Water leakage into piping.
    - e. Exfiltration: Water leakage from or around piping.
  - 6. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
  - 7. Reinspect and repeat procedure until results are satisfactory.

3.7 CLEANING

- A. Clean interior of piping and structures of dirt and superfluous materials. Flush with water.

END OF SECTION

## SECTION 33 46 00 - SUBDRAINAGE

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes, but is not limited to, drainage systems for the following:
  - 1. Underdrain.
  - 2. Cistern
  - 3. Cleanouts
- B. Related Sections include the following:
  - 1. Division 31 Section "Earth Moving."

#### 1.2 DEFINITIONS

- A. PVC: Polyvinyl chloride.
- B. HDPE: High Density Polyethylene

#### 1.3 DEFINITIONS

- A. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).
- B. FHWA: Shall mean the most recent version of the "United States Department of Transportation, Federal Highway Administration, Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14 (2014)."

#### 1.4 SUBMITTALS

- A. Product Data:
  - 1. Perforated pipe.
  - 2. Discharge conduit
  - 3. Cleanout(s).
  - 4. Connections.
  - 5. Crushed Stone.
  - 6. Non-woven geotextile filter fabric.
  - 7. Precast Cistern
  - 8. Frame and Cover
- B. Shop Drawing:
  - 1. Undrain system: Layout of system, system inverts, outlet orientation, castings

2. Cistern: Include plans, elevations, sections, details, frames, covers, and grates.

C. Material Test Reports:

1. Crushed stone gradation

#### 1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic pipe and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

C. Handle precast concrete structures according to manufacturer's written rigging instructions.

#### 1.6 PROJECT CONDITIONS

A. Site Information: Research public utility records and verify existing utility locations prior to construction.

### PART 2 - PRODUCTS

#### 2.1 PERFORATED PIPING AND FITTINGS

1. Description: ASTM F 405 or AASHTO M 252, Type CP, perforated, corrugated, for coupled joints

2. Couplings: Manufacturer's standard, band type.

#### 2.2 PVC PIPE AND FITTINGS

1. Pipe: ASTM D 1785, Schedule 80 PVC, with plain ends for solvent-cemented joints.

2. Fittings: ASTM D 2467, Schedule 80 PVC, socket type.

#### 2.3 SPECIAL PIPE COUPLINGS

A. Description: ASTM C 1173. Rubber or elastomeric sleeve and band assembly fabricated to match outside diameters of pipes to be joined.

#### 2.4 CLEANOUTS

A. Description Cast-Iron Soil Pipe: ASME A112.36.2M; with round-flanged, cast-iron housing; and secured, scoriated, Medium-Duty Loading class, cast-iron cover. Include cast-iron ferrule and countersunk, brass cleanout plug.

B. PVC Cleanouts: ASTM D 2466, PVC cleanout threaded plug and threaded pipe hub.

#### 2.5 SOIL MATERIALS

A. Soil materials are specified in Section 31 20 00 "Earth Moving"

2.6 NON WOVEN GEOTEXTILE FILTER FABRIC.

- A. Shall meet Section M9.50.0 of the Standard Specifications for Type II Fabric; complying with AASHTO M 288.

2.7 PRECAST CONCRETE CISTERN

- A.
  - A. Structure: Shall be shea concrete 1,200 gallon dry well or accepted equal.
    - 1. Description: ASTM C 913, precast, reinforced, perforated concrete rings. Include the following:
    - 2. Frame and Cover: Frames to be 0MA124000021 as manufactured by East Jordan Co. or accepted equal, Cover: Shall be 0MA124000026 as manufactured by East Jordan Co. or accepted equal. Frames and covers shall be ASTM – A48 class 35B gray iron, heavy duty
    - 3. Wall Thickness: 4 inches minimum with 1-inch diameter maximum slotted perforations arranged in rows parallel to axis of ring.
      - a. Total Free Area of Perforations: Approximately 15 percent of ring interior surface.
      - b. Ring Construction: Designed to be self-aligning.

2.8 IDENTIFICATION

- A. Materials and their installation are specified in Division 31 Section "Earthwork." Arrange for installation of green warning tapes directly over piping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces and areas for suitable conditions where subdrainage systems are to be installed.
- B. Locate and mark existing utilities, underground structures, and aboveground obstructions before beginning installation and avoid disruption and damage of services.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earth Moving"

3.3 IDENTIFICATION

- A. In landscaped and asphalt areas install detectable warning tape over piping and over edges of underground structures.

3.4 SOIL INSTALLATION

- A. Place crushed stone to dimensions shown on plan over compacted subgrade to form base for placement of pipe.

- B. Crushed stone to be placed shall be inspected prior to placement by the Engineer for signs of contamination by finer grained foreign soil material. Contaminated crushed stone shall not be placed and shall be removed from the site.

### 3.5 PIPING INSTALLATION

- A. Install piping beginning at low points of system, true to grades and alignment indicated, with unbroken continuity of invert. Lay filter fabric in trench and overlap sides of trench. Bed piping with full bearing in crushed stone material; install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions and other requirements indicated. Place crushed stone over pipe and then wrap top of crushed stone with filter fabric. Place backfill material over filter fabric to Contract Drawing grades and elevations.
  - 1. Lay perforated pipe with perforations down.
  - 2. Excavate recesses in trench bottom for bell ends of pipe. Lay pipe with bells facing upslope and with spigot end entered fully into adjacent bell.
- B. Use couplings made for different sizes or materials of pipes and fittings being connected. Reduction of pipe size in direction of flow is prohibited.
- C. Install PVC piping according to ASTM D 2321.

### 3.6 CISTERN INSTALLATION

- A. Excavate hole to diameter of at least 12 inches greater than outside of cistern.
- B. Place filter fabric in hole and up the sides of the hole.
- C. Install precast cistern according to the following:
  - 1. Assemble rings to depth indicated.
  - 2. Extend rings to height where top of cover will be approximately 4 inches below finished grade.
  - 3. Backfill bottom of inside of rings with filtering material to level with bottom.
  - 4. Extend effluent inlet pipe 12 inches (300 mm) into rings and terminate into side of tee fitting.
  - 5. Backfill around outside of rings with crushed stone to top level of rings.
  - 6. Install cover over top of rings.
- D. Cover crushed stone with filter fabric and backfill to proposed grade.

### 3.7 CLEANOUT INSTALLATION

- A. Install cleanouts from drainage piping to grade. Locate cleanouts at beginning of piping run unless otherwise indicated and at changes in direction. Install fittings so cleanouts open in direction of flow in piping.
- B. All clean outs are to be cast-iron soil pipe and fittings for subdrainage piping branch fittings and riser extensions to cleanout plug. Set cleanout frames and covers in a cast-in-place concrete

anchor, 18 by 18 by 12 inches in depth. Set top of concrete anchor and cast iron frame flush with grade.

### 3.8 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.

### 3.9 FIELD QUALITY CONTROL

- A. Testing: After installing crushed stone to top of pipe, test drain piping with water to ensure free flow before backfilling. Remove obstructions, replace damaged components, and repeat test until results are satisfactory.
- B. Inspect interior of piping to determine whether line displacement or other damage has occurred.
  - 1. Defects requiring correction include the following:
    - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    - c. Crushed, broken, cracked, or otherwise damaged piping.
  - 2. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
  - 3. Re-inspect and repeat procedure until results are satisfactory.
- C. Drain piping will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

### 3.10 CLEANING

- A. Clear interior of installed piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed. Place plugs in ends of uncompleted pipe at end of each day or when work stops.

END OF SECTION

**DIVISION 35 – WATERWAYS AND MARINE CONSTRUCTION**



## SECTION 35 10 70 – CONTROL OF WATER

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This section includes the following:

1. Temporary water control measures including cofferdams and water bypass conveyances (Water Control System) for Normal Water Control and Flood Water Control including design and sequencing, construction, installation, maintenance, and removal of temporary protective facilities and appurtenances required to convey surface water beyond or around project work areas and to dewater/divert groundwater seepage into work areas. Temporary measures and appurtenances may include but are not limited to:
  - a. surface and subsurface dams (including cofferdams);
  - b. flow diversions;
  - c. special linings for erosion protection;
  - d. pipes;
  - e. dewatering sumps;
  - f. pumps;
  - g. barriers;
  - h. dewatering areas and sedimentation pools;
  - i. prefabricated sediment containment devices; and
  - j. watertight seals.
2. Safe conveyance of water and flood flows.
3. Protection of existing structures and features, constructed improvements, work in progress, and downstream areas during significant rainfall and high water.

- B. Construct Water Control System in phases as required to bypass flow around active work area(s), to maintain a minimum stream flow in upstream and downstream watercourses, and to protect adjacent properties and structures.

- C. Control of water shall assure the overall safety of the site, project personnel and equipment, constructed improvements, work in progress and downstream properties, which may be affected by sudden releases of flood flows. This could include bringing manpower, equipment and materials to the site as necessary to prevent damage or failure resulting from significant rainfall.

- D. The Contractor shall be solely responsible for controlling water in the project area. Alternative methods are acceptable only with prior written approval by the Engineer.

- E. The amount of runoff resulting from significant rainfall events vary depending on numerous factors including, but not limited to, the following:
  - 1. The degree of saturation of the soils in the watershed which will be affected by the amount of recent rainfall which has fallen;
  - 2. The amount of snow cover in the watershed which could melt with rainfall and add to stream flows;
  - 3. The amount of water in the river and/or impoundment prior to any rainfall event;
  - 4. The response time of the watershed which depends on the amount of impervious cover, the size and the amount of storage available within the watershed; and
  - 5. The impact of the bypass methods on downstream areas.
  
- F. RELATED SECTIONS
  - 1. Division 03 Section "Cast-in-Place Concrete"
  - 2. Division 03 Section "Grout"
  - 3. Division 31 Section "Earth Moving"

### 1.3 DEFINITIONS

- A. Conveyance Structures: Temporary systems for conveying or by-passing water flows from cofferdammed areas to the downstream river channel without overtopping the temporary upstream and downstream cofferdam system(s) or other abutting properties/structures during normal river flows.
  
- B. Cofferdammed Area: Work area(s) within the river channel that are protected from river flows following construction of temporary cofferdam(s).

### 1.4 QUALITY ASSURANCE

- A. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).

### 1.5 SUBMITTALS

- A. Submittals For Information
  - 1. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by cofferdamming/water bypass operations.
  
- B. Material Certificates: Indicating compliance with requirements indicated. Prepare separate reports for each type and application off-site soil/rock materials.
  
- C. Product Data: Cutsheets, product literature, specifications sheets or other detailed information indicating product sizing, performance characteristics, loading capacities, anchoring requirements, care and maintenance requirements, and other information relative to materials of construction and methods of operation for all products and materials incorporated into cofferdamming and water bypass/dewatering systems.

## 1.6 PERFORMANCE REQUIREMENTS

### A. General

1. Design, furnish, install, monitor, and maintain cofferdam(s), water bypass conveyances and groundwater dewatering measures (Water Control System) capable of supporting and resisting hydrostatic and hydrodynamic pressures, flood flows and groundwater seepage rates.
  - a. Furnish, install, test, operate, monitor, and maintain Water Control System of sufficient scope, size, and capacity to adequately divert water around active project work areas.
  - b. Continuously monitor and maintain Water Control System material, equipment and operations to minimize suspension of sediment or other soil materials in the river, minimize erosion of channel beds and riverbanks, and protect adjacent structures, features, and properties to remain undisturbed.
  - c. Remove Water Control System in a controlled fashion when no longer required for construction.
  - d. Construct, operate and maintain Water Control System without damaging existing structures to remain or adjacent properties.
2. Prevent induction danger to persons and other living resources and damage or blockage by debris including trees, branches and other debris.
  - a. Debris entrained by the cofferdam or conveyances shall be removed and disposed off-site promptly.
3. Evaluate need for larger minimum capacity due to Project factors including construction duration and risk of damage to constructed features as work progresses.
4. Include controls to protect living resources adjacent to the site and in the downstream watercourse.

B. Minimum Capacity of Conveyance Structures for Normal Flow Conditions: The conveyance of bypass flows shall be designed, at minimum, to convey approximately 70-75 cubic feet per second (cfs) without overtopping cofferdam systems.

### C. Flood Water Control Measures:

1. Contractor shall have materials and measures readily available for rapid implementation upon the threat or occurrence of flood water flow in excess of Normal Water Control flows, and shall furnish and deploy such materials and measures where required by increased flood flows. Protect erodible areas from erosion and protect components of the existing structures to remain from damage.
2. In the event that flows in the river rises to within 6-inches of top of cofferdam, contractor shall remove all equipment and personnel from the work area.

D. Location and Materials on Contract Drawings: The locations and materials for Water Control System cofferdam and water bypass provisions shown on the Contract Drawings are for reference only.

1. The Contractor shall determine its manner of constructing, maintaining and removing its cofferdams and conveyances meeting performance requirements contained herein.

2. Layout cofferdam(s) to provide adequate clearances in all directions as required for execution of work to be performed within the river channel, including room for pumps and suction/discharge lines, bypass pipes, open channels and siphons, and construction operations.
  3. All materials used in the cofferdam system must be clean and free of contaminants, debris and trash or other materials that may pollute the river.
    - a. No material may be used in the cofferdam or by-pass systems that may be harmful to plant growth or aquatic life.
    - b. All materials shall be stable when subjected to expected river flows such that they will not migrate within the river channel and not be removable in its entirety following construction of downstream river channel modifications.
    - c. If a liner is used it shall be a continuous, flexible, liner membrane that provides a complete barrier to river flows when positioned. Liners shall extend adequately into the upstream and transverse river channel sections and be anchored in place to provide a complete, firm seal during the work when exposed to hydrostatic/hydrodynamic pressures of the overlying standing/flowing water column.
  4. Alternative water control methods will be considered, providing proposed methods conform to applicable local, state and federal codes; will not require an extension of contract time; and will not result in increase of construction costs.
    - a. The Engineer is not obligated to accept alternative methods and may impose additional requirements as condition of acceptance.
- E. Contractor may allow limited water flows in the areas of work, provided the magnitude of flows and character of channel bottom does endanger site workers, equipment or materials and does not pollute or otherwise cause an excessive increase in turbidity in the downstream watercourse as compared to concurrent turbidity levels in the upstream watercourse.
- a. Contractor shall only allow equipment into the river that is in good condition and does not have oil, grease, fuel or other materials on its surface that may damage or pollute the river.
    - 1) All equipment shall be equipment with spill control materials (e.g., booms, dry absorbent) that can be deployed immediately in the event of a release of such materials.
    - 2) All equipment shall be inspected each day prior to entering the river channel for surface materials; if observed such materials shall be completely cleaned and removed from the equipment prior to entering the river channel.
    - 3) The Engineer may, at its sole discretion, direct the Contractor to remove equipment from the river channel that is leaking fluids or is otherwise polluting the water or channel bottom material. The Contractor shall address such conditions causing pollution to the satisfaction of the Engineer prior to resuming work in the river channel.
  - b. The Engineer will monitor turbidity in the downstream watercourse throughout the project duration to evaluate turbidity levels and whether such levels are excessive.
  - c. If the Engineer determines that Contractor's activities are resulting in an excessive increase of turbidity, the Contractor shall suspend work causing such conditions and

adjust operations, equipment, materials, activities or locations as required to reduce turbidity levels to acceptable levels.

- d. The Engineer shall be solely responsible for evaluating and determining what constitutes an excessive increase of turbidity levels in the watercourse. Such means may include use of real-time turbidity monitoring equipment to evaluate upstream and downstream levels.

## 1.7 PROJECT CONDITIONS

- A. Protect aquatic life within impoundment areas and upstream/downstream watercourses. Incorporate additional controls during drawdown and dewatering.
- B. Maintain aquatic base flow rates in water course channels downstream of the project site. If flow in river is less than base flow rate, allow in-flows to exit directly downstream.

## PART 2 - PRODUCTS

- A. General: Provide materials that are either new or in serviceable condition, and manufactured for the intended use in control of water at the site.
- B. Sand: Clean, inorganic, well-graded, granular material with 100 percent passing a 1-inch (2.54 cm) sieve.
- C. Sandbags: Burlap or polypropylene.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. The Contractor shall take actions necessary to assure the safety and protection of the construction area and downstream areas during any periods of significant rainfall or upon the threat or occurrence of flood water flows. This shall include bringing manpower, equipment and materials to the site necessary to resist damage or failure as a result of a significant rainfall or flood water flows. The Contractor may need to man the job site 24 hours a day during such events to assure timely response to problems which may develop.
- B. Do not begin work within downstream work areas until Water Control System materials and equipment are in place and operating as intended such that water levels in active work areas have been lowered to achieve water depths that do not cause excessive sedimentation or otherwise endanger site workers, equipment, constructed features, or adjacent properties, structures and features.
- C. If Contractor is prevented from completing work due to high flows exceeding 70-75 cfs, a time extension will be granted equal to time delayed due to flows recorded as exceeding that level.
  1. The Contractor shall remain responsible for protecting its work and adjacent properties, structures and features throughout any such period.

### 3.2 PREPARATION

- A. Investigate and verify existing conditions at the site.

- B. Evaluate type of protective facility, appurtenances, and measures required for development of Water Control Plan.

### 3.3 PROTECTION

- A. Since water level is dependent on the flow in the contributing watershed, water level can be expected to vary. The potential for major flood events is always a possibility. Ensure safety of dam and downstream areas.
  - 1. Provide additional erosion control measures or other modifications or reinforcement of the system to manage resulting increases in water surface elevations and water flows without damage or risk of failure to the site and constructed channel modifications, temporary cofferdam and water conveyances, materials/equipment, adjacent properties and existing structures and features, adjacent wetland resources and adjacent roadway.

### 3.4 INSTALLATION

- A. Install temporary cofferdam(s) in accordance with the Water Control Plan. The cofferdam(s) shall be installed during the specified low flow period, during dry weather and controlled conditions, and maintained throughout the construction period to ensure respective components function as intended to protect adjacent properties, wetland resources and downstream work areas. Pumps may be required within cofferdam areas to achieve and maintain dewatered conditions. All pumped discharge from within cofferdammed areas must pass through silt bags, or other acceptable treatment practices, to remove suspended sediment prior to being discharged to the downstream river channel.

### 3.5 MAINTENANCE

- A. Monitor water control system daily. Promptly correct seepage, breakage, or other evidence of movement to ensure that temporary cofferdam(s) and water bypass conveyances remain stable and functioning as intended.
- B. Maintain siphons or pumps as necessary to maintain dewatered conditions within cofferdammed areas sufficient for completion of work and placement proposed materials under safe, controlled conditions.
- C. Maintain personnel and equipment on-site during periods of heavy rainfall, flood watches, flashflood watches and flood warnings to mitigate potential damage during flood events.
- D. Monitor dewatering and by-pass systems continuously and provide additional measures as needed to control resulting increases in water surface elevations and water flows, and to convey flood flows to downstream channel reaches, without damage or risk of failure to the Water Control System.
- E. Provide additional materials, equipment and manpower, as required, to resist damage to or failure of temporary water conveyance measures and existing and proposed features including the raceway channel and adjacent walls and structures.
- F. Protect adjacent structures from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by cofferdamming and water bypass operations.
- G. Promptly repair damages to adjacent areas or structures caused by Water Control System activities.

### 3.6 FISH PASSAGE TEST FLOW DIVERSIONS

- A. Contractor shall temporarily divert test flows through modified river channel sections where the rock ramp fishway has been constructed to proposed lines and grades, to allow observation and measurement of such flows by the Engineer for purposes of verifying hydraulic performance of such features to assure adequate and suitable flow conditions for project targeted passage species.
1. Contractor shall coordinate such operations with the Engineer, including scheduling and notification at least fourteen (14) days prior to diversion of test flows.
  2. Contractor shall conduct a total of up to two (2) test flow diversions as requested by the Engineer for verification of flows and velocities within the structure at or as near, as can be practicably generated, minimum, normal, and maximum design operating conditions for the fishway structure.
    - a. The purpose of the first diversion test within each phase of construction will be to confirm that interstitial spaces within the rock ramp stone armor layer and joints between raised weirs were adequately packed/chinked with fill material to minimize seepage. The purpose of the second diversion test, if determined necessary due to excessive seepage, will be to confirm that corrective modifications executed by the Contractor reduce seepage to a level approved to be adequate by the Engineer and Contract Owner. Flow through each phase of the constructed rock ramp fishway shall be achieved by removing a portion of the upstream cofferdam to allow flow to pass through the work area.
  3. Test flows shall be no less than 9 cubic feet per second (CFS), and occur during a normal working weekday hours, extending over a minimum 12-hour period, to allow observation and measurements of flows by the Engineer and Project Partners. If upstream river flows cannot sustain such test flows at the time of testing, the Contractor shall schedule such test flows on a date, acceptable to the Engineer, where such flows are provided by the upstream watercourse.
  4. Contractor shall provide Engineer information on conveyance flow, elevations and headwater/tailwater conditions as required for calculation of actual flow rate(s) during the test diversions.
  5. Contractor shall make such adjustments to constructed channel features (e.g., excavation of additional rock material, modifications to rock grade control weirs, etc.) as directed by the Engineer to achieve required depth and flow velocity parameters established by the Engineer during project design throughout the section of the river within the project limits.
  6. Contractor shall restore cofferdamming and water bypass conveyance provisions following completion of test flows, if/as required for completion of adjustments to constructed channel features.

### 3.7 DRAWDOWN AND REMOVAL

- A. Upon completion of all work in the downstream channel, completely remove temporary cofferdam(s) and water bypass conveyances in a controlled manner to restore river flows through completed portion(s) of the rock ramp fishway in a controlled manner to prevent damage to constructed features (e.g., scour, shifting/movement of placed rock, dry hydrants, etc.) and existing features to remain.

- B. Remove water control systems when permanent construction has progressed sufficiently to accommodate hydrostatic pressures and stabilization measures proposed within the river and along its banks are complete
  - 1. Repair or replace adjacent work or existing features damaged or displaced by construction operations at no additional cost.

### 3.8 ALTERNATIVE METHODS

- A. The Contractor may propose alternative methods for control of water, for consideration by the Engineer. The proposed alternative method(s):
  - 1. Shall conform to all applicable local, State and Federal codes and regulations and permits.
  - 2. Shall not require an extension of the Contract time.
  - 3. Shall not result in an increase in Contract costs.
  - 4. Shall not cause excessive turbidity in downstream watercourse.
  - 5. Shall safely convey flood flows around work areas.
  - 6. Shall not damage or otherwise cause damage to the adjacent properties, structures or features, including trees and other natural resources.
- B. The Engineer is not obligated to accept alternative methods and may impose additional requirements as a condition of acceptance of any alternative method proposed by the Contractor.

### 3.9 EMERGENCY NOTIFICATION

- A. In the event that significant flood flows endanger the site, adjacent properties, structures or downstream areas, the Contractor shall immediately notify the Engineer and the Marshfield Police Departments.

END OF SECTION



## SECTION 35 79 13 – NATURE-LIKE FISHWAY

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

1.2 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.3 SUMMARY

A. This Section includes, but is not limited to, the following:

1. Construction of boulder riffle fishway and downstream roughened channel/riffle section with low-flow channel.

B. Related Sections:

1. Section 31 20 00 – Earth Moving
2. Section 32 72 00 – Wetland and Site Restoration
3. Section 33 37 00 – Flow Control Structures
4. Section 35 10 70 – Control of Water

#### 1.4 DEFINITIONS

- A. Boulder Riffle: A component of the nature-like fishway created by boulder/stone crest and notch/footer stones located between resting pools. Each riffle will be constructed with a two-foot-wide notch to facilitate aquatic passage during varying flow conditions. Because riffles have high turbulence, they are areas that provide a good deal of oxygen to the stream or river.
- B. Boulder Grade Control Weir: The most upstream boulder riffle that will not only function to facilitate aquatic passage, but also to retain existing base condition water levels in upstream river system while maintaining adequate flow into the lagoon inlet channel during normal and flood flow conditions.
- C. Roughened Channel/Riffle Section with Low-Flow Channel: Section of the river channel downstream of the nature-like fishway that will be reconstructed as indicated on the Drawings to provide a transition between the nature-like fishway and existing river channel just upstream of Main Street. Small boulders shall be interspersed throughout the roughened channel/riffle section as field-directed during construction.
- D. Washed Fill: Imported material to fill void spaces within stone armor.
- E. Stable Channel Fill: Satisfactory soil used to raise subgrades within the rock ramp footprint and riverbank areas.

- F. Stone Armor: Angular and rounded stone material used to construct the boulder riffles, including weirs (crest stones, notch/footer stones), weir pools, slope and channel protection, and upstream boulder grade control weir.
- G. Streambed Sand/Gravel Cobble Material: Natural on-site material to fill void spaces within stone armor.

#### 1.5 SUBMITTALS

- A. Material Certifications for the following:
  - 1. Soil-Filled Stone Slope Protection Mixture
  - 2. Soil-Filled Stone/Cobble Streambed Channel Protection
  - 3. Native Stable Channel Bottom Material
- B. Laboratory Test Reports for the following:
  - 1. Washed Fill
  - 2. Stable Channel Fill
  - 3. Imported FHWA Class 1 Riprap Stone
  - 4. Imported FHWA Class 2 Riprap Stone
- C. Reference Stone Samples and Sources for Engineer's Approval:
  - 1. For each source of stone armor, provide at least two samples, exhibiting extremes of the full range of color and other visual characteristics expected in completed Work. Samples will establish the standard by which stone provided will be judged.
    - a. Locate one approved sample at quarry or construction site. This sample may be incorporated into the Work during final placement of that type of stone.
      - 1) Make arrangements with Engineer to obtain approval of any stone armor before stone is installed.
      - 2) Stone delivered to site that does not match the native type and size requirements will be rejected and shall be replaced at the Contractor's expense.
  - 2. The Contractor shall examine existing rock hues and available stone and quarry samples in preparing its bid.
- D. Product Data: For each type of the following manufactured products required:
  - 1. Non-Woven Geotextile Fabric

#### 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs experienced stonemasons and stone fitters.

- B. Source Limitations for Stone: Obtain stone to supplement salvaged stone, from one or more sources with resources to provide materials of consistent quality in appearance and physical properties.
- C. Contractor shall provide a surveyor licensed in the State of Massachusetts to survey required elevations of proposed boulder riffles, pools and other constructed features.
- D. Standard Specifications: Shall mean the most recent version of the "Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2024 Edition", and Supplemental Specifications (March 31, 2024).
- E. FHWA: Shall mean the most recent version of the "United States Department of Transportation, Federal Highway Administration, Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14 (2014)."

#### 1.7 DELIVERY, STORAGE AND HANDLING

- A. Protect geotextile from direct sunlight, ultraviolet rays and temperatures greater than 140 degrees Fahrenheit during shipment and storage.
- B. Keep fabric wrapped in manufacturer's protective covering before use.
- C. Materials delivered to the site shall be inspected for damage, unloaded and stored with the minimum of handling. Materials shall be kept free of dirt and debris.

### PART 2 - PRODUCTS

#### 2.1 NOTCH/FOOTER AND CREST STONES

- A. Natural river stone, field stone or rock fragments that are hard, sound and durable; resistant to weathering action; reasonably fine grained; and free from structural defects that would impair the strength or durability of the stone. Crushed/processed stone or stones with defects that have been repaired with cement or other materials shall not be allowed, except where specifically approved by the Engineer for lower courses of stone armor layers within boulder riffles or slope protection areas.
  - 1. Match appearance (color, grain size and pattern) of rock native to the geographic area. Color shall match existing channel rock hues.
  - 2. Offsite Source: Natural stones from river beds, gravel pits/mines or undeveloped sites, known to be of satisfactory quality.
  - 3. No limestone or other stones differing in quality or color from existing natural river deposited stone shall be allowed.
  - 4. Size shall be as depicted on Drawings.
- B. Crest Stone
  - 1. Shape: Sub-angular.

2. Color: To match existing channel rock hues.
3. Size: As depicted on the Drawings.

C. Notch/Footer Stone

1. Shape: Angular or sub-angular.
2. Color: To match existing channel rock hues.
3. Size: As depicted on the Drawings.

2.2 SOIL-FILLED STONE SLOPE PROTECTION MIXTURE AND SOIL-FILLED STONE/COBBLE STREAMBED CHANNEL PROTECTION

- A. Sound, tough, durable and rounded/sub-angular (top course) or angular/sub-angular (bottom course) rock, free from decomposed stones or other defects that impairs its durability, shall have a minimum density of 160 pounds per cubic foot and shall conform to the quality requirements of Subsection M2.02.0 of the Standard Specifications. The stone shall be well-graded and conform to the size requirements for FHWA Class 1 or Class 2 riprap stone where indicated on the Drawings.
- B. Natural river stone, field stone or rock fragments that are hard, sound and durable; resistant to weathering action; reasonably fine grained; and free from structural defects that would impair the strength or durability of the stone. Crushed/processed stone or stones with defects that have been repaired with cement or other materials shall not be allowed, except where specifically approved by the Engineer for lower courses of stone armor layers within rock ramp or slope protection areas.
1. Match appearance (color, grain size and pattern) of rock native to the geographic area. Color shall match existing channel rock hues.
  2. Offsite Source: Natural stones from river beds, gravel pits/mines or undeveloped sites, known to be of satisfactory quality.
  3. No limestone or other stones differing in quality or color from existing natural river deposited stone shall be allowed.
  4. Shape shall be rounded or sub-angular for rock ramp pools and bottom courses and angular (not processed fractured rock) or sub-angular for slopes. Angular stone may be allowed for bottom courses of placement layers that are not exposed.
  5. Size shall be as depicted on Drawings.

2.3 WASHED FILL

- A. Where insufficient on-site materials clean sand/gravel material shall be imported meeting the following gradation requirements:
1. 100% shall pass the 2.5-inch sieve
  2. 50% shall pass #4 and be retained by the 1-inch sieve
  3. No more than 10% shall pass the #200 sieve

#### 2.4 NON-WOVEN GEOTEXTILE FABRIC

- A. Geotextile fabric shall be non-woven fabric, Mirafi 1100N, or approved equal.
- B. The geotextile must be permitted to function properly by allowing relief of hydrostatic pressure; therefore fine soil particles shall not be allowed to clog the filter fabric.
- C. At the time of installation, the geotextile shall be rejected if it has been removed from its protective cover for over 72 hours or has defects, tears, punctures, flow deterioration, or damage incurred during manufacture, transportation or storage. With the acceptance of the Engineer, placing a geotextile patch over the damaged area prior to placing the articulated cable concrete mats shall repair a torn or punctured section of fabric. The patch shall be large enough to overlap a minimum of three (3) feet in all directions.

#### 2.5 NATIVE STABLE CHANNEL BOTTOM MATERIAL

- A. Material used to construct roughened channel/riffle section with low-flow channel consisting of cobbles, gravel and 3" – 6" cracked stone with interspersed small boulders.
- B. Small boulders shall conform to the size of crest stones as indicated on the Drawings.

#### 2.6 STABLE CHANNEL FILL

- A. On-site material to be reused for general site grading stability that is free from ice, snow, roots, sod, rubbish, and other deleterious or excessive organic matter.
- B. Stable Channel Fill shall not be saturated, and must be graded and amended as required to meet the quality requirements of Section M1.03.0 – Gravel Borrow – Type B of the Standard Specifications and shall conform to the gradation of Table M1.03.0-1 of the Standard Specifications.
- C. If on-site material is not available, off-site material meeting the same quality and gradation requirements may be substituted.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. General Locations and Arrangements: Drawings indicate general locations and details of boulder riffles, pools and riverbank stabilization areas. Furnish and install all materials to the size, dimensions, and elevations indicated on the Drawings.
- B. Slopes and excavation areas to be protected by stone and bedding shall be free of brush, trees, stumps, and other unsuitable material and shall be graded to a smooth surface. All unsuitable material shall be removed from the sub-base and replaced with gravel borrow. Filled areas will be properly compacted.
- C. Inspection - Immediately prior to placing the geotextile, the prepared area shall be inspected by the Engineer. No geotextile or blocks shall be placed thereon until that area has been approved.

### 3.2 SEQUENCING – GENERAL

- A. Perform construction of nature-like fishway and roughened channel/riffle section with low-flow channel in accordance with the following general sequence. Modifications, as needed for each project or as requested by the Contractor, must be submitted to the Engineer and approved prior to construction.
  - 1. Install water control systems including stream diversion where required.
  - 2. As directed by the Engineer, dig test pits and excavate/remove unsuitable material from stream channel to required subgrade elevations for construction of proposed structures.
  - 3. Construct nature-like fishway from downstream location to upstream location. Construct elements according to the Water Control and Construction Phasing Plan.
  - 4. Implement Water Control Plan to divert water from respective work areas to allow preparation and installation work under controlled conditions.
- B. Backfill boulders with stable channel fill to fill in voids for proper flow conditions.

### 3.3 GEOTEXTILE INSTALLATION

- A. Geotextile shall be placed within the limits shown on the Contract Drawings and as directed by the Engineer.
- B. Place geotextile directly on the prepared area, in intimate contact with the sub-grade, and free of folds or wrinkles. Do not walk on or disturb the geotextile when the result is a loss of intimate contact between the geotextile and the sub-grade.
  - 1. Overlap joints a minimum of 24 inches.

### 3.4 STONE RIFFLES

- A. Install, in sequence, a footer/notch stones, then a crest stone, such that one crest stone rests on a footer/notch stone, to the stations, offsets, and elevations indicated on the Contract Drawings.
- B. Place footer/notch stones as shown on Contract Drawings to the grades specified.
- C. Place compacted Stable Channel Fill as required to firmly support crest stones.
- D. Place crest stones on footer/notch stones and Stable Channel Fill to obtain the desired height and center channel width as shown on the Contract Drawings. Crest stones shall be installed with its long axis perpendicular to the flow as detailed in the Contract Drawings.
- E. Continue this process until a single riffle is completed.
- F. Plug gaps with chink stones to limit openings to no more than four square inches in size. Completely fill remaining voids with Washed Fill.
- G. Thoroughly backfill the upstream side of the footer/notch and crest stone with washed fill material to fill void spaces, and then backwash to hydraulically settle the channel fill. If gaps remain between the footer/notch or crest stones, which could wash out the channel fill, the Contractor shall wedge

appropriately sized chink stones between the stones on the upstream side of the structure. The chink stones shall be placed in a manner that ensures its stability during high flow events.

- H. Crest stones shall not be stacked, but must lean against the downstream footer/notch stones for structural support to prevent unwanted movement during ice and debris flows. The Engineer shall verify line and grade (station, offset, and elevation) of placed stone and upon verification, approve final placement and orientation of all stones.

### 3.5 RIFFLE POOLS

- A. Install soil-filled stone/cobble streambed protection material above bedding material to the lines and grades indicated on the Drawings. Prevent displacement of bedding material.
- B. Soil-filled stone/cobble streambed protection material shall be placed to its full course thickness (in one layer) as to produce a reasonably well-graded mass of rock without causing displacement of the underlying material. Rearrange individual stones by hand or equipment as required to produce a reasonably well-graded distribution of rock, free from pockets of small stones and clusters of larger stones. Do not drop stones from heights greater than three feet.
- C. The finished surface shall be free from pockets of small stones and clusters of larger stones. Placing this material by methods likely to cause segregation of the various sizes of stone shall not be permitted. Double decking of thin, flat stones to bring the surface up to the required grade will not be allowed.
- D. Thoroughly backfill riffle pools with washed fill material to fill void spaces up to top of soil-filled stone/cobble streambed protection material layer. Backwash as required to hydraulically settle the channel fill.

### 3.6 DOWNSTREAM ROUGHENED CHANNEL/RIFFLE SECTION WITH LOW-FLOW CHANNEL

- A. Install downstream cofferdam extension to provide isolation/protection of work area and dewater.
- B. Excavate and remove channel bottom material by hand or mechanical methods from section of the river channel downstream of the nature-like fishway to the limits and elevations indicated on the Drawings. Any removed loose rock, stone, cobbles shall be re-used/incorporated into proposed native, stable channel bottom material.
- C. Install small boulders as field-directed by Engineer during construction.
- D. Once completed, remove downstream cofferdam extension.

END OF SECTION

**CONSTRUCTION DRAWING SET**



# SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02

MARSHFIELD · MASSACHUSETTS  
**CONSTRUCTION DRAWING SET**  
 AUGUST 2, 2024

## PROJECT TEAM

**DESIGN**  
 FUSS & O'NEILL, INC.  
 317 IRON HORSE WAY, SUITE 204  
 PROVIDENCE, RI 02908  
 P:401-861-3070

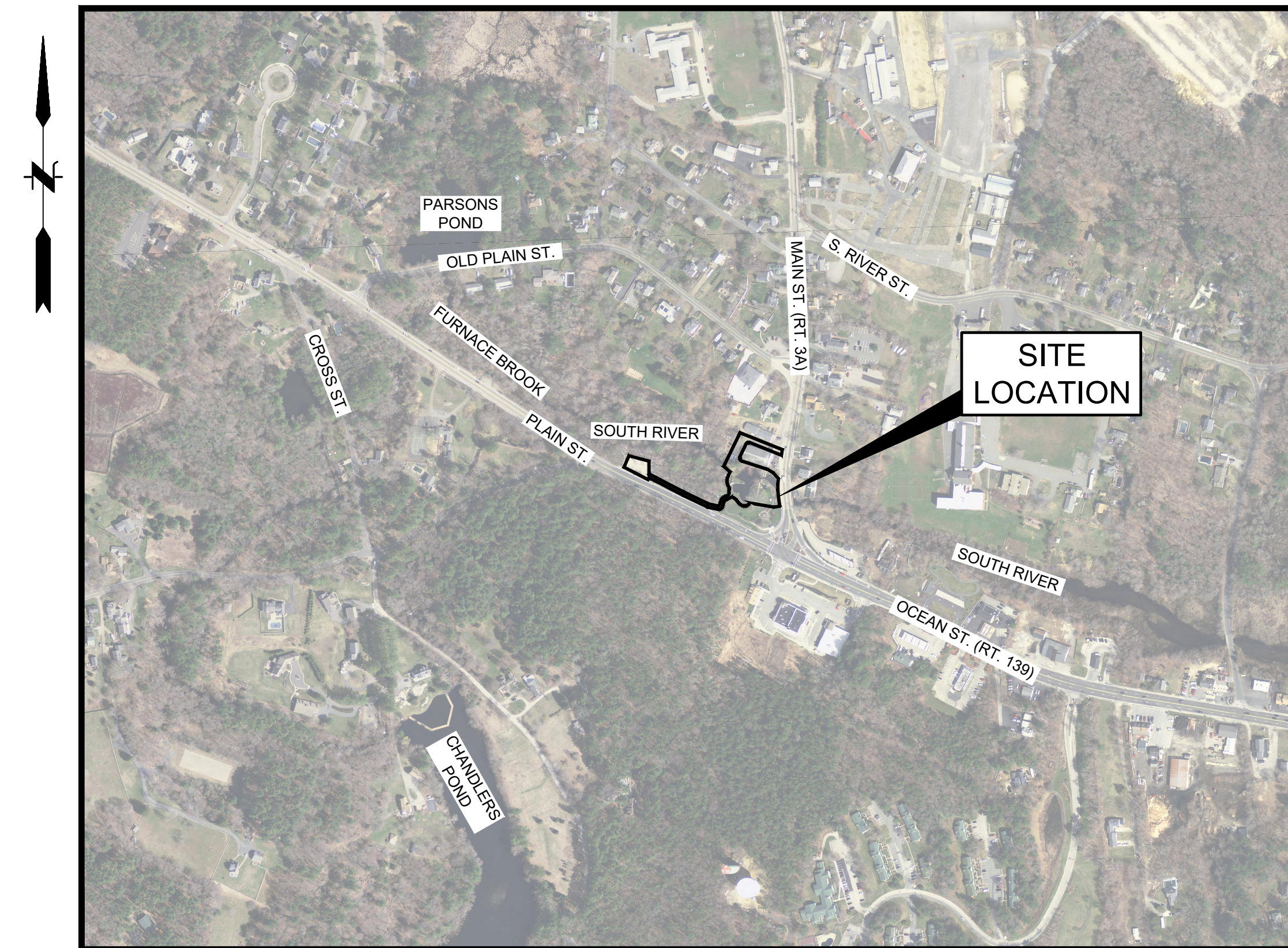
**PERMITTING**  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532  
 P:508-540-8080

**SURVEY**  
 NATIONAL LAND SURVEYORS  
 42 HAMLET AVENUE  
 WOONSOCKET, RI 02895  
 P:401-769-7779

**WETLANDS**  
 CR ENVIRONMENTAL, INC.  
 639 BOXBERRY HILL ROAD  
 EAST FALMOUTH, MA 02536  
 P:508-563-7970

## SHEET INDEX

SHEET NO.	SHEET LABEL	SHEET TITLE
1	GI-001	COVER SHEET
2	CN-001	GENERAL NOTES & LEGEND
3	CS-101	INDEX PLAN
4	CS-102	EXISTING CONDITIONS PLAN
5	CS-103	CONSTRUCTION ACCESS/STAGING & REGULATORY BUFFER PLAN
6	CS-104	DEMOLITION & EROSION CONTROL PLAN
7	CS-105	SOUTH RIVER FISH PASSAGE & PARK LAGOON IMPROVEMENTS PLAN
8	CS-106	RIFFLE POOL PROFILE & DETAILS
9	CS-107	RIPARIAN HABITAT & PARK AREA RESTORATION PLAN
10	CS-108	STONE MASONRY WALL REPAIR / LAGOON LINER PLAN
11	CS-109	WATER CONTROL & CONSTRUCTION PHASING PLAN
12	CS-110	WETLAND IMPACT PLAN
13-15	CD-501 - CD-503	CONSTRUCTION DETAILS
16	CD-504	PHOTOGRAPHIC WORK REPAIR DEPICTIONS
17	CD-505	BRIDGE DETAILS
18-19	CD-506 - CD-507	FLOW CONTROL STRUCTURE DETAILS
20	CD-508	ELECTRICAL DETAILS
21	GC-101	PROJECT PAYMENT LIMIT



LOCATION MAP  
 SCALE: 1" = XXXX'

PREPARED BY

**FUSS & O'NEILL**

317 IRON HORSE WAY, SUITE 204  
 PROVIDENCE, RI 02908  
 401.861.3070  
 www.fando.com



PREPARED FOR

**TOWN OF MARSHFIELD**  
 870 MORaine STREET  
 MARSHFIELD, MA 02050



**DIVISION OF ECOLOGICAL RESTORATION**  
**MA DEPARTMENT OF FISH & GAME**  
 251 CAUSEWAY ST., SUITE 400  
 BOSTON, MA 02114

PROJ. No.: 20180319.A23  
 DATE: AUGUST 2, 2024

GI-001

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### LEGEND

EXIST	PROP	DESCRIPTION
		PROPERTY LINE/RIGHT-OF-WAY
		LIMIT OF DISTURBANCE/CONTRACT LIMIT LINE
		BASELINE
		WETLAND SYMBOL
		APPROXIMATE WETLAND BOUNDARY (MASSGIS)
		FLAGGED WETLANDS BY CR ENVIRONMENTAL, INC.
		FLOODPLAIN BOUNDARY (PER FUSS & O'NEILL HEC-RAS ANALYSIS)
		GRAVEL PATH
		EDGE OF PAVEMENT
		BITUMINOUS CURB
		MATCH LINE
		TIMBER RAIL FENCE
		WOODEN PICKET FENCE
		WOODEN STOCKADE FENCE
		EXIST. TREE LINE / PROP. CLEARING LIMIT
		EXISTING TREE
		MULCHED PLANTING AREA
		WOODED SWAMP DECIDUOUS WETLAND
		LAND UNDER WATERBODIES AND WATERWAYS/FISH RUN
		TEMPORARY STAGING/STOCKPILE/STORAGE AREA
		TEMPORARY CONSTRUCTION ACCESS ROUTE
		STONE MASONRY RETAINING WALL
		MINOR CONTOUR
		MAJOR CONTOUR
		SEDIMENT SAMPLE LOCATION
		BUILDING
		BOLLARD
		SIGN
		SPOT ELEVATION
		DRAINAGE LINE
		CATCH BASIN
		DRAIN MANHOLE
		SEWER MANHOLE
		FIRE HYDRANT
		LIGHT POST
		UTILITY POLE
		UTILITY GUY WIRE
		COMPOST FILTER TUBE

### LEGEND NOTE

SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SHOWN ON THE DRAWINGS TO SCALE OR TO THEIR ACTUAL DIMENSION OR LOCATION. COORDINATE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS, AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

### ABBREVIATIONS

GENERAL	APPROXIMATE
APPROX	APPROXIMATE
BIT	BITUMINOUS PAVEMENT
BW	BOTTOM OF WALL
CC	CONCRETE CURB
CCB	CAPE CODE BERM
ELEV	ELEVATION
EXIST	EXISTING
GC	GRANITE CURB
MAX	MAXIMUM
MIN	MINIMUM
NTS	NOT TO SCALE
PC	PRECAST CONCRETE CURB
PROP	PROPOSED
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
TOS	TOP OF SLOPE
TW	TOP OF WALL
TYP	TYPICAL
VGC	VERTICAL GRANITE CURB
UTILITY	
CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
OPP	CORRUGATED POLYETHYLENE PIPE
DCB	DOUBLE CATCH BASIN
DI	DUCTILE IRON PIPE
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
HDPE	HIGH DENSITY POLYETHYLENE
HYD	HYDRANT
INV	INVERT ELEVATION
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UP	UTILITY POLE

### GENERAL NOTES

- REFERENCES:
  - COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES, 2024 EDITION, REVISIONS AND ALL CURRENT ADDENDA, ARE MADE A PART HEREOF, AS IF ATTACHED HERETO. ALL REFERENCES TO "STATE STANDARD SPECIFICATIONS" SHALL REFER TO THE LATEST EDITION OF THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES CONSTRUCTION.
  - THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION CONSTRUCTION STANDARD DETAILS, 2017 EDITION, AND ALL CURRENT REVISIONS, ARE MADE A PART HEREOF, AS IF ATTACHED HERETO. ALL REFERENCES TO "STANDARD DETAILS" SHALL REFER TO THE LATEST EDITION OF THE COMMONWEALTH OF MASSACHUSETTS STANDARD DETAILS.
  - THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, 2003 EDITION, REVISIONS AND ALL CURRENT ADDENDA, ARE MADE A PART HEREOF, AS IF ATTACHED HERETO. ALL REFERENCES TO "SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" SHALL REFER TO THE LATEST EDITION OF THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS.
  - THE MARSHFIELD WETLANDS PROTECTION REGULATIONS, INCLUDING REVISIONS AND ALL CURRENT ADDENDA, ARE MADE A PART HEREOF, AS IF ATTACHED HERETO.
- EXISTING CONDITIONS:
  - TOPOGRAPHY, EXISTING FEATURES, AND BATHYMETRY WITHIN THE IMMEDIATE PROJECT AREA WERE OBTAINED FROM THE FOLLOWING SOURCES:
    - SITE BATHYMETRY OF THE LAGOON AND ADJACENT RIVER CHANNEL WERE OBTAINED ON MAY 21-24, 2019 BY CR ENVIRONMENTAL, INC.
    - CHANNEL BATHYMETRY OBTAINED AT SELECTED TRANSECT LOCATIONS UPSTREAM OF THE LAGOON ON MAY 21-24, 2019 BY CR ENVIRONMENTAL, INC.
    - TOPOGRAPHIC (LAND) SURVEY PERFORMED ON JUNE 7, 2019 BY NATIONAL SURVEYORS-DEVELOPERS, INC.
  - TOPOGRAPHIC DATA SHOWN OUTSIDE OF THE IMMEDIATE PROJECT SITE IS APPROXIMATE ONLY AND WAS OBTAINED FROM 2-FOOT CONTOUR AVAILABLE FROM NOAA'S DATA ACCESS VIEWER WEBSITE. THIS INFORMATION WAS OBTAINED FROM A COMBINATION OF 2011 USGS LIDAR AND 2013-2014 CMG LIDAR DATA.
  - DIGITAL ORTHOPHOTOGRAPHY SHOWN WAS OBTAINED FROM USGS ORTHOPHOTOGRAPHY, ACQUIRED APRIL 2008, © 2008. SOURCE: OFFICE OF GEOGRAPHIC AND ENVIRONMENTAL INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS (MASS.GOV).
  - WETLAND FLAGGING/BOUNDARIES WITHIN THE IMMEDIATE PROJECT LIMITS (I.E. THE RIVER BANKFULL, WOODED SWAMP, AND EMERGENT MARSH BOUNDARIES) WERE IDENTIFIED AND LOCATED BY CR ENVIRONMENTAL, INC. MINOR ADJUSTMENTS TO THE BANKFULL BOUNDARIES WERE THEN MADE BY FUSS & O'NEILL TO MATCH ACTUAL RIVER WALL EXTENTS (AS LOCATED BY FIELD SURVEY). WETLAND BOUNDARIES LOCATED OUTSIDE OF THE IMMEDIATE PROJECT AREA ARE APPROXIMATE ONLY AND WERE OBTAINED FROM MASSGIS DATA (MASSDEP WETLANDS-2005).
  - PROPERTY BOUNDARIES ARE APPROXIMATE ONLY AND WERE OBTAINED FROM THE MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEM (GIS) DATABASE.
- DATE REFERENCE:
  - ALL TOPOGRAPHIC INFORMATION INCLUDED HEREON IS IN REFERENCE TO THE FOLLOWING DAUNTS:
    - HORIZONTAL: NAD83
    - VERTICAL: NAVD83
- FLOOD ZONE INFORMATION:
  - THE PROJECT SITE IS LOCATED IN FLOOD ZONE 'ZONE AE (EL. 9.0)' AS DEPICTED ON FIRM MAP NUMBER 2502300227L (DATED JULY 6, 2021).
  - BASE CONDITION AND 100-YEAR WATER SURFACE ELEVATIONS (AND FLOODPLAIN BOUNDARIES) WITHIN THE PROJECT LIMITS ARE BASED ON HYDRAULIC (HEC-RAS) ANALYSES PERFORMED BY FUSS & O'NEILL FOR THIS PROJECT PRIOR TO AND FOLLOWING DAM REMOVAL.
- UTILITIES:
  - THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONFIRM THE DEPTHS, LOCATIONS AND STATUS WHERE UNDERGROUND UTILITIES WILL POTENTIALLY CONFLICT WITH THE INSTALLATION OF THE PROPOSED DRAINAGE SYSTEM AS INDICATED ON THESE PLANS.

- AND SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS.
- DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, FIRE HYDRANTS, AND UTILITIES WITHOUT APPROPRIATE PERMITS.
- WORK IS RESTRICTED TO THE HOURS OF 7 AM TO 5 PM ON MONDAY THROUGH FRIDAY, EXCLUDING HOLIDAYS, UNLESS OTHERWISE APPROVED BY THE OWNER.
- PRIOR TO CONSTRUCTION, ACCESS AND CONSTRUCTION EASEMENTS MUST BE GRANTED BY PROPERTY OWNERS WHERE ACCESS AND CONSTRUCTION WILL BE REQUIRED.

### UTILITY COORDINATION REQUIREMENTS

- THE CONTRACTOR SHALL CONTACT DIG SAFE (811) AND UTILITY COMPANIES TO LOCATE ALL EXISTING UTILITIES, AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN HEREON AND ANY OTHER EXISTING UTILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, AT ITS OWN EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.
- THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT RESULT FROM THE CONTRACTOR'S FAILURE TO LOCATE SAID INFRASTRUCTURE AND UTILITIES EXACTLY. IF FIELD CONDITIONS DIFFER FROM PLAN INFORMATION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY FOR POSSIBLE REDESIGN. THE CONTRACTOR SHALL CONTACT DIG SAFE (811) AND UTILITY COMPANIES TO LOCATE ALL EXISTING UTILITIES, AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
- BEFORE BEGINNING SITE WORK, THE CONTRACTOR SHALL INVESTIGATE AND VERIFY THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES AND OTHER CONSTRUCTION AFFECTING THE WORK. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS (INCLUDING TEST PITS AT POTENTIAL UTILITY CONFLICT LOCATIONS AS INDICATED ON THE PLANS) AND LOCATE EXISTING UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF NECESSARY. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
- MATERIALS AND METHODS OF CONSTRUCTION ASSOCIATED WITH THE ADJUSTMENT AND/OR REMOVAL AND RELOCATIONS OF UNDERGROUND UTILITIES SHALL BE IN ACCORDANCE WITH THE UTILITY OWNER'S RULES AND REGULATIONS. THE CONTRACTOR SHALL NOTIFY AFFECTED PROPERTY OWNERS AT LEAST 48 HOURS IN ADVANCE OF ANY DISRUPTIONS OR AS OTHERWISE REQUIRED BY THE RESPECTIVE UTILITY OWNER.

### PROTECTION OF WORK AND SITE REQUIREMENTS

- THE WORK AND SITE (DEFINED HEREIN AS THE ENTIRE PARK AND INTERTIDAL AREA WITHIN THE LIMIT OF DISTURBANCE) SHALL BE PROTECTED AT ALL TIMES UNTIL FINAL ACCEPTANCE BY THE OWNER. CARE SHALL BE EXERCISED WHILE OPERATING EQUIPMENT WITHIN THE SITE. THE CONTRACTOR SHALL BE RESPONSIBLE TO ASSURE THE UTILIZED EQUIPMENT DOES NOT CAUSE DAMAGE TO EXISTING FEATURES. ANY DAMAGE SHALL BE REPAIRED TO ORIGINAL CONDITION OR BETTER AT THE CONTRACTOR'S SOLE COST.
- ACCESS TO VARIOUS PORTIONS OF THE SITE SHALL BE UNDERTAKEN IN SUCH A MANNER THAT THE WORK AND SITE ARE PROTECTED AT ALL TIMES. ACCESS WAYS SHALL BE CONSTRUCTED, MAINTAINED, AND PROTECTED WITH SEDIMENT CONTROLS TO PREVENT DAMAGE FROM EROSION DURING MAJOR STORM EVENTS.
- ONLY FOOT ACCESS AND EQUIPMENT ACCESS ON TEMPORARY GROUND PROTECTION (SWAMP) MATS IS ALLOWED IN INTERTIDAL AREAS. OTHERWISE ALL WORK IN INTERTIDAL AREAS SHALL BE COMPLETED USING LONG-REACH EQUIPMENT POSITIONED ON UPLAND AREAS (ABOVE ELEV. 4.7 FEET).
- PLACEMENT AND COMPACTION OF FILL MATERIALS SHALL BE COMPLETED IN SUCH A MANNER THAT THE WORK AND ADJACENT ROADWAYS ARE PROTECTED FROM DAMAGE AT ALL TIMES.
- BACKFILL OPERATIONS SHALL PROCEED TO RAISE THE GROUND SURFACE UNIFORMLY AND SHAPED TO PROVIDE POSITIVE DRAINAGE AT ALL TIMES. CONSTRUCT AND MAINTAIN ON THE SITE, ALL DITCHES AND CHANNELS NECESSARY TO KEEP THE SITE IN A DRY AND WORKABLE CONDITION. WHERE WATER IS FLOWING OR OTHERWISE INFILTRATING INTO AN EXCAVATION, PROVIDE FOR PUMPING AND OTHER DRAINAGE FACILITIES, INCLUDING EROSION AND SEDIMENT CONTROLS, TO DIVERT WATER FROM SUCH EXCAVATION.
- DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. REMOVE WATER TO PREVENT SOFTENING OF FOUNDATION BOTTOMS, UNDERCUTTING OF FOOTINGS AND SOIL CHANGES DETRIMENTAL TO STABILITY OF SUBGRADES, FOUNDATIONS AND STRUCTURES.

### CONTROL OF WATER

- IT IS ANTICIPATED THAT PROPOSED WORK BELOW THE SEASONAL HIGH WATER SURFACE ELEVATION SHALL BE LIMITED TO TIMES WHEN SUCH WORK CAN BE COMPLETED IN DRY CONDITIONS (I.E. PERIODS OF SEASONAL LOW WATER ELEVATIONS AND/OR WITH APPROPRIATE COFFERDAMMING AND FLOW BYPASS PROVISIONS). THE CONTRACTOR SHALL PROVIDE NECESSARY MEASURES TO PROTECT THE WORK AREA DURING PERIODS OF HIGH FLOWS EXCEEDING CAPACITIES OF COFFERDAMMING AND BYPASS SYSTEMS.
- TEMPORARY STORMWATER BYPASS CONVEYANCE SYSTEMS (THAT MAY BE REQUIRED) TO DISCHARGE GROUNDWATER IN EXCAVATIONS OR STORMWATER THROUGH THE SITE (AND AROUND PROPOSED WORK) DURING CONSTRUCTION SHALL BE INSTALLED, OPERATED, MAINTAINED AND REMOVED IN SUCH MANNERS TO PROTECT THE ENVIRONMENT, WORK, PUBLIC, SITE WORKERS AND EXISTING FEATURES FROM DAMAGE AT ALL TIMES UNTIL FINAL ACCEPTANCE BY THE OWNER.
- DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. REMOVE WATER TO PREVENT SOFTENING OF FOUNDATION BOTTOMS, UNDERCUTTING OF FOOTINGS AND SOIL CHANGES DETRIMENTAL TO STABILITY OF SUBGRADES, FOUNDATIONS AND STRUCTURES.
- PUMP DISCHARGES FROM LOCALIZED WORK AREAS SHALL NOT CAUSE EROSION OF SOILS. PUMP INTAKES SHALL BE FLOATED TO MINIMIZE SEDIMENTATION. PUMPED WATER SHALL BE DISCHARGED INTO A DEWATERING AREA WHICH IS SURROUNDED BY A TIGHT ENCLOSURE OF SILT FENCE AND/OR HAY BALES, OR OTHER APPROVED CONTROL DEVICE (E.G., SILT BAG) TO PROPERLY FILTER TURBID WATER PRIOR TO ITS RETURN TO THE WATERCOURSE. THE DISCHARGE OF PUMPED WATER SHALL BE ONTO AN APPROVED ARMORED SURFACE (E.G., RIPRAP APRON) TO AVOID SCOUR OR SUSPENSION OF SOIL AT THE DISCHARGE. WATER SHALL NOT BE DISCHARGED ONTO FILL OR BACKFILL AREAS OR FOUNDATIONS. WATER SHALL ONLY BE ALLOWED TO DISCHARGE DIRECTLY INTO THE WATERCOURSE AFTER EMERGING CLEAR WITHOUT ANY SUSPENDED SEDIMENT OR SILT.
- PROTECT CONSTRUCTED WORK ON THE SITE DURING STORM AND FLOOD CONDITIONS.
- PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN OR AS REQUIRED BY SITE CONDITIONS. ALL EROSION CONTROL DEVICES WILL BE MAINTAINED THROUGHOUT CONSTRUCTION.

### EROSION AND SEDIMENT CONTROL

- PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN OR AS REQUIRED BY SITE CONDITIONS. ALL EROSION CONTROL DEVICES WILL BE MAINTAINED THROUGHOUT CONSTRUCTION.
- DISTURBANCE OF SOIL SURFACES IS REGULATED BY STATE LAW AND LOCAL ORDINANCE. ALL WORK SHALL COMPLY WITH THE FOLLOWING CRITERIA AND OTHER PERMIT CONDITIONS TO PREVENT OR MINIMIZE SOIL EROSION AND SEDIMENTATION TO OFF-SITE AREAS.
- THE CONTRACTOR SHALL COMPLY WITH THE LATEST EDITION OF THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" IN CONSTRUCTING THE EROSION AND SEDIMENT CONTROLS INDICATED ON THE PLANS. ALL EROSION AND SEDIMENT CONTROL MEASURES OR WORKS AND REHABILITATION MEASURES MUST CONFORM TO OR EXCEED THE SPECIFICATIONS OR STANDARDS SET OUT IN THIS DOCUMENT.
- THE CONTRACTOR IS RESPONSIBLE FOR THE TIMELY INSTALLATION, INSPECTION, MAINTENANCE, AND/OR REPLACEMENT OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES SHOWN ON THESE PLANS TO ENSURE PROPER OPERATION THROUGHOUT THE LIFE OF THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF PERMANENT MEASURES UNTIL CONSTRUCTION OF THE PROJECT IS COMPLETED OR UNTIL IT IS ACCEPTED BY THE OWNER. REMOVE EROSION AND SEDIMENTATION CONTROLS AFTER STABLE VEGETATIVE GROWTH IS ESTABLISHED.
- THE CONTRACTOR SHALL INSPECT EROSION AND SEDIMENT CONTROL DEVICES ON A WEEKLY BASIS, AFTER EACH STORM EVENT, AND AT LEAST DAILY DURING PROLONGED RAINFALL. CLEAN OUT ACCUMULATED SEDIMENT BEHIND CONTROLS. REPAIR OR REPLACE CONTROLS PROMPTLY AS NEEDED. REMOVE ACCUMULATED SEDIMENT FROM BEHIND PERIMETER CONTROLS WHEN ONE-HALF OF THE ORIGINAL HEIGHT OF THE PERIMETER CONTROLS BECOME FILLED WITH SEDIMENT. REMOVE SEDIMENT FROM CATCH BASIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. DISPOSE OF REMOVED SEDIMENT IN ON-SITE FILL AREAS OR LAWFULLY OFF-SITE.
- TREES AND OTHER EXISTING VEGETATION NOT WITHIN THE LIMITS OF DISTURBANCE SHALL BE PROTECTED FROM DAMAGE. VEGETATED AREAS AND/OR TREES DAMAGED THAT ARE NOT PLANNED FOR REMOVAL SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE TOWN.
- TEMPORARY VEGETATIVE COVER SHALL BE APPLIED TO ANY UPLAND, DISTURBED AREAS THAT HAVE NOT YET REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN SEVEN (7) DAYS AFTER CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN THIRTY (30) DAYS. TEMPORARY VEGETATIVE COVER SHALL CONSIST OF 40% ANNUAL RYEGRASS AND 60% PERENNIAL RYEGRASS FROM APRIL 1 TO NOVEMBER 15 AND WINTER RYEGRASS BETWEEN NOVEMBER 15 AND MARCH 31. SEED AT A RATE OF 75 LBS/ACRE BY HAND.
- PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED TO ALL DISTURBED AREAS THAT HAVE REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN SEVEN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS PERMANENTLY CEASED. RECOMMENDED PERMANENT SEEDING DATES ARE APRIL 1 TO JUNE 30 AND SEPTEMBER 1 TO OCTOBER 1. PERMANENT VEGETATIVE COVER SEED MIXTURES AND APPLICATION RATES SHALL BE IN ACCORDANCE WITH THE SITE RESTORATION PLANS. ALL PLANTINGS AND SEED SHALL BE COVERED BY A ONE-YEAR WARRANTY PERIOD; RE-SEEDING/RE-PLANTING SHALL BE COMPLETED TO ENSURE STABLE VEGETATIVE COVER IS ESTABLISHED OVER ALL DISTURBED AREAS.
- IF PERMANENT SEEDING CANNOT BE COMPLETED IMMEDIATELY OR WITHIN THE RECOMMENDED SEEDING DATES, TEMPORARY BIODEGRADABLE EROSION CONTROL BLANKETING (CONTAINING NO PLASTIC COMPONENTS) OR MULCHING SHALL BE SPREAD/INSTALLED OVER ALL UPLAND DISTURBED AREAS TO PROTECT THE SITE UNTIL ARRIVAL OF THE NEXT RECOMMENDED SEEDING PERIOD. MULCHING OR BLANKETING SHOULD BE INSTALLED AS SOON AS POSSIBLE IF SEEDING IS INSTALLED BETWEEN OCTOBER 1 AND MARCH 31, BUT NOT MORE THAN SEVEN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED UNLESS THE ACTIVITY IS TO RESUME WITHIN THIRTY (30) DAYS. IF PERMANENT SEEDING IS INSTALLED IN JULY AND AUGUST, APPLY WATER TO SEEDED AREAS ON A DAILY BASIS.
- BLANKETING OR MULCHING MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. WHERE EROSION IS OBSERVED, ADDITIONAL MULCH MUST BE APPLIED OR BLANKETING REPAIRED OR REPLACED. INSPECTIONS SHALL TAKE PLACE UNTIL VEGETATION IS THOROUGHLY ESTABLISHED.
- GOOD HOUSEKEEPING: THE PROJECT SITE SHALL PROVIDE FOR THE MINIMIZATION OF EXPOSURE OF CONSTRUCTION DEBRIS (INCLUDING, BUT NOT LIMITED TO, INSULATION, WIRING, PAINTS AND PAINT CANS, SOLVENTS, WALL BOARD, ETC.) TO PRECIPITATION BY MEANS OF DISPOSAL AND/OR PROPER SHELTER OR COVER. CONSTRUCTION WASTE MUST BE PROPERLY DISPOSED OF IN ORDER TO AVOID EXPOSURE TO PRECIPITATION AT THE END OF EACH WORKING DAY.
- STORAGE AND DISPOSAL: MATERIALS WHICH COULD BE A POTENTIAL SOURCE OF STORMWATER POLLUTION SUCH AS GASOLINE, DIESEL FUEL, HYDRAULIC OIL, ETC., WILL BE STORED AT THE END OF EACH DAY IN A LOCKED STORAGE TRAILER OR COVERED LOCATION AND TAKEN OFF-SITE AND PROPERLY DISPOSED OF. ALL TYPES OF WASTE GENERATED AT THIS SITE WILL BE DISPOSED OF IN A MANNER CONSISTENT WITH STATE LAW AND/OR REGULATIONS.
- SPILL/LEAK PROTECTION AND RESPONSE: FUEL VEHICLES AND EQUIPMENT AWAY FROM THE WETLAND AND DRAINAGE SYSTEM AND PREVENT CONTAMINATION OF SOIL, GROUNDWATER OR SURFACE WATER FROM SPILLS OR LEAKS. DEPLOY BOOMS AND OTHER CONTAINMENT/CLEANUP MEASURES IN THE EVENT OF A SPILL OR LEAK. NOTIFY LOCAL FIRE DEPT. AND DEP IMMEDIATELY OF ANY SPILLS.
- DEWATERING: DEWATERING SHALL BE IN ACCORDANCE WITH THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS." THE CONTRACTOR SHALL SUBMIT A DEWATERING PLAN TO THE TOWN FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.
- TRACKING AND DUST CONTROL: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CLEAN ADJACENT ROADS WHERE CONSTRUCTION VEHICLES HAVE TRACKED SEDIMENT FROM THE PROJECT, CONTROL DUST, AND TAKE ALL NECESSARY MEASURES TO ENSURE THAT THE SITE AND ALL ADJACENT ROADS BE MAINTAINED IN A MUD- AND DUST-FREE CONDITION AT ALL TIMES THROUGHOUT THE LIFE OF THE CONTRACT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO THE SURROUNDING ROADWAYS MUST BE REMOVED IMMEDIATELY. DUST CONTROL MAY INCLUDE APPLICATION OF CONTROLLED AMOUNTS OF WATER ONTO AFFECTED AREAS OR OTHER CONTROL MEASURES APPROVED BY THE ENGINEER. THE TEMPORARY STONE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THE CONTRACTOR MUST PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND.

### SPILL PREVENTION AND RESPONSE PROCEDURE

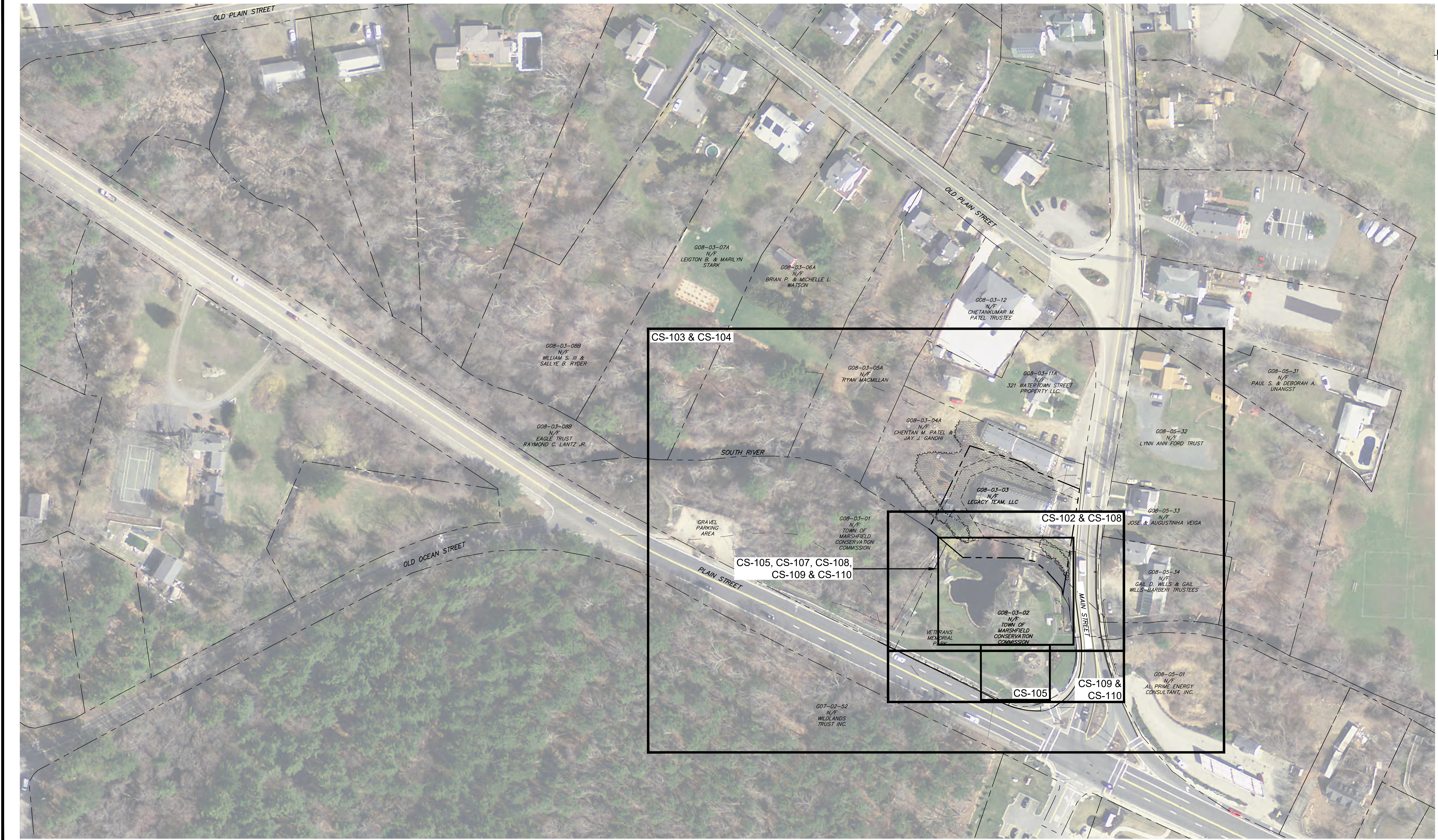
- ANY INCIDENT OF GROUNDWATER CONTAMINATION RESULTING FROM THE IMPROPER DISCHARGE OF POLLUTANTS TO THE STORMWATER SYSTEM SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER AS WELL AS ANY OTHER PARTIES DETERMINE TO BE RESPONSIBLE FOR THE CONTAMINATION. PURSUANT TO STATE LAWS AND REGULATIONS, THE REGULATING AGENCY MAY REQUIRE THE PROPERTY OWNER AND OTHER RESPONSIBLE PARTIES TO REMEDIATE ANY INCIDENTS THAT MAY ADVERSELY IMPACT GROUNDWATER QUALITY.
- UPON TRANSFER OF THE PROPERTY, THE NEW OWNER SHALL BE INFORMED AS TO THE LEGAL RESPONSIBILITIES ASSOCIATED WITH DISPOSAL SYSTEM, AS INDICATED ABOVE.
- THE PROPERTY OWNER SHALL BE RESPONSIBLE TO REMEDIATE INCIDENTS THAT ADVERSELY IMPACT GROUNDWATER QUALITY.

	SEAL	SEAL		
SCALE: HORIZ.: NOT TO SCALE VERT.:		DATUM: HORIZ.: VERT.:		GRAPHIC SCALE
<h2>FUSS &amp; O'NEILL</h2> <p>317 IRON HORSE WAY, SUITE 204 PROVIDENCE, RI 02908 401.861.3070 www.fandoo.com</p>			TOWN OF MARSHFIELD DIVISION OF ECOLOGICAL RESTORATION <h3>GENERAL NOTES AND LEGEND</h3> <p>SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02 MARSHFIELD MASSACHUSETTS</p>	
		PROJ. No.: 20180319A23 DATE: AUGUST 2, 2024		<b>CN-001</b> 2 OF 21

No.	DATE	ISSUED FOR	DESCRIPTION	DRN/SDA	NSW
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				DESIGNER	REVIEWER



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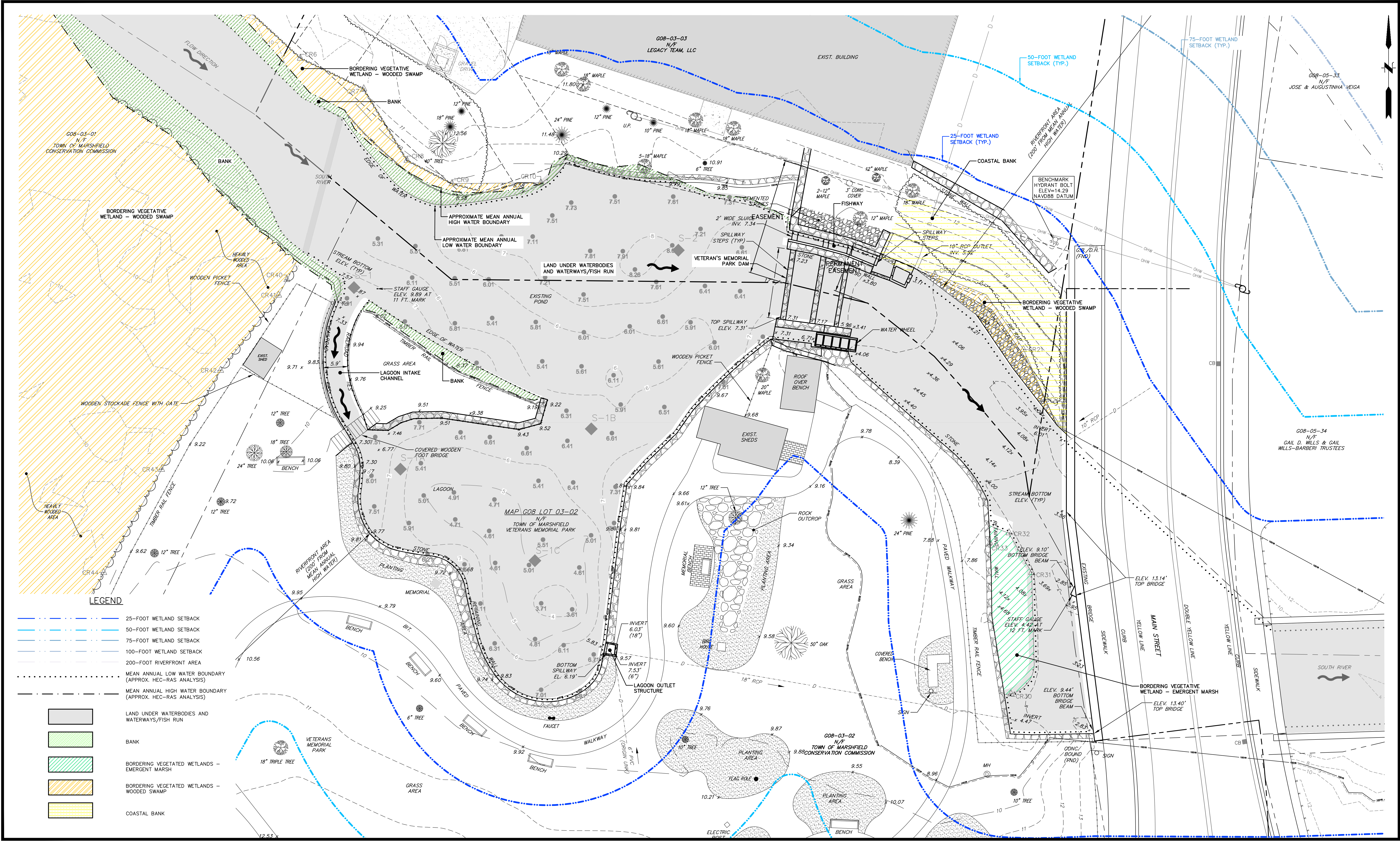
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TOWN OF MARSHFIELD  
 DIVISION OF ECOLOGICAL RESTORATION  
 INDEX PLAN  
 SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
 PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
 MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319.A23  
 DATE: AUGUST 2, 2024  
**CS-101**  
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 HORZ.: NAD83  
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EXISTING CONDITIONS PLAN

SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
 PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
 MARSHFIELD MASSACHUSETTS

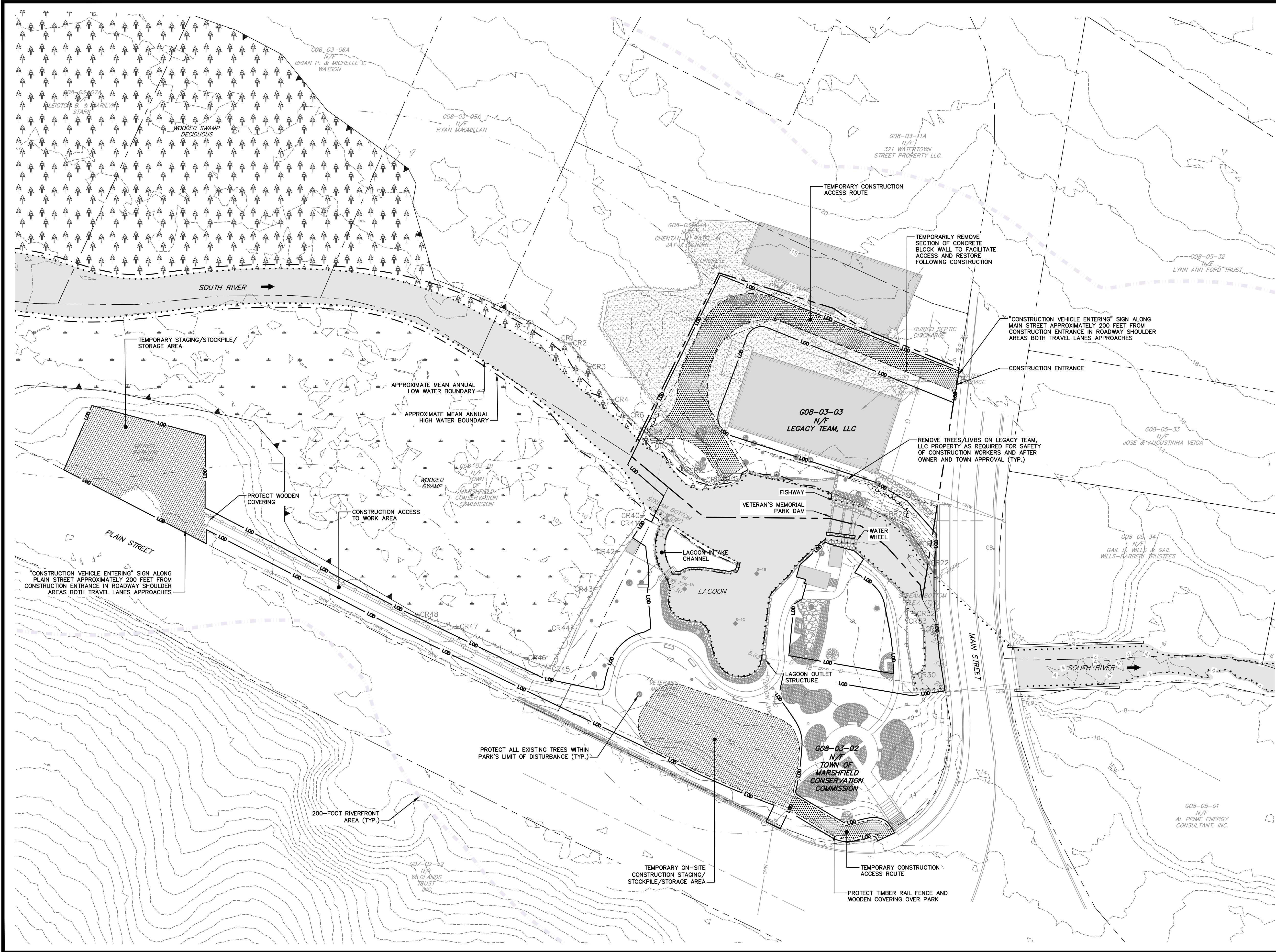
PROJ. No.: 20180319A23  
 DATE: AUGUST 2, 2024

**CS-102**

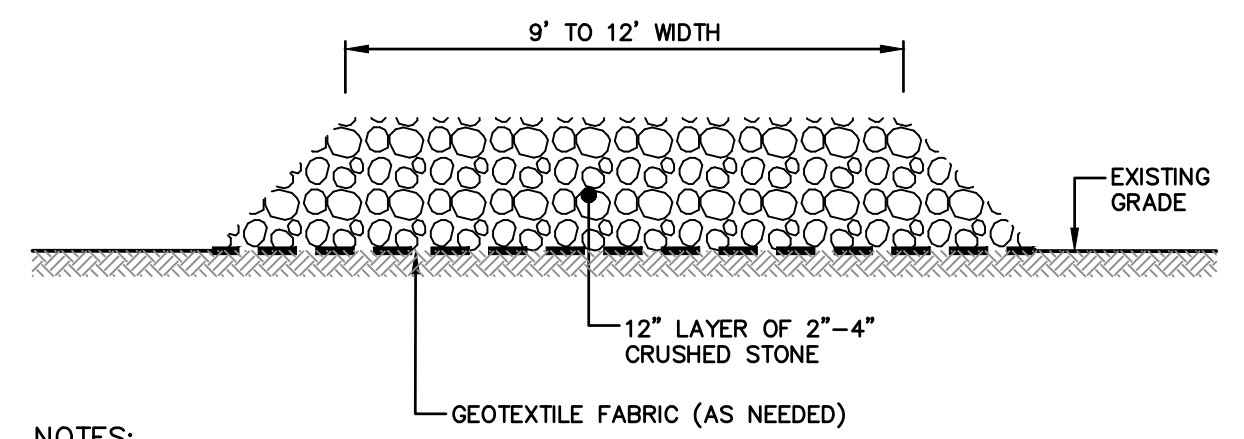
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- CONSTRUCTION ACCESS NOTES:**
1. THE MAJORITY OF THE TEMPORARY CONSTRUCTION ACCESS ROUTE ON PARCEL ID# G08-03-03 WILL BE LOCATED ON AN EXISTING GRAVEL TRAVELWAY. CRUSHED STONE TEMPORARY CONSTRUCTION ACCESS ROUTE SHALL BE INSTALLED WHERE THE TEMPORARY ACCESS ROUTE WILL NOT BE ON A STABLE GRAVEL SURFACE OR WHERE THE CRUSHED STONE IS REQUIRED FOR ADDITIONAL PROTECTION OF EXISTING STRUCTURES (I.E., OVER THE EXISTING SEPTIC LEACHING FIELD AND ASSOCIATED STRUCTURES). CONTRACTOR SHALL USE ADDITION PROTECTION MEASURES AS REQUIRED TO PROTECT THE SITE DURING ITS ACCESS THROUGHOUT CONSTRUCTION. THIS AREA SHALL NOT BE USED FOR THE STORAGE OF ANY MATERIALS. THE CONTRACTOR SHALL MAINTAIN (DO NOT CLOG) ACCESS TO THEIR PROPERTY FOR THE LEGACY TEAM, LLC. PROPERTY OWNERS AND THEIR REPRESENTATIVES.
  2. THE TEMPORARY CONSTRUCTION ACCESS ROUTE AND STAGING/STOCKPILE/STORAGE AREA WITHIN THE VETERANS MEMORIAL PARK WILL BE ESTABLISHED ON CRUSHED STONE OVER GEOTEXTILE FABRIC.
  3. ALL AREAS DISTURBED BY TEMPORARY ACCESS AND STORAGE AREA PROVISIONS WILL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS.
  4. RESTORE GRAVEL PARKING AREA PRIOR TO END OF CONSTRUCTION.
  5. THE GROUND SURFACE OVER/ ADJACENT TO THE WALKWAY SHALL BE COVERED BY TEMPORARY GROUND PROTECTION MATS TO PREVENT DAMAGE BY VEHICLES/EQUIPMENT. RESTORE WALKWAY SURFACE AND GRASSED AREAS FOLLOWING COMPLETION OF CONSTRUCTION; MINOR VEGETATION CLEARING AND GRUBBING IS ALLOWED TO FACILITATE ACCESS TO THE PROJECT SITE.
  6. ACCESS STEPS ON BOTH SIDES OF ENTRANCE, RESTORE CONDITIONS FOLLOWING CONSTRUCTION.



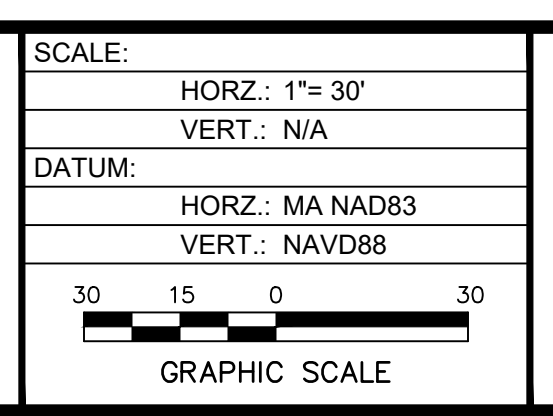
- NOTES:**
1. PROTECTION DEPICTED SHALL BE PROVIDED THROUGH LOCATIONS WHERE ADDED STABILITY OR PROTECTION OF EXISTING SUBSURFACE FEATURES IS DETERMINED NECESSARY BY THE ENGINEER.
  2. PLACE ADDITIONAL CRUSHED STONE AND GEOTEXTILE FABRIC AS REQUIRED THROUGHOUT CONSTRUCTION TO MAINTAIN STABLE ACCESS.

**TEMPORARY CONSTRUCTION ACCESS ROUTE**  
NOT TO SCALE

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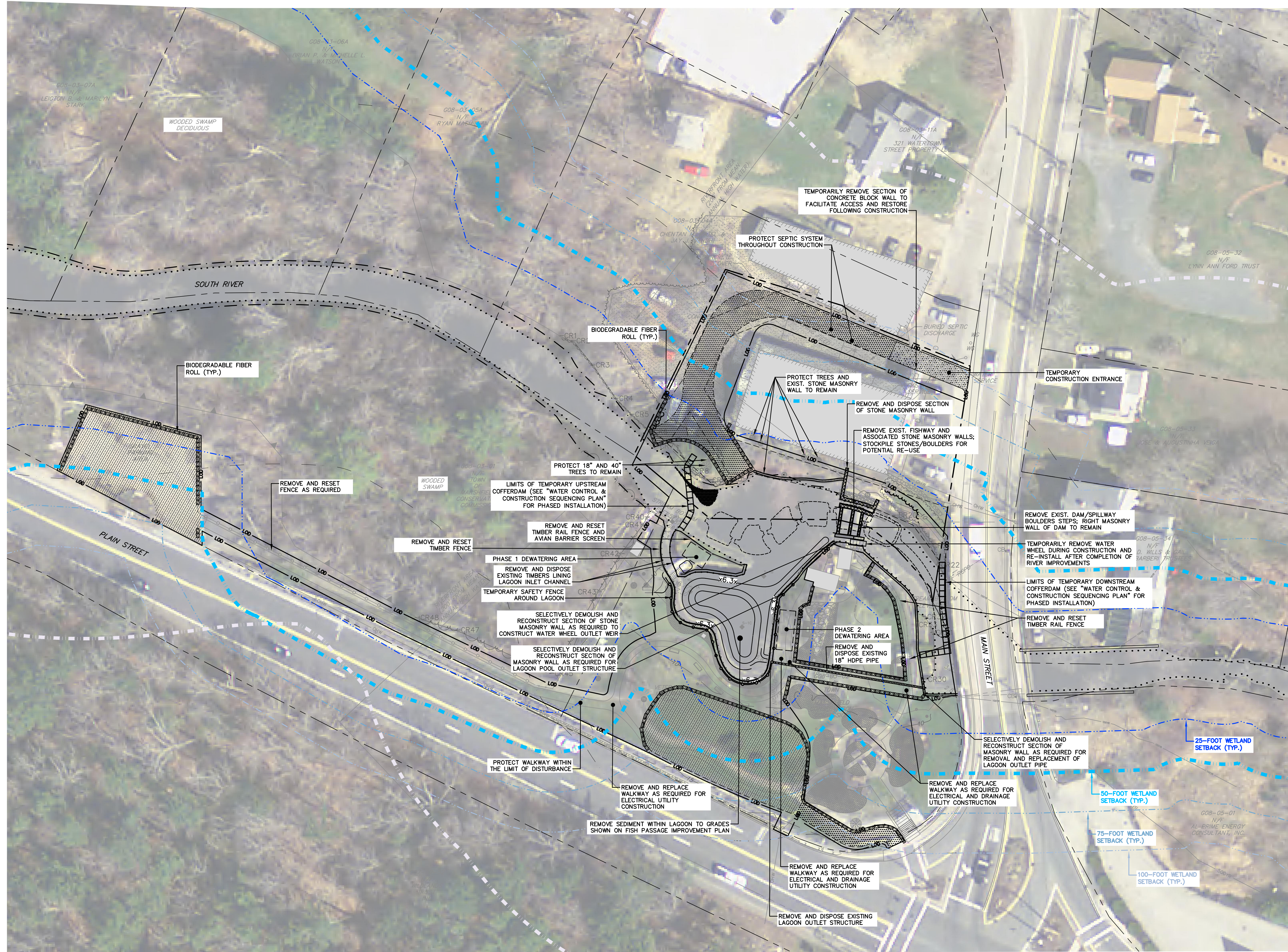
TOWN OF MARSHFIELD  
 DIVISION OF ECOLOGICAL RESTORATION  
 CONSTRUCTION ACCESS/STAGING AND  
 REGULATORY BUFFER PLAN  
 SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
 PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
 MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319.A23  
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DATUM:

HORIZ.: MA NAD83

VERT.: NAVD88

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 DEMOLITION AND EROSION  
 CONTROL PLAN  
 SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
 PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
 MARSHFIELD MASSACHUSETTS

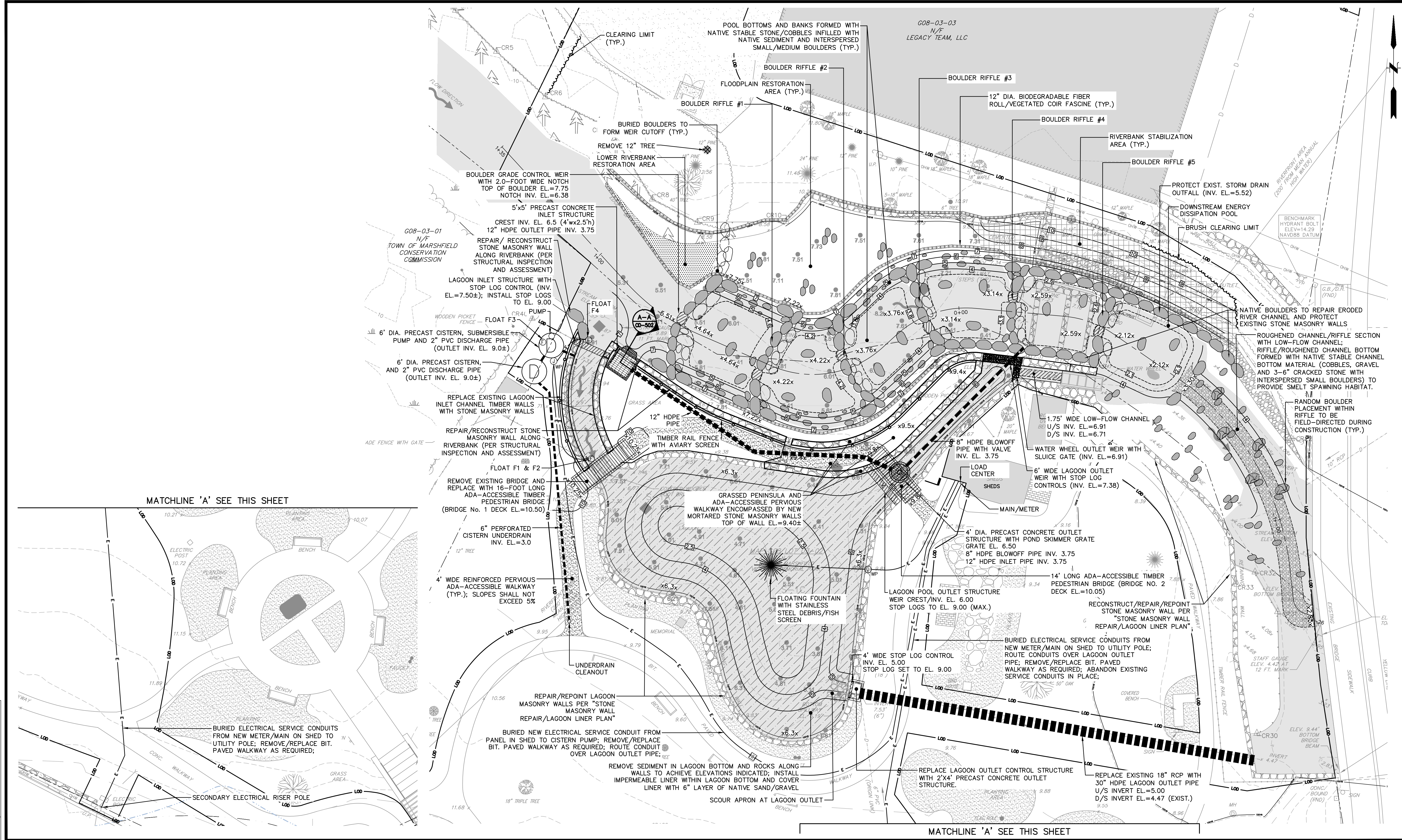
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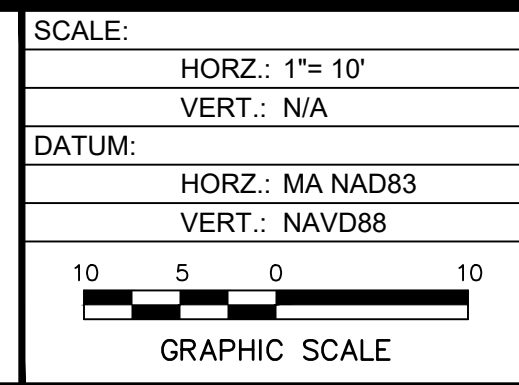


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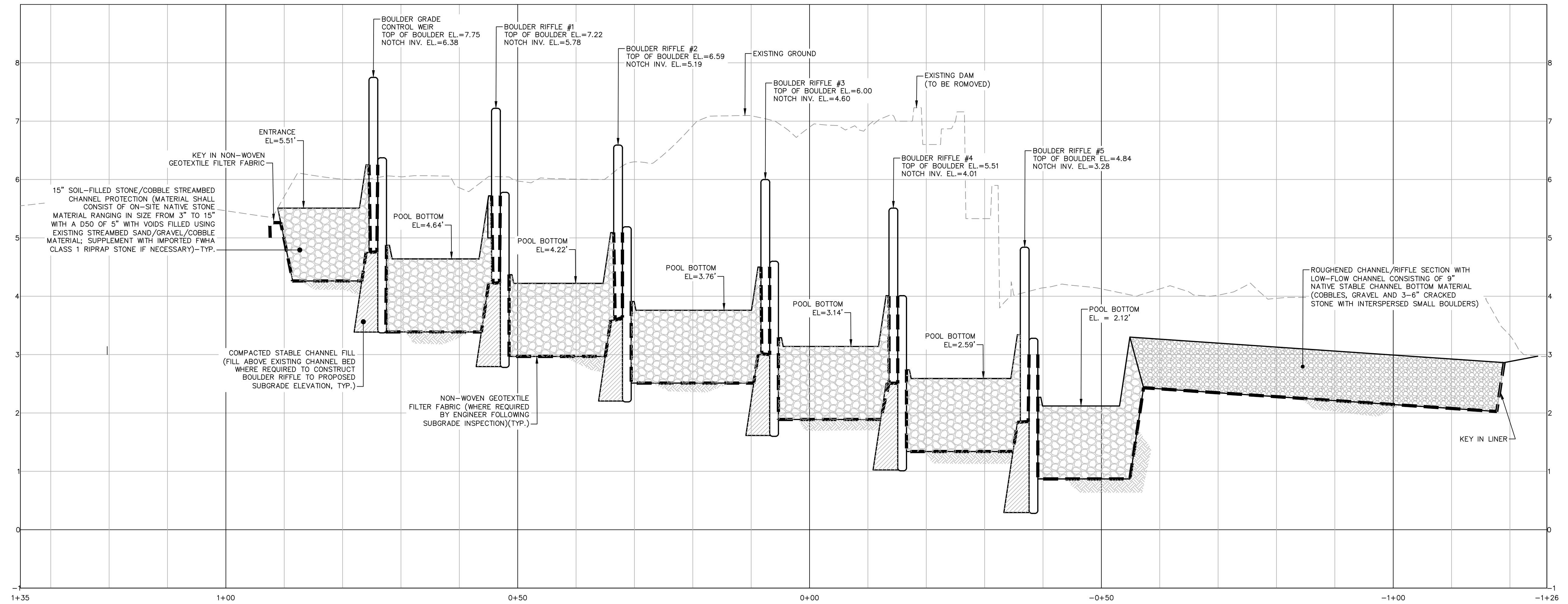


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 SOUTH RIVER FISH PASSAGE AND PARK  
 LAGOON IMPROVEMENTS PLAN  
 SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
 PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
 MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319.A23  
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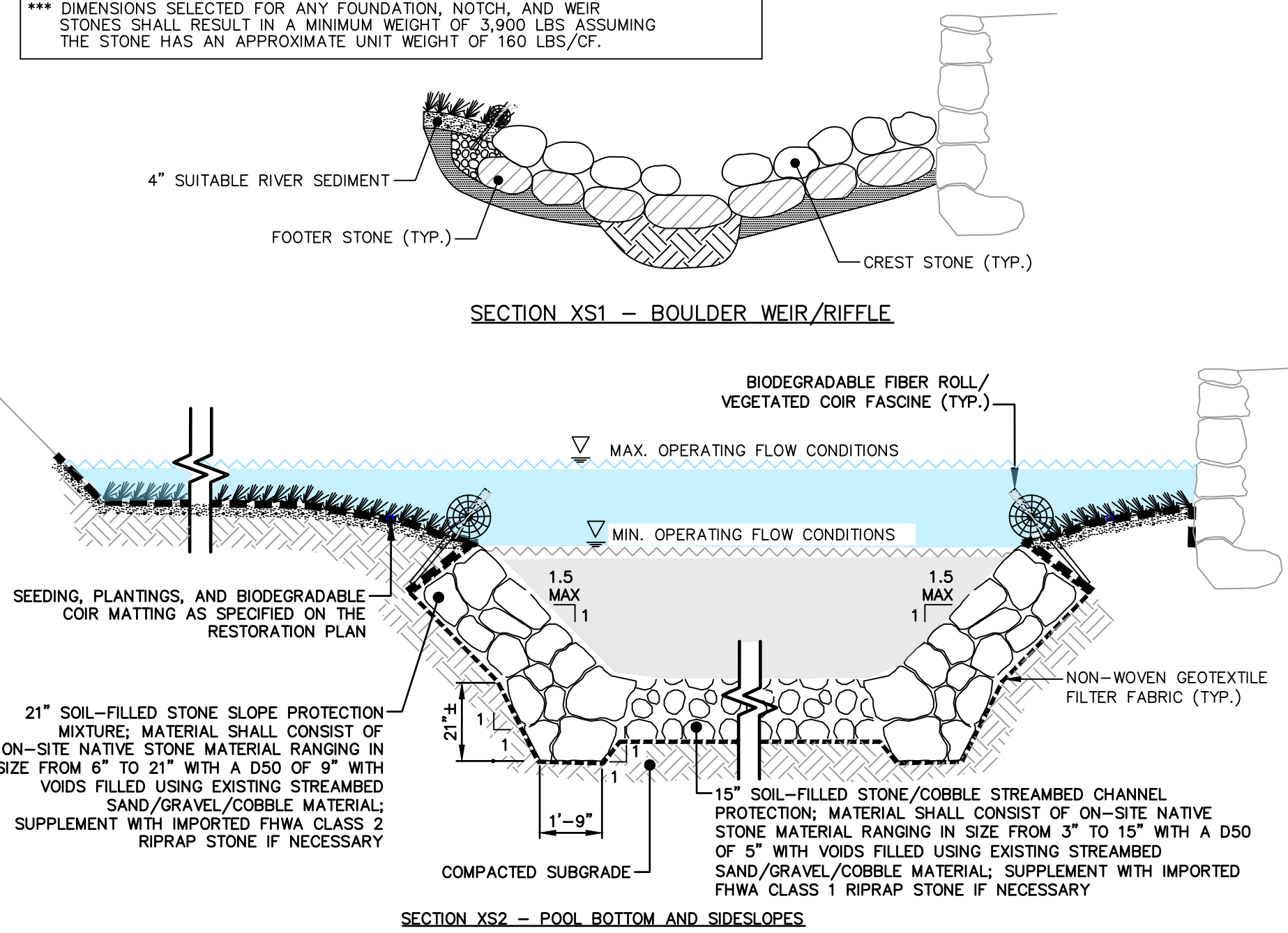
STONE TYPE	STONE LENGTH (A)*	STONE WIDTH (B)	STONE HEIGHT (C)
NOTCH/FOOTER STONE	3.0'-4.0'	3.0'-3.5'	3.0'-3.5'
CREST STONE	3.0'-4.0'	3.0'-3.5'	2.5'-3.0'

\* 'A' DIMENSION REFERS TO LENGTH OF STONE PERPENDICULAR TO FLOW; 'C' DIMENSION REFERS TO WIDTH OF STONE PARALLEL TO FLOW.

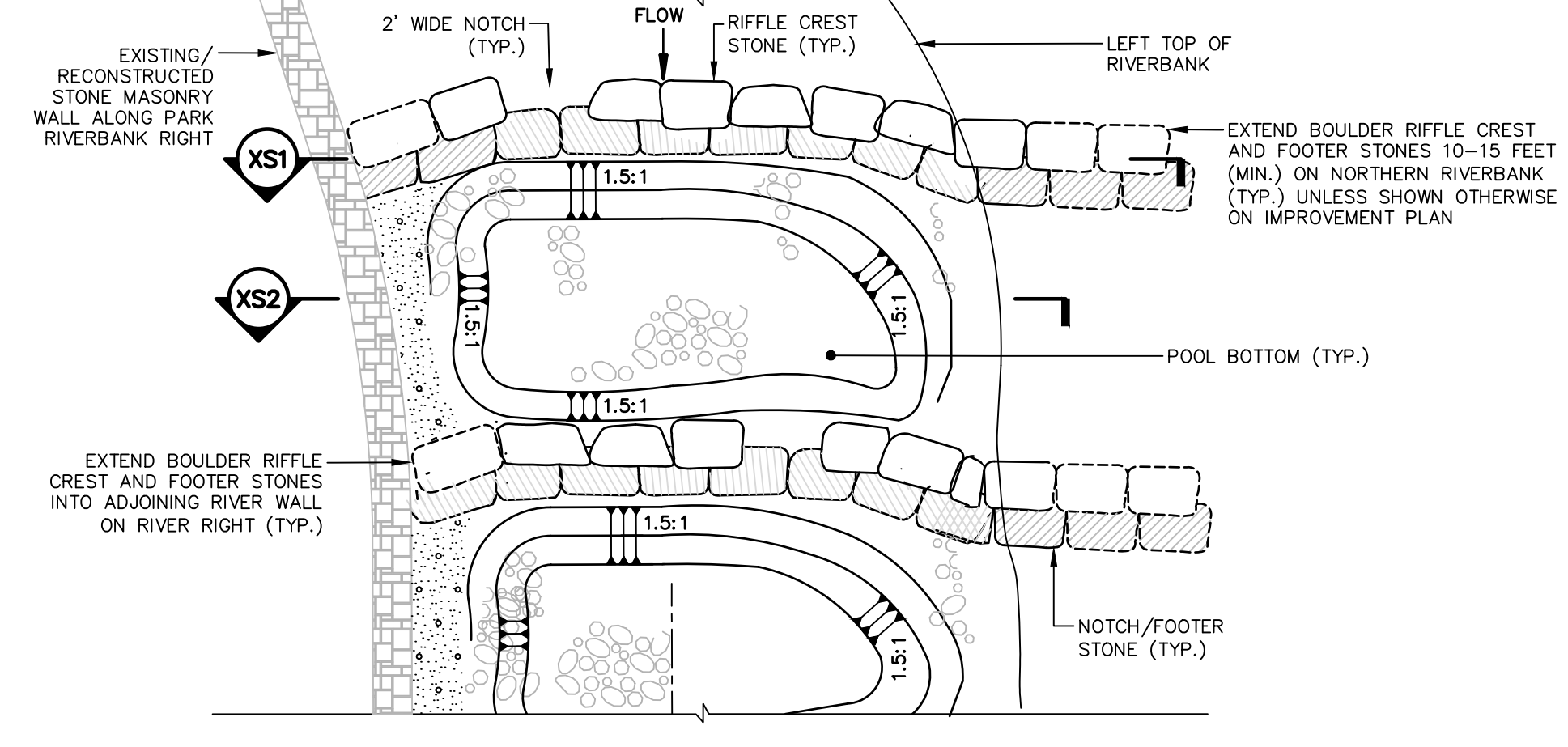
\*\* ADDITIONAL STONES MAY BE PLACED BEHIND & ABUTTING THE NOTCH/FOOTER STONES AS DIRECTED BY THE ENGINEER TO OBTAIN REQUIRED NOTCH WIDTH AND RIFFLE FLOW CONDITIONS.

\*\*\* DIMENSIONS SELECTED FOR ANY FOUNDATION, NOTCH, AND WEIR STONES SHALL RESULT IN A MINIMUM WEIGHT OF 3,900 LBS ASSUMING THE STONE HAS AN APPROXIMATE UNIT WEIGHT OF 160 LBS/CF.

**FISHWAY PROFILE**  
 HORZ: 1"=10', VERT: 1"=1'

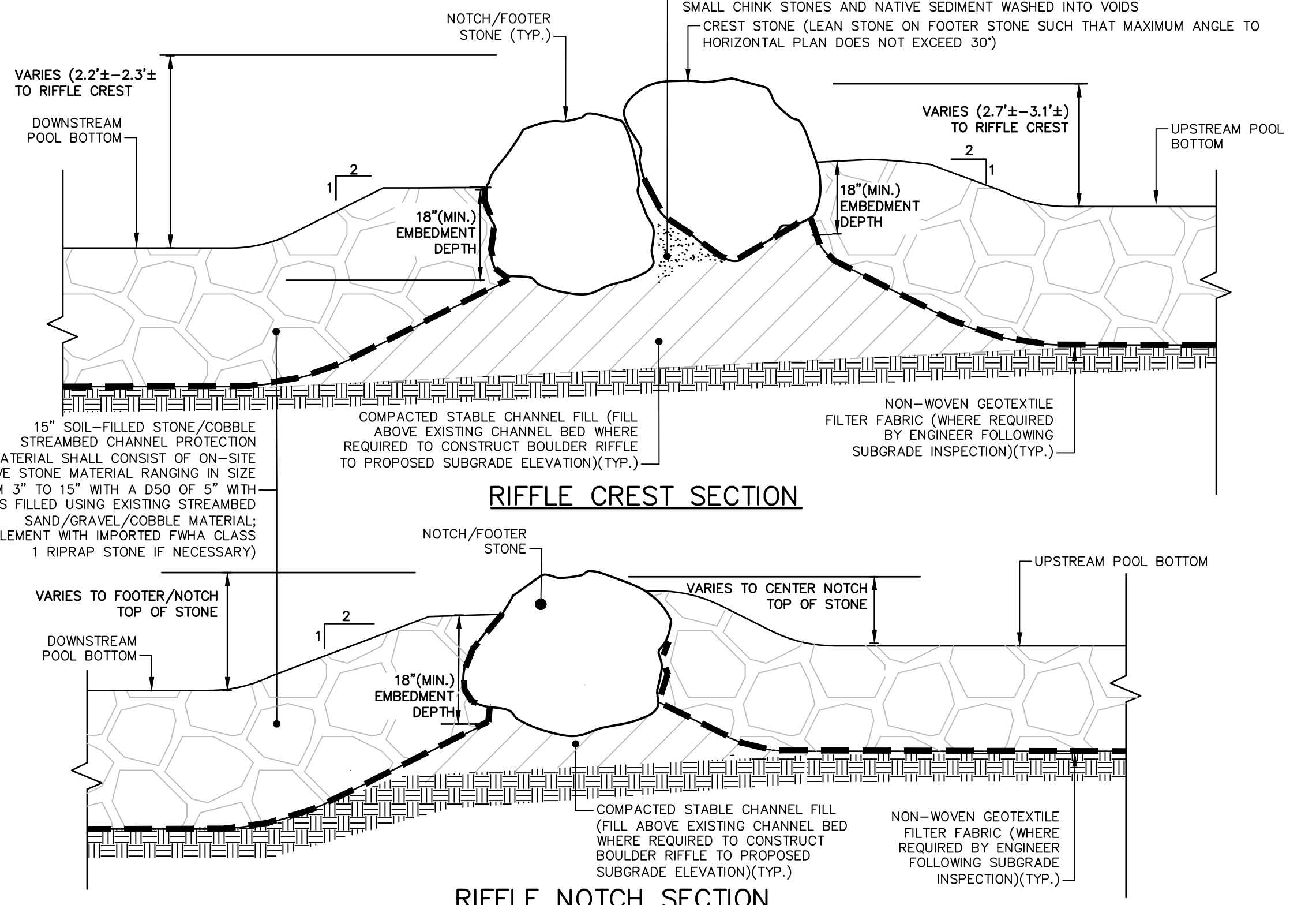


**BOULDER RIFFLE POOL TYPICAL CROSS SECTION**  
 NOT TO SCALE



**BOULDER RIFFLE AND POOL DETAIL**  
 NOT TO SCALE

- NOTES:**
- WEIR NOTCH OPENINGS SHALL BE STAGGERED AS APPROXIMATELY SHOWN ON THE IMPROVEMENT PLAN.
  - RESTING POOLS BETWEEN RIFFLES SHALL BE CONSTRUCTED IN THE LOCATIONS AND TO THE DIMENSIONS INDICATED ON THE IMPROVEMENT PLAN. RESTING POOLS SHOWN HEREON ARE APPROXIMATE AND DEPICTED TO SHOW BASIC INFORMATION ONLY IN ADDITION TO THE OVERALL INTENT OF LOCATIONS OF POOLS IN RESPECT TO RIFFLE WEIRS.
  - FOOTER, NOTCH AND CREST STONES SHALL BE PLACED IN A STRUCTURALLY STABLE CONFIGURATION GENERALLY SHOWN ON THESE DRAWINGS, AS DIRECTED AND ACCEPTED BY THE ENGINEER IN THE FIELD.
  - COMPACT STABLE CHANNEL FILL BELOW AND ALONG ALL SIDES OF BOULDERS TO FINISHED GRADE.



**BOULDER RIFFLE SECTION DETAILS**  
 NOT TO SCALE

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**RIFFLE POOL PROFILE AND DETAILS**

SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
 PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
 MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319.A23  
 DATE: AUGUST 2, 2024

**CS-106**

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**SEEDING RATES AND NOTES:**

ALL SEED MIXES SHALL BE FREE OF INVASIVE NON-NATIVE PLANT SPECIES AND SHALL BE INSTALLED AT THE FOLLOWING APPLICATION RATES:

**CONSERVATION SEED MIX**  
 MIXTURE: NEW ENGLAND WETLAND PLANTS, NEW ENGLAND CONSERVATION/WLDLIFE MIX  
 APPLICATION RATE: ANNUAL RYEGRASS (TEMPORARY COVER) = 25 LBS/ACRE  
 NEW ENGLAND WETLAND PLANTS, NEW ENGLAND CONSERVATION/WLDLIFE MIX = 25 LBS/ACRE

**WETLAND SEED MIX**  
 MIXTURE: NEW ENGLAND WETLAND PLANTS, NEW ENGLAND WETMIX  
 APPLICATION RATE: ANNUAL RYEGRASS (TEMPORARY COVER) = 25 LBS/ACRE  
 NEW ENGLAND WETLAND PLANTS, NEW ENGLAND WETMIX = 18 LBS/ACRE

**RIPARIAN/WOODLAND SEED MIX**  
 MIXTURE: RIPARIAN/WOODLAND SEED MIX  
 APPLICATION RATE: ANNUAL RYEGRASS (TEMPORARY COVER) = 25 LBS/ACRE  
 CONSERVATION SEED MIX = 30 LBS/ACRE

**PARK SEED MIX**  
 MIXTURE: LAVOIE HORTICULTURE PLAYERS'S BEST SEED MIX  
 APPLICATION RATE: SEED MIX = 220 LBS/ACRE

**RESTORATION SEED MIXES:**

**I. WETLAND SEED MIX**  
 NEW ENGLAND WETLAND PLANTS, NEW ENGLAND WETMIX.  
 WETLAND SEED MIX FOR RESTORATION OF WET MEADOW/EMERGENT MARSH RESTORATION AREAS.

BOTANICAL NAME	COMMON NAME	IND.
CAREX VULPINOIDEA	FOX SEDGE	OBL
CAREX SCOPARIA	BLUNT BROOM SEDGE	FACW
CAREX LURIDA	LURID SEDGE	OBL
CAREX LUPULINA	HOP SEDGE	OBL
POA PALUSTRIS	POWDER BLUEGRASS	FACW
BIDENS FRONDOSA	BEGGAR TICKS	FACW
SCIRPUS ATROVIRENS	GREEN BULRUSH	OBL
ASCLEPIAS INCARNATA	SWAMP MILKWEED	OBL
CAREX CRINITA	FRINGED SEDGE	OBL
VERNONIA NOVEBORACENSIS	NEW YORK IRONWEED	FACW+
JUNCUS EFFUSUS	SOFT RUSH	FACW+
ASTER LATERIFLORUS	STARVED/CALICO ASTER	FACW
(SYMPHYOTRICHUM LATERIFLORUM)	STARVED/CALICO ASTER	FACW
IRIS VERSICOLOR	BLUE FLAG	OBL
GLYCERIA GRANDIS	AMERICAN MANNAGRASS	OBL
MIMULUS RINGENS	SQUARE STEMMED MONKEY FLOWER	OBL
EUPATORIUM MACULATUM	SPOTTED JOE PYE WEED	OBL
(EUTROCHIMUM MACULATUM)	SPOTTED JOE PYE WEED	OBL

**II. RIPARIAN/WOODLAND MIX**  
 SEED MIX FOR RESTORATION OF PARTIAL SUN TO SHADY BANK AND SHORELINE AREAS ADJACENT TO WET MEADOW/EMERGENT MARSH RESTORATION AREAS.

BOTANICAL NAME	COMMON NAME	IND.
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	FACW
GEUM LACINIATUM	ROUGH AVENS	FACU
SMILACINA RACEMOSA	FALSE SALOMON'S SEAL	FACU
ASTER PILOSUS	HEATH ASTER	UPL
ELYMUS RIPARIUS	RIVERBANK WILD RYE	FACW
ANEMONE VIRGINIANA	THIMBLEWEED	FACU
HELIOPSIS HELIANTHOIDES	OX-EYE SUNFLOWER	FACU
ASTER PRENANTHOIDES	ZIG ZAG ASTER	FACU
CAULOPHYLLUM THALICTROIDES	BLUE COHOSH	FACU
CIMIFUGA RACEMOSA	BLACK COHOSH	FACU
ASTER MACROPHYLLUS	BIG LEAF ASTER	FACU
OSMORHIZA DAYTONII	SWEET CICELY	FACU
RUBUS ALLEGHENIENSIS	BLACKBERRY	FACU
AQUILEGIA CANDENSIS	EASTERN COLUMBINE	FACU
ARISAEMA TRIPHYLLUM	JACK-IN-THE-PULPIT	FACU
ASTER DIVARIEFUS	WHITE WOOD ASTER	FACU
PLEMONIUM REPTANS	GREEK VALERIAN	FACU
CAREX VULPINOIDES	FOX SEDGE	OBL
VERBENA HASTATA	BLUE VERVAIN	FACU
EUPATORIUM PERFOLIATUM	BONESET	FACU
JUNCUS EFFUSUS	SOFT RUSH	FACU
EUPATORIUM MACULATUM	SPOTTED JOE PYE WEED	OBL
CAREX COMOSA	COSMOS SEDGE	OBL
MIMULUS RINGENS	MONKEY FLOWER	OBL

**III. WETLAND SEED MIX**  
 NEW ENGLAND WETLAND PLANTS, NEW ENGLAND WETMIX.  
 CONSERVATION SEED MIX FOR RESTORATION OF UNPAVED AREAS AND REMAINING NON-HATCHED AREAS WITHIN LIMIT OF DISTURBANCE ON THE NORTHERN SIDE OF THE RIVER.

BOTANICAL NAME	COMMON NAME	IND.
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	FACW
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	FACU
ANDROPOGON GERARDII	BIG BLUESTEM	FACU
FESTUCA RUBRA	RED FESCUE	FACU
SORGHASTRUM NUTANS	INDIAN GRASS	UPL
PANICUM VIRGATUM	SWITCH GRASS	FACU
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	FACU
DESMODIUM CANADENSE	SHOWY TICK TREFLOIL	FACU
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED	NI
BIDENS FRONDOSA	BEGGAR TICKS	FACW
EUPATORIUM PURPUREUM	PURPLE JOE PYE WEED	FACU
RUDBECKIA HIRTA	BLACK EYED SUSAN	FACU
ASTER PILOSUS	HEATH (OR HAIRY) ASTER	UPL
SOLIDAGO JUNCEA	EARLY GOLDENROD	NI

**IV. LAVOIE HORTICULTURE PLAYERS BEST SEED MIX (PARK SEED MIX)**  
 PARK SEED MIX FOR RESTORATION OF UNPAVED AREAS AND REMAINING UNHATCHED LAWN AREAS WITHIN LIMIT OF DISTURBANCE WITHIN THE PARK ON THE SOUTHERN SIDE OF THE RIVER (INCLUDING TEMPORARY STAGING/STORAGE AND ACCESS AREAS AND AREA DISTURBED BY PRIMARY ELECTRICAL SERVICE CONDUIT INSTALLATION) SHALL RECEIVE NATIVE OR IMPORTED TOPSOIL AND SEED CONFORMING TO LAVOIE HORTICULTURE'S "PLAYERS BEST SEED MIX" OR APPROVED EQUAL.

**RESTORATION PLANTING REQUIREMENTS:**

SPACINGS INDICATED BELOW ARE A GUIDE. GROUPING/CLUSTERING OF PLANTS SHALL BE FIELD DIRECTED BY THE ENGINEER IN CONSULTATION WITH THE TOWN AND PROPERTY OWNERS.

**UPPER RIVERBANK RESTORATION AREA:**  
 TREES: SPACED @ 15' O.C. (MIN.) (20 TOTAL TREES)  
 RED MAPLE (ACER RUBRUM)  
 AMERICAN ELM (ULMUS AMERICANA)  
 SUB TUPELO (NYSSA L.)  
 BLACK WILLOW (SALIX NIGRA)

SHRUBS: SPACED @ 5' O.C. (95 TOTAL SHRUBS)  
 RED OSIER DOGWOOD (CORNUS STOLONIFERA)  
 BUTTONBUSH (CEPHALANTHUS OCCIDENTALIS)  
 GREY DOGWOOD (CORNUS RACEMOSA)  
 SWEET PEPPERBUSH (CLETHRA ALNIFOLIA)  
 NANNYBERRY (VIBURNUM LENTAGO)

RESTORATION: RIPARIAN/WOODLAND MIX STABILIZED WITH BIODEGRADABLE EROSION CONTROL BLANKETING

**RIVERBANK STABILIZATION AREA:**

**LOWER SLOPE (EDGE OF RIVER UP TO EL. 7.5):**

LIVE STAKES: SPACED @ 18' O.C.  
 BLACK WILLOW (SALIX NIGRA)

SHRUBS: SPACED @ 24' O.C.  
 SILKY DOGWOOD (SMIDA AMOMUM)

SEEDING: WETLAND SEED MIX

**MID SLOPE (EL. 7.5 TO 9.0):**

SHRUBS: SPACED @ 24' O.C.  
 SWAMP ROSE (ROSA PALUSTRIS)

SEEDING: CONSERVATION SEED MIX

**UPPER SLOPE (EL. 9.0 TO TOP OF RESTORATION AREA):**

SHRUBS: SPACED @ 24' O.C.  
 WINTER HOLLY (ILEX VERTICILLATA)  
 SILKY DOGWOOD (CORNUS OBLIQUA)  
 HIGHBUSH BLUEBERRY (VACCINIUM CORYMBOSUM)

SEEDING: CONSERVATION SEED MIX

STABILIZATION: AREA TO BE STABILIZED WITH BIODEGRADABLE EROSION CONTROL BLANKETING OVERLAIN BY BIODEGRADABLE COIR

**FLOODPLAIN RESTORATION AREA:**

WETLAND PLUGS: SPACED @ 12' O.C.  
 GOLDENROD (SOLIDAGO)  
 JOE PYEWEED (EUTROCHIM FISTULOSUM)  
 SWAMP ASTER (ASTER PUNICEUS)  
 SENSITIVE FERN (ONOCLEA SENSIBILIS)  
 TALL MEADOW-RUE (THALICTRUM PUBESCENS)

RESTORATION: WETLAND SEED MIX STABILIZED WITH BIODEGRADABLE COIR MATTING AND BIODEGRADABLE FIBER ROLLS/VEGETATED COIR FASCINE

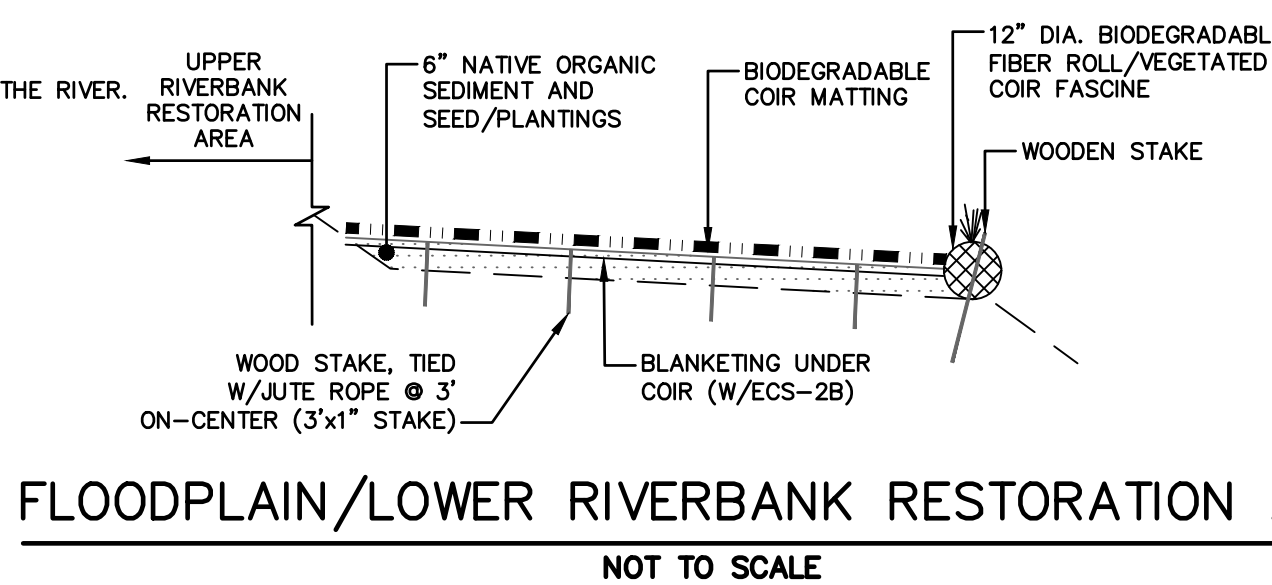
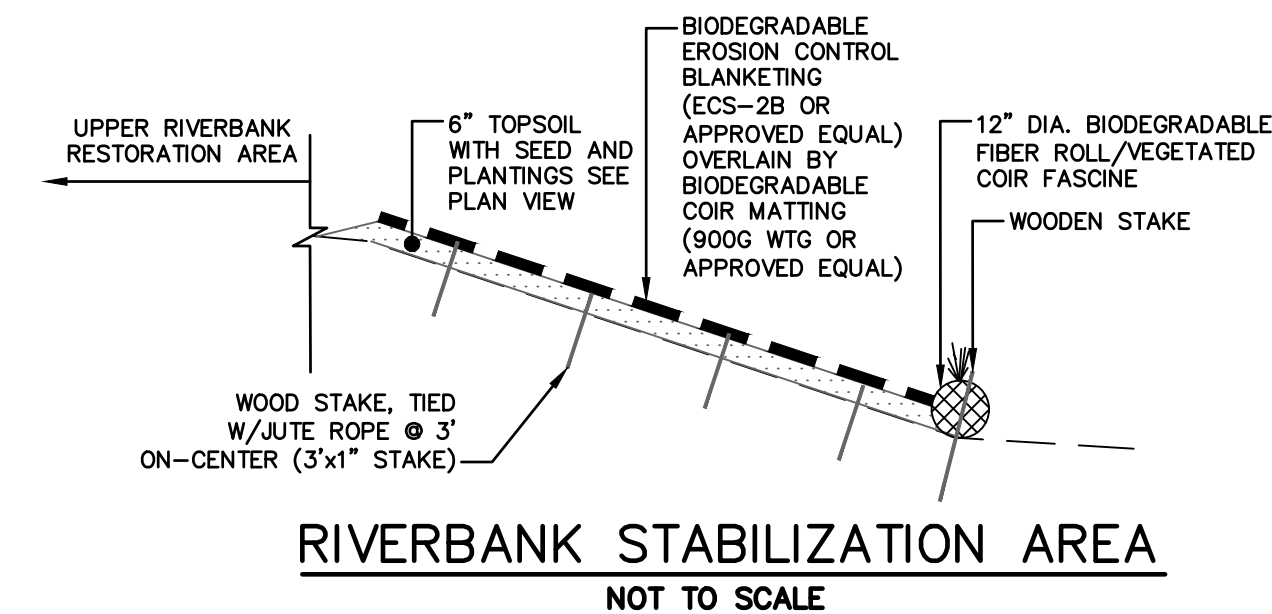
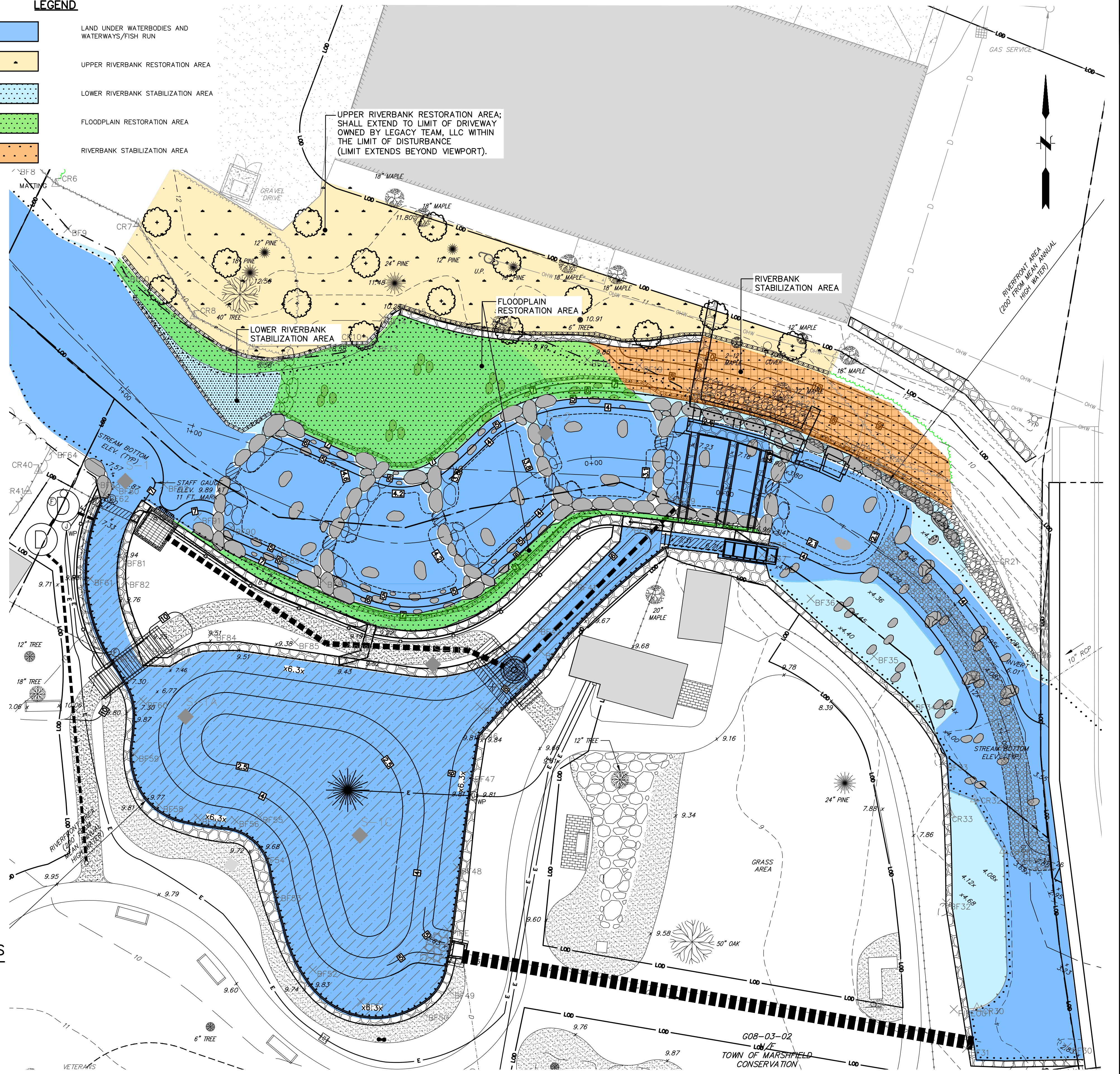
**LOWER RIVERBANK STABILIZATION AREA:**

LIVE STAKES: SPACED 18' O.C.  
 BLACK WILLOW (SALIX NIGRA)

RESTORATION: WETLAND SEED MIX STABILIZED WITH BIODEGRADABLE COIR MATTING AND BIODEGRADABLE FIBER ROLLS/VEGETATED COIR FASCINE

**LEGEND**

- LAND UNDER WATERBODIES AND WATERWAYS/FISH RUN
- UPPER RIVERBANK RESTORATION AREA
- LOWER RIVERBANK STABILIZATION AREA
- FLOODPLAIN RESTORATION AREA
- RIVERBANK STABILIZATION AREA



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 VERT.: N/A  
 DATUM:  
 HORIZ.: MA NAD83  
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TOWN OF MARSHFIELD  
 DIVISION OF ECOLOGICAL RESTORATION  
 RIPARIAN HABITAT AND PARK AREA  
 RESTORATION PLAN  
 SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
 PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
 MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319.A23  
 DATE: AUGUST 2, 2024  
**CS-107**  
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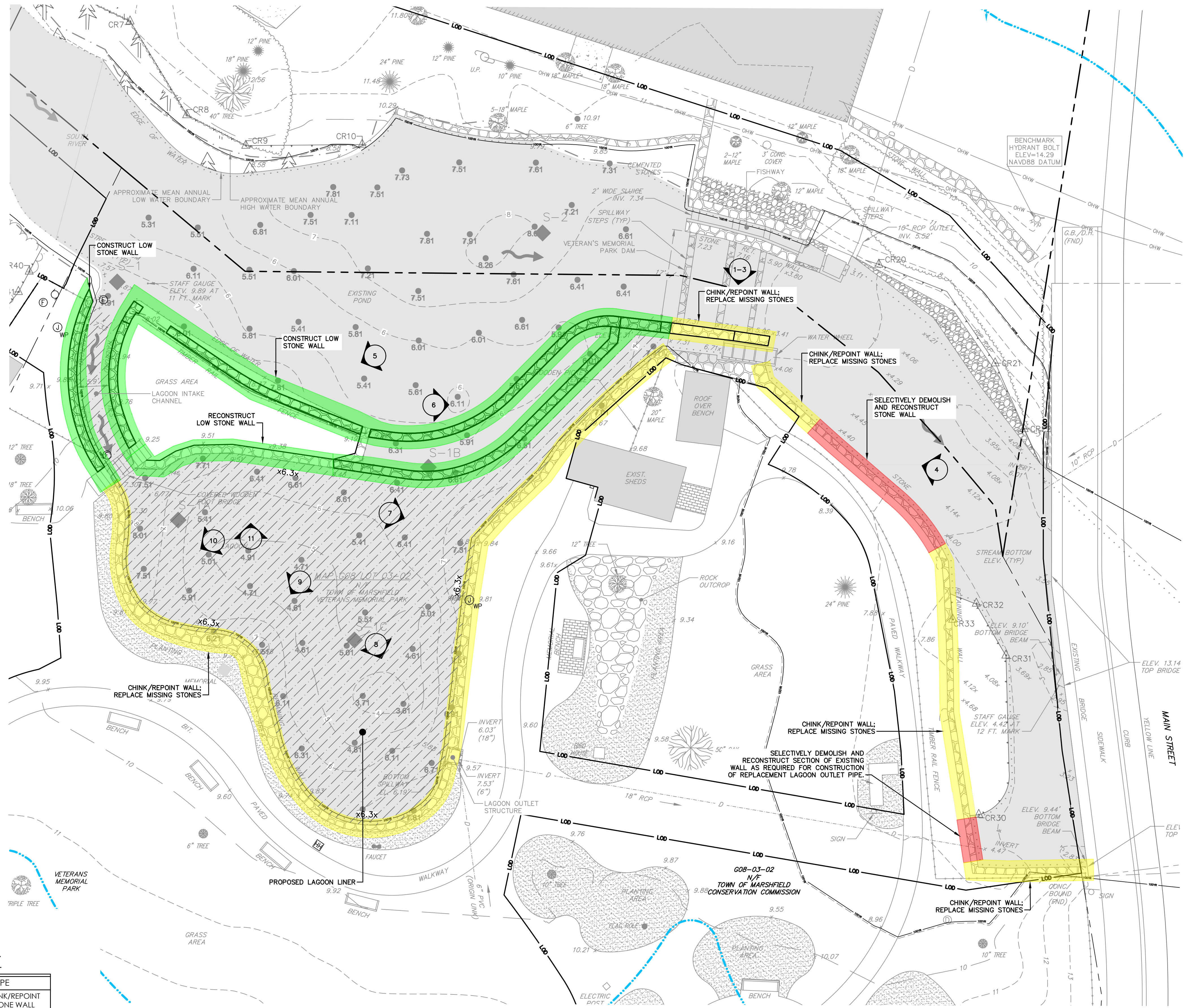


**LEGEND**

-  APPROXIMATE LIMIT OF LINER
-  RECONSTRUCT/CONSTRUCT LOW STONE WALL
-  RECONSTRUCT MEDIUM STONE WALL
-  CHINK/REPOINT STONE WALL; REPLACE MISSING STONE WALL STONES

**NOTES:**

1. WALL RECONSTRUCTION AND REPAIRS SHALL BE COORDINATED WITH OTHER SITE IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO LINER INSTALLATION AND CONSTRUCTION OF WATER CONTROL STRUCTURES, SUPPLEMENTAL WATER IMPROVEMENTS, PEDESTRIAN BRIDGES AND SITE GRADING/RESTORATION.
2. AREAS OF WORK AND TYPES OF REPAIRS/RECONSTRUCTION SHALL BE CONFIRMED OR ADJUSTED BASED ON THE CONDITION OF RESPECTIVE WALL SECTIONS AS OF THE DATE OF CONSTRUCTION, WHICH WILL BE EVALUATED BY THE ENGINEER DURING SEASONAL LOW WATER OR DEWATERED CONDITIONS IN PREPARATION FOR WORK AT THE SITE.
3. ALL REPAIRS SHOWN ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
4. CONTRACTOR SHALL PROVIDE A SURVEYED SKETCH OF ALL REPAIRS TO BE REVIEWED AND APPROVED BY THE ENGINEER.



**WORK ITEM CONTRACT QUANTITY SUMMARY**

ASSUMED QUANTITY	STONE MASONRY WALL REPAIR TYPE		
	RECONSTRUCT STONE WALL (SQ. FT.)	REPLACE MISSING STONE WALL STONES (SQ. FT.)	CHINK/REPOINT STONE WALL (SQ. FT.)
	1,050	100	500

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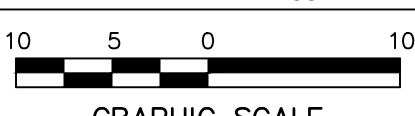
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HORIZ.: NAD83

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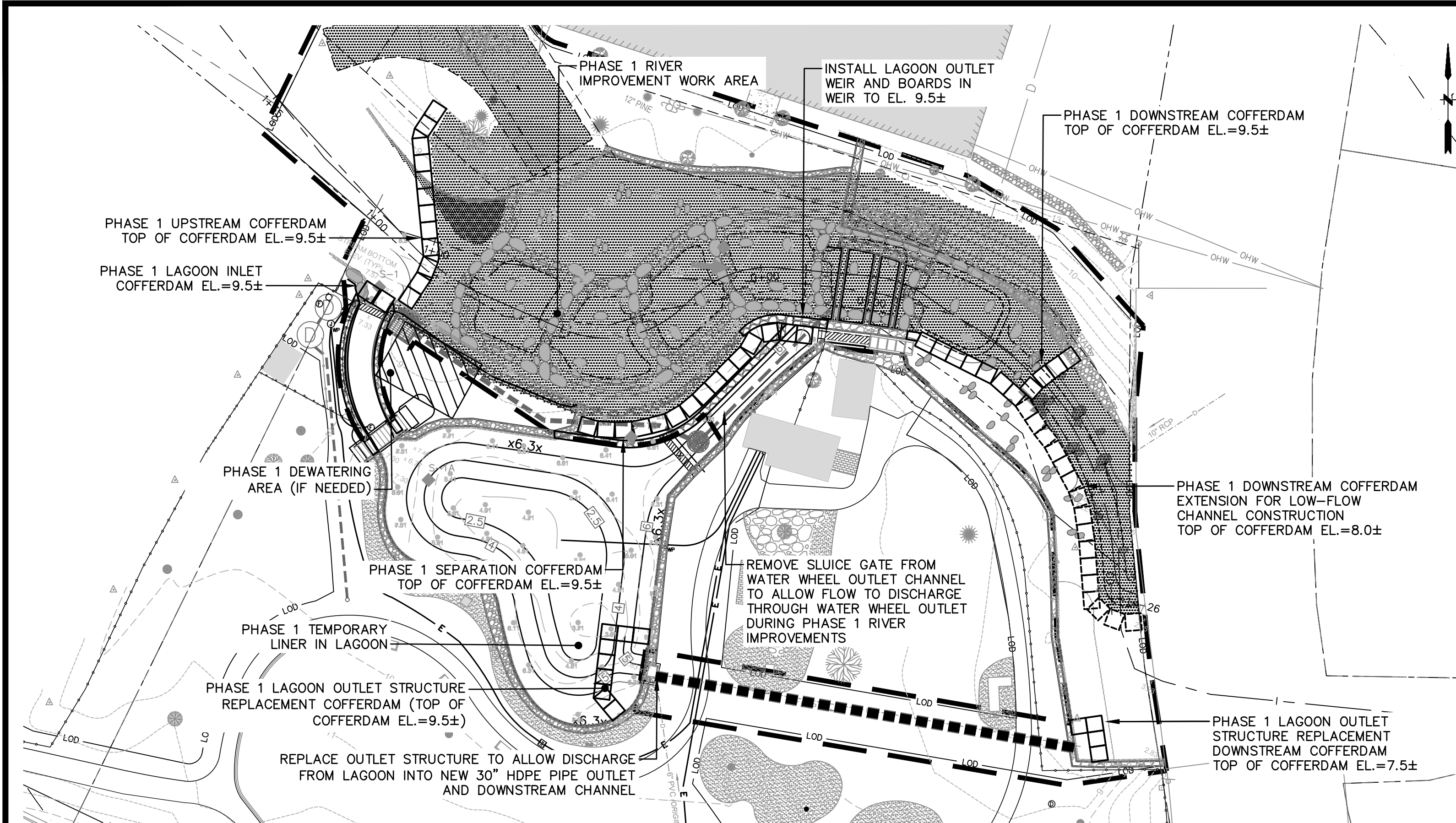
TOWN OF MARSHFIELD  
 DIVISION OF ECOLOGICAL RESTORATION  
 STONE MASONRY WALL REPAIR /  
 LAGOON LINER PLAN  
 SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
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 MARSHFIELD MASSACHUSETTS

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**PHASE 1 WATER CONTROL – RIVER RESTORATION IMPROVEMENTS**  
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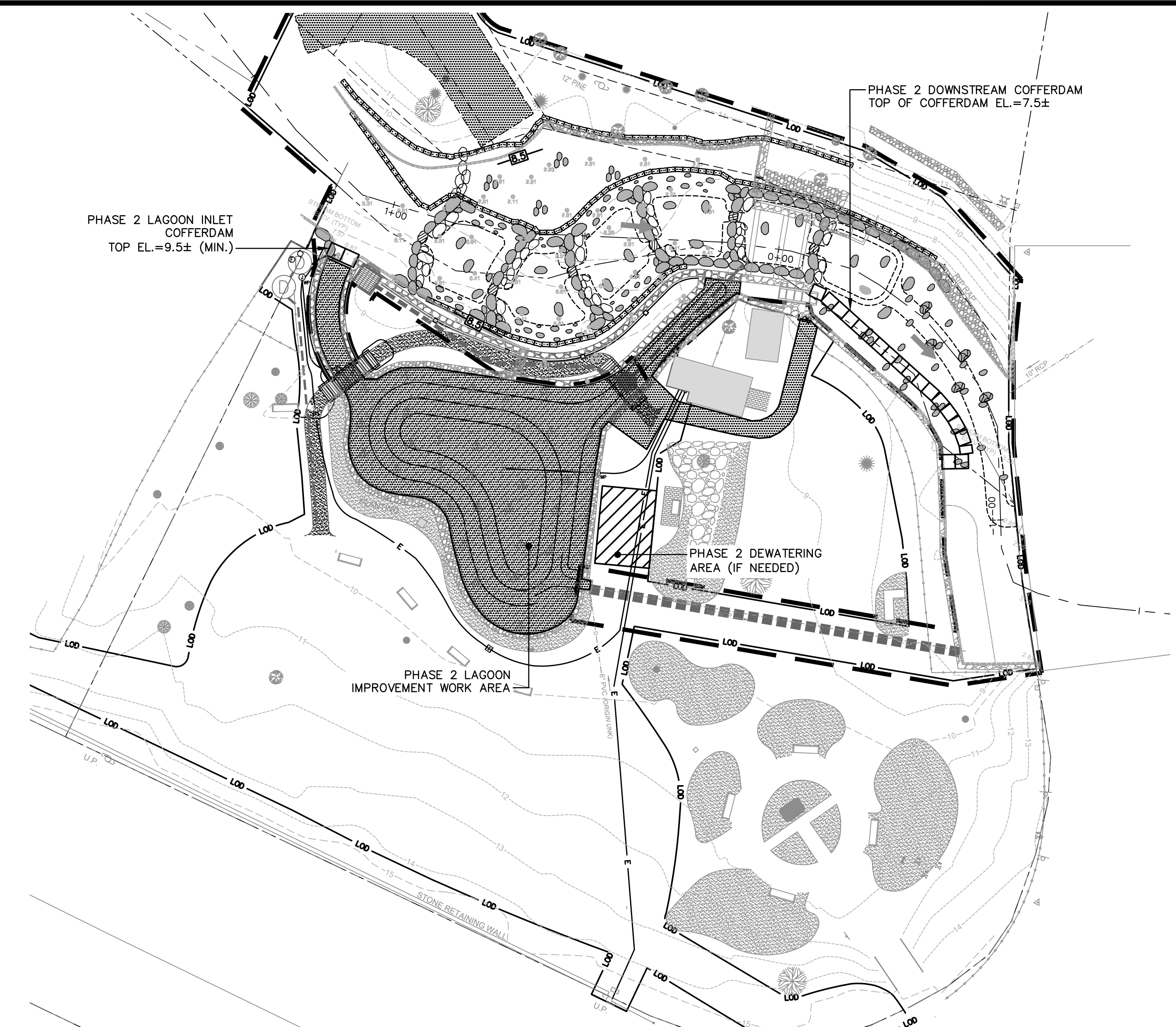
**WATER CONTROL SYSTEM NOTES**

THE FOLLOWING NOTES ARE INTENDED TO SUPPORT THE WATER CONTROL CONSTRUCTION SEQUENCE AND CONCEPT AS DEPICTED ON THESE PLANS. IF THE CONTRACTOR OPTS TO USE A WATER CONTROL DESIGN AND SEQUENCE DIFFERENT THAN THAT SHOWN ON THESE PLANS, THE CONTRACTOR SHALL SUBMIT A WATER CONTROL AND PHASING PLAN FOR ACCEPTANCE BY THE ENGINEER PRIOR TO CONSTRUCTION.

- PRIOR TO ANY LAND DISTURBANCE ACTIVITIES, THE CONTRACTOR MUST PHYSICALLY MARK THE LIMITS OF DISTURBANCE IN ACCORDANCE WITH THE PLANS APPROVED UNDER THE MARSHFIELD CONSERVATION COMMISSION'S ORDER OF CONDITIONS.
- THE TEMPORARY COFFERDAMS AND BY-PASS STRUCTURES MUST BE INSTALLED DURING THE SEASONAL LOW FLOW PERIOD (I.E., THE PERIOD BETWEEN JULY 1 THROUGH OCTOBER 31) AND BE MAINTAINED TO ALLOW A DRY WORKING CONDITION (NO SEDIMENT PLUME) IN THE WATERCOURSE. SOIL DISTURBANCE IN THE WATERCOURSE MUST TEMPORARILY CEASE IN THE EVENT OF ANY ABNORMALLY HIGH STORMWATER RUNOFF EVENT IF A DRY WORKING CONDITION CANNOT BE MAINTAINED.
- REMOVAL OF THE TEMPORARY COFFERDAMS MUST BE CONDUCTED SEQUENTIALLY TO CONTROL UPSTREAM DRAWDOWN TO NO MORE THAN SIX (6) INCHES PER DAY.
- OBTAIN CONFIRMATORY ELEVATIONS OF THE RIVER CHANNEL AND LAGOON BOTTOMS ALONG THE PROPOSED ALIGNMENTS OF THE TEMPORARY COFFERDAMS AND DIVERSION PIPES TO VERIFY EXISTING CONDITIONS AND ACTUAL COFFERDAM HEIGHTS PRIOR TO INSTALLATION.
- THIS PLAN ILLUSTRATES ONE CONCEPTUAL APPROACH TO WATER CONTROL FOR THE PROJECT. AT LEAST TWO WEEKS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A FINAL WATER CONTROL PLAN TO ENGINEER AND/OR TOWN OF MARSHFIELD FOR REVIEW. WATER CONTROL MEASURES FOR PHASE 1 ARE INTENDED TO PROVIDE PROTECTION TO WORK AREAS FOR FLOWS RANGING BETWEEN 164 TO 120 CFS. THESE FLOWS ARE ROUGHLY EQUIVALENT TO THE 1.5- TO 2-YEAR FLOOD EVENTS. MEASURES FOR PHASE 1 ARE INTENDED TO PROVIDE PROTECTION TO WORK AREAS FOR FLOWS UP TO APPROXIMATELY 120 CFS. WHILE THIS FLOW IS GREATER THAN NORMAL FLOWS EXPERIENCED THROUGHOUT THE YEAR, IT IS ONLY 67%-73% OF THE 1.5- TO 2-YEAR FLOOD EVENTS. IF FLOWS IN EXCESS OF 120 CFS ARE EXPECTED, THE CONTRACTOR SHALL REMOVE EQUIPMENT FROM THE PHASE 1 WORK AREA AND REMOVE A SECTION OF THE DOWNSTREAM PHASE 1 COFFERDAM, AND ALLOW FOR THE TEMPORARY UPSTREAM OVERTOPPING OF THE COFFERDAM. WHILE THIS WILL RESULT IN A MINOR DELAY OF WORK, MATERIALS BEING INSTALLED WITHIN THE RIVER WORK AREA SHALL REMAIN STABLE AS THEY ARE BEING DESIGNED TO REMAIN STABLE DURING FLOOD EVENTS MORE SIGNIFICANT THAN THE 2-YEAR FLOOD. ONCE FLOWS IN THE RIVER DECREASE TO LESS THAN 120 CFS, THE DOWNSTREAM PHASE 1 COFFERDAM CAN BE RESTORED AND WORK CAN RESUME.
- THE COFFERDAMS AND BYPASS PROVISIONS SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD TO ENSURE RESPECTIVE COMPONENTS FUNCTION AS INTENDED TO PROTECT ADJACENT PROPERTIES, WETLAND RESOURCES AND DOWNSTREAM WORK AREAS.
- PROPOSED PHASE 1 AND 2 LAYOUTS SHOWN HEREON ARE APPROXIMATE ONLY AND IS INTENDED TO ONLY DEPICT RELATIVE PHASES OF WORK AND GENERAL WORK AREAS. REFER TO OTHER DRAWINGS FOR SPECIFIC WORK ACTIVITIES AND LIMITS.

**PHASE 1 – RIVER RESTORATION IMPROVEMENTS**

- MOBILIZE AND INSTALL TEMPORARY EROSION CONTROL MEASURES. REMOVE ALL STOP LOGS FROM THE EXISTING DAM'S SPILLWAY.
- INSTALL PHASE 1 LAGOON OUTLET STRUCTURE REPLACEMENT UPSTREAM AND DOWNSTREAM COFFERDAMS AND REPLACE THE EXISTING OUTLET STRUCTURE AND DISCHARGE PIPE. THIS NEW OUTLET STRUCTURE AND DISCHARGE PIPE CAN CONVEY ±45 CFS.
- REMOVE THE WATER WHEEL AND STORE ON-SITE FOR RE-INSTALLATION FOLLOWING THE COMPLETION OF PHASE 2 IMPROVEMENTS. FLOW THROUGH THE WATER WHEEL CHANNEL MUST BE ALLOWED DURING THE ENTIRETY OF PHASE 1. THIS WATER WHEEL CAN CONVEY ±28 CFS WITHOUT OVERTOPPING.
- CONSTRUCT PHASE 1 SEPARATION COFFERDAM TO EL. 9.5± AND PHASE 1 DOWNSTREAM COFFERDAM SYSTEM TO EL. 7.5± WITH EXCEPTION TO PORTION OF THE PHASE 1 DOWNSTREAM COFFERDAM THAT EXTENDS ACROSS THE RIVER CHANNEL.
- BLOCK OFF FLOW INTO LAGOON AT INLET CHANNEL WITH TEMPORARY COFFERDAM AT INLET CHANNEL ENTRANCE. DEWATER LAGOON WITH NEWLY INSTALLED LAGOON OUTLET STRUCTURE AND DISCHARGE PIPE. INSTALL TEMPORARY LINER IN BOTTOM AND ALONG SIDES OF LAGOON. SLOWLY REMOVE TEMPORARY COFFERDAM AT INLET CHANNEL ENTRANCE AND INTRODUCE FLOW INTO LAGOON AFTER INSTALLATION OF TEMPORARY LINER.
- CONSTRUCT PHASE 1 UPSTREAM RIVER CHANNEL COFFERDAM AND SECTION OF DOWNSTREAM COFFERDAM THAT EXTENDS ACROSS THE CHANNEL (TO EL. 9.5±) TO FULLY DIVERT FLOW INTO LAGOON. APPROXIMATELY 50 CFS OF FLOW CAN DISCHARGE THROUGH THE LAGOON INLET CHANNEL PRIOR TO OVERTOPPING THE UPSTREAM COFFERDAM AND THE RIVER'S NORTH BANK. IF FLOWS ARE EXPECTED TO EXCEED 70-75 CFS IN THE RIVER (WHICH EQUATES TO EL. 9.5± IN THE HEADPOND) AT ANY TIME DURING PHASE 1 OF CONSTRUCTION, THE CONTRACTOR SHALL REMOVE ALL PERSONNEL, EQUIPMENT, AND NON-STABLE MATERIALS FROM THE PHASE 1 WORK AREA. IT IS ANTICIPATED THAT THE COFFERDAM SYSTEMS SHALL CONSIST OF LARGE (BULK) SANDBAGS OR APPROVED EQUAL. THE UPSTREAM AND SEPARATION COFFERDAMS WILL PROVIDE PROTECTION OF WORK AREA FOR FLOW UP TO 70-75 CFS. IN THE EVENT THAT FLOWS IN THE RIVER RISE TO WITHIN 6-INCHES OF TOP OF COFFERDAM, CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND PERSONNEL FROM THE PHASE 1 WORK AREA.
- REMOVE THE EXISTING DAM AND FISHWAY STRUCTURE TO THE LIMITS INDICATED, PROTECTING ADJACENT STRUCTURES TO REMAIN. DEPLOY AND OPERATE SUMP PUMPS AS NECESSARY TO MAINTAIN WORKING CONDITIONS SUITABLY PROTECTED FROM FLOWING OR STANDING WATER. DISCHARGE WATER PUMPED FROM SUMPS THROUGH SEDIMENT TREATMENT PRACTICES (SILT BAG, DEWATERING DISCHARGE CONTROL STRUCTURE).
- CONSTRUCT RIVER IMPROVEMENTS FROM DOWNSTREAM TO UPSTREAM WITHIN THE PHASE 1 WORK AREA AS INDICATED INCLUDING, BUT NOT LIMITED TO, THE NATURE-LIKE RIFFLE-POOL FISHWAY, RECONSTRUCTION AND REHABILITATION OF STONE MASONRY WALLS, DOWNSTREAM ROUGHENED CHANNEL BED AND LOW-FLOW CHANNEL, GRASSED PENINSULA AND RIVER/LAGOON SEPARATION WALL, LAGOON OUTLET WEIR AND BLOWOFF PIPING DISCHARGE COMPONENTS (ON RIVER-SIDE OF WALL), RIVER CHANNEL/OVERBANK AREA GRADING AND BANK STABILIZATION PRACTICES. EXTEND DOWNSTREAM COFFERDAM (TOP OF COFFERDAM EL.=8.0±) TO SUPPORT CONSTRUCTION OF THE ROUGHENED CHANNEL BED AND LOW-FLOW CHANNEL, INCLUDING FIELD-DIRECTED PLACEMENT OF BOULDERS.
- INSTALL LAGOON OUTLET WEIR WITH BOARDS IN WEIR TO EL. 9.5±; BOARDS MAY BE REMOVED FOLLOWING CONSTRUCTION IF FLOWS IN RIVER ARE EXPECTED TO EXCEED 70-75± CFS. OPENING THIS WEIR WILL ALLOW UP TO 50 CFS FROM LAGOON INTO PHASE 1 WORK AREA TO PROVIDE FLOOD RELIEF TO LAGOON IF NECESSARY. IF THIS OCCURS, THE PORTION OF THE DOWNSTREAM COFFERDAM THAT BISECTS THE RIVER WOULD NEED TO BE REMOVED TO ALLOW FLOW TO CONTINUE FLOWING DOWNSTREAM THROUGH WORK AREA.
- UPON SUBSTANTIAL COMPLETION OF THE PROPOSED IN-RIVER IMPROVEMENTS, TEMPORARILY REMOVE A SECTION OF THE UPSTREAM AND DOWNSTREAM RIVER CHANNEL COFFERDAMS TO ALLOW A TEST FLOW OF APPROXIMATELY 10 CFS (MINIMUM FISH PASSAGE OPERATING CONDITION FLOW) TO PASS THROUGH THE RIVER CHANNEL AND NATURE-LIKE FISHWAY TO ALLOW OBSERVATION AND ASSESSMENT OF FISH PASSAGE CONDITIONS/SUITABILITY.
- AFTER ACCEPTANCE OF NATURE-LIKE FISHWAY CONSTRUCTION, REMOVE PHASE 1 UPSTREAM AND DOWNSTREAM TEMPORARY COFFERDAMS. THE PHASE 1 SEPARATION COFFERDAM, HOWEVER, SHALL REMAIN IN PLACE.
- RE-INSTALL LAGOON INLET COFFERDAM SUCH THAT ALL FLOW WILL BE DIRECTED THROUGH RIVER/FISHWAY. PERFORM RECONSTRUCTION OF LAGOON INLET CHANNEL WALLS AND NORTHERN LAGOON WALL (GRASSED PENINSULA SEPARATION WALL) THAT WILL FORM BORDER OF PENINSULA. INSTALL LAGOON INLET CHANNEL STRUCTURE AND CONCRETE INLET STRUCTURE AND WATER WHEEL HDPE AND DUCTILE IRON BYPASS PIPING (WITH EXCEPTION TO PRECAST CONCRETE OUTLET STRUCTURE IN LAGOON OUTLET CHANNEL). TEMPORARILY CAP BYPASS PIPING. INSTALL STOP LOGS AT THE INLET TO THE LAGOON'S OUTLET STRUCTURE AND INSTALL WATER WHEEL SLUICE GATE AND LOW-FLOW CHANNEL IN WATER WHEEL CHANNEL FLOOR.
- BACKFILL PENINSULA AND REMOVE PHASE 1 SEPARATION COFFERDAM. AT THIS POINT, THE PHASE 1 LAGOON INLET TEMPORARY COFFERDAM CAN BE REMOVED UNTIL PHASE 2 CONSTRUCTION COMMENCES.



**PHASE 2 WATER CONTROL – LAGOON, ACCESS AND SITE SAFETY IMPROVEMENTS**  
SCALE: 1"= 20'

**PHASE 2 – LAGOON, ACCESS AND SITE SAFETY IMPROVEMENTS**

- INSTALL UPSTREAM LAGOON INLET COFFERDAM TO EL. 9.5±, THE PHASE 2 SEPARATION COFFERDAM TO EL. 9.5±, AND THE PHASE 2 DOWNSTREAM COFFERDAM TO EL. 7.5±. IT IS ANTICIPATED THAT COFFERDAMS WILL BE CONSTRUCTED OF LARGE (BULK) SANDBAGS OR APPROVED EQUAL.
- DEWATER THE LAGOON BY USE OF THE LAGOON'S OUTLET STRUCTURE. DEPLOY AND OPERATE SUMP PUMPS AS NECESSARY TO FURTHER DEWATER THE LAGOON AND MAINTAIN WORKING CONDITIONS SUITABLY PROTECTED FROM FLOWING OR STANDING WATER. DISCHARGE WATER PUMPED FROM SUMPS THROUGH THE DEWATERING AREA THAT INCLUDES SEDIMENT TREATMENT PRACTICES (E.G. SILT BAG, DEWATERING DISCHARGE CONTROL STRUCTURE, ETC.) PRIOR TO CONVEYANCE THROUGH THE LAGOON'S OUTLET STRUCTURE.
- ONCE THE LAGOON IS DEWATERED, REMOVE TEMPORARY GEOMEMBRANE LINER OVER LAGOON BOTTOM.
- CONSTRUCT SITE AND LAGOON IMPROVEMENTS PROPOSED WITHIN THE PHASE 2 WORK AREA AS SHOWN, INCLUDING BUT NOT LIMITED TO, SEDIMENT REMOVAL, PERMANENT LAGOON BOTTOM LINER, LAGOON POOL OUTLET STRUCTURE, REMAINDER OF WATER WHEEL OPERATION BYPASS PIPING, CHINKING/REPOINTING STONE MASONRY WALLS (INCLUDING REPLACING MISSING WALL STONES), SUPPLEMENTAL WATER SUPPLY CISTERNS WITH SUBMERSIBLE PUMP AND ASSOCIATED ELECTRICAL CONDUITS, ADA-ACCESSIBLE WALKWAYS AND PRE-FABRICATED BRIDGES, TIMBER RAIL FENCES, PRIMARY ELECTRICAL SERVICE SAFETY IMPROVEMENTS AND VEGETATIVE RESTORATION MEASURES.
- REMOVE PHASE 2 COFFERDAMS AND RESTORE FLOW TO LAGOON. INSTALL STOP LOGS IN THE LAGOON OUTLET WEIR TO EL. 9.38 AND WITHIN THE THE LAGOON INLET AND POOL OUTLET STRUCTURE WEIRS TO EL. 9.00.
- RESTORE ANY REMAINING DISTURBED AREAS WITHIN THE PHASE 1 AND 2 WORK AREAS AS INDICATED ON THE CONTRACT DOCUMENTS. RE-INSTALL THE WATER WHEEL AND OPEN SLUICE SUCH THAT BOTTOM OF SLUICE GATE IS 1-2 INCHES ABOVE FLOOR OF WATER WHEEL CHANNEL.
- RESTORE AREAS DISTURBED BY TEMPORARY CONSTRUCTION ACCESS AND CONSTRUCTION TO PRE-CONSTRUCTION CONDITIONS.

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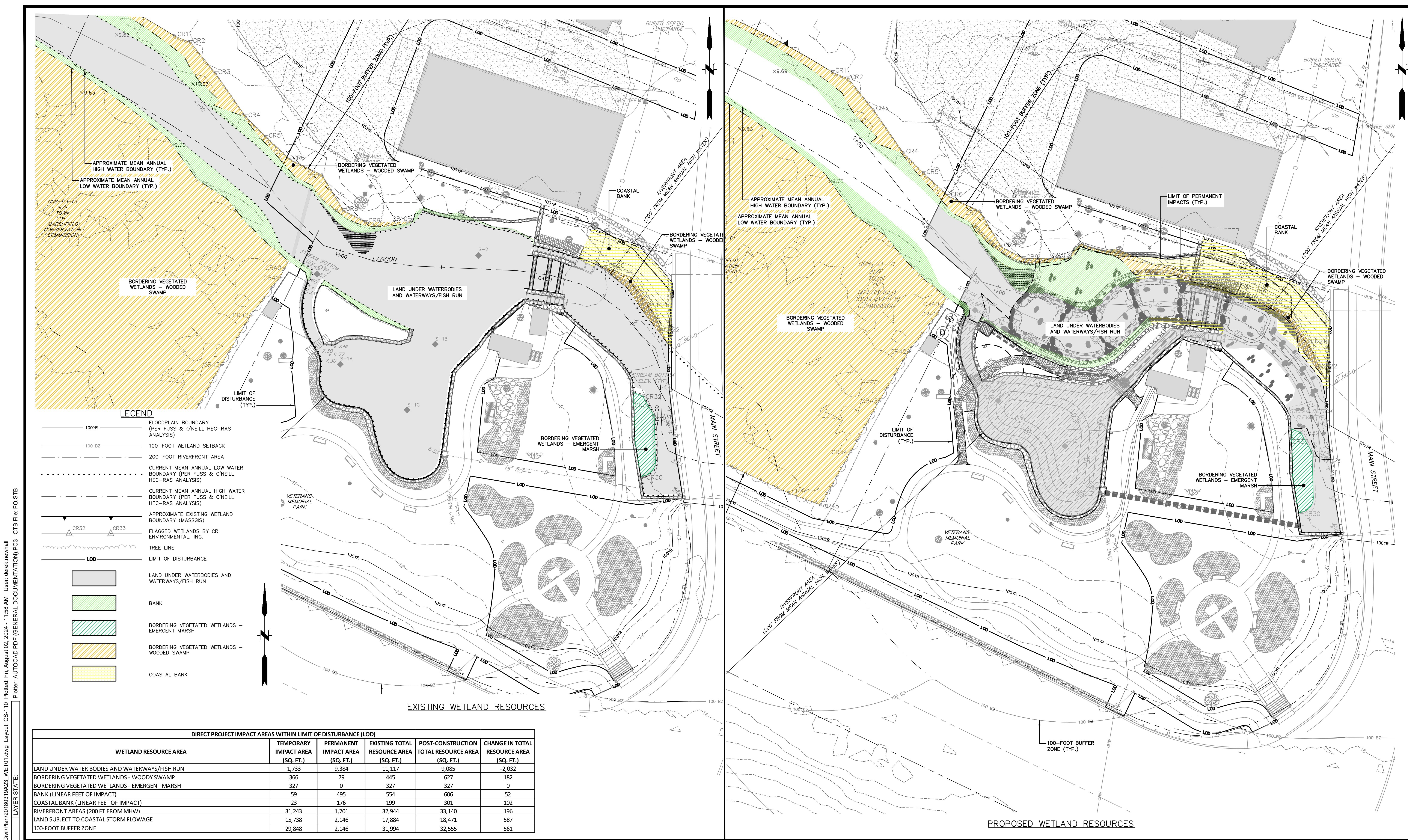
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 WATER CONTROL AND  
 CONSTRUCTION PHASING PLAN  
 SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
 PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
 MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319.A23  
 DATE: AUGUST 2, 2024

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DIRECT PROJECT IMPACT AREAS WITHIN LIMIT OF DISTURBANCE (LOD)					
WETLAND RESOURCE AREA	TEMPORARY IMPACT AREA (SQ. FT.)	PERMANENT IMPACT AREA (SQ. FT.)	EXISTING TOTAL RESOURCE AREA (SQ. FT.)	POST-CONSTRUCTION TOTAL RESOURCE AREA (SQ. FT.)	CHANGE IN TOTAL RESOURCE AREA (SQ. FT.)
LAND UNDER WATER BODIES AND WATERWAYS/FISH RUN	1,733	9,384	11,117	9,085	-2,032
BORDERING VEGETATED WETLANDS - WOODED SWAMP	366	79	445	627	182
BORDERING VEGETATED WETLANDS - EMERGENT MARSH	327	0	327	327	0
BANK (LINEAR FEET OF IMPACT)	59	495	554	606	52
COASTAL BANK (LINEAR FEET OF IMPACT)	23	176	199	301	102
RIVERFRONT AREAS (200 FT FROM MHW)	31,243	1,701	32,944	33,140	196
LAND SUBJECT TO COASTAL STORM FLOWAGE	15,738	2,146	17,884	18,471	587
100-FOOT BUFFER ZONE	29,848	2,146	31,994	32,555	561

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**WETLAND IMPACT PLAN**

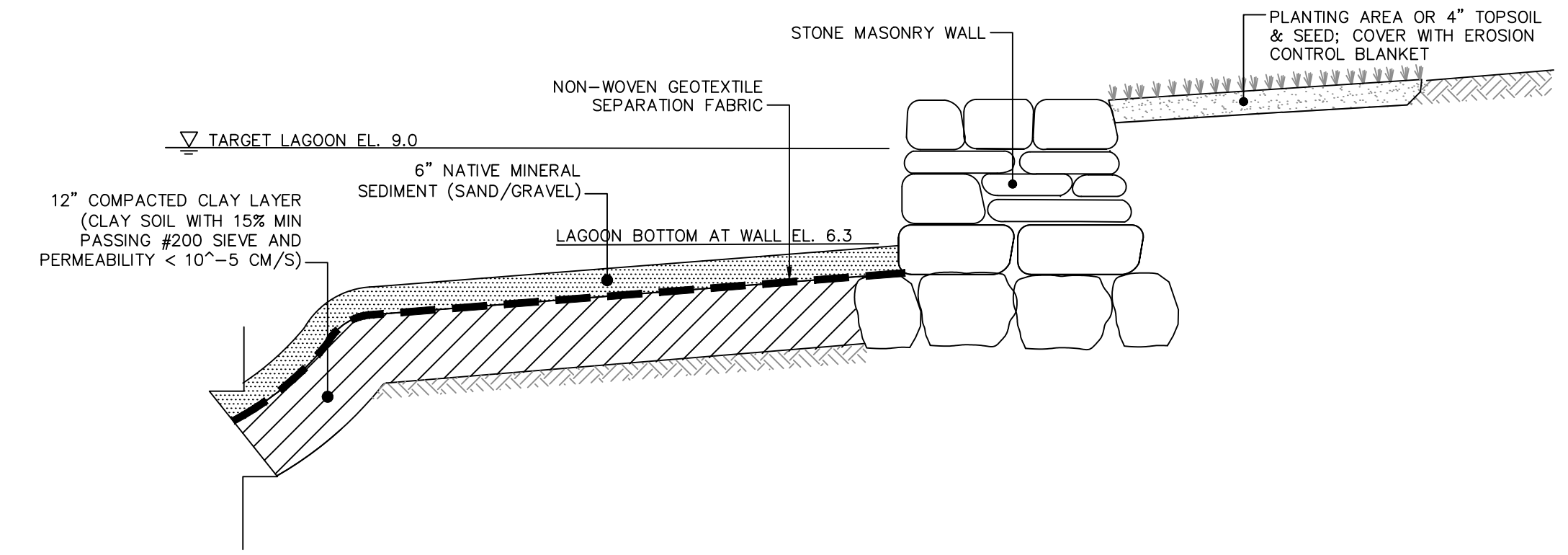
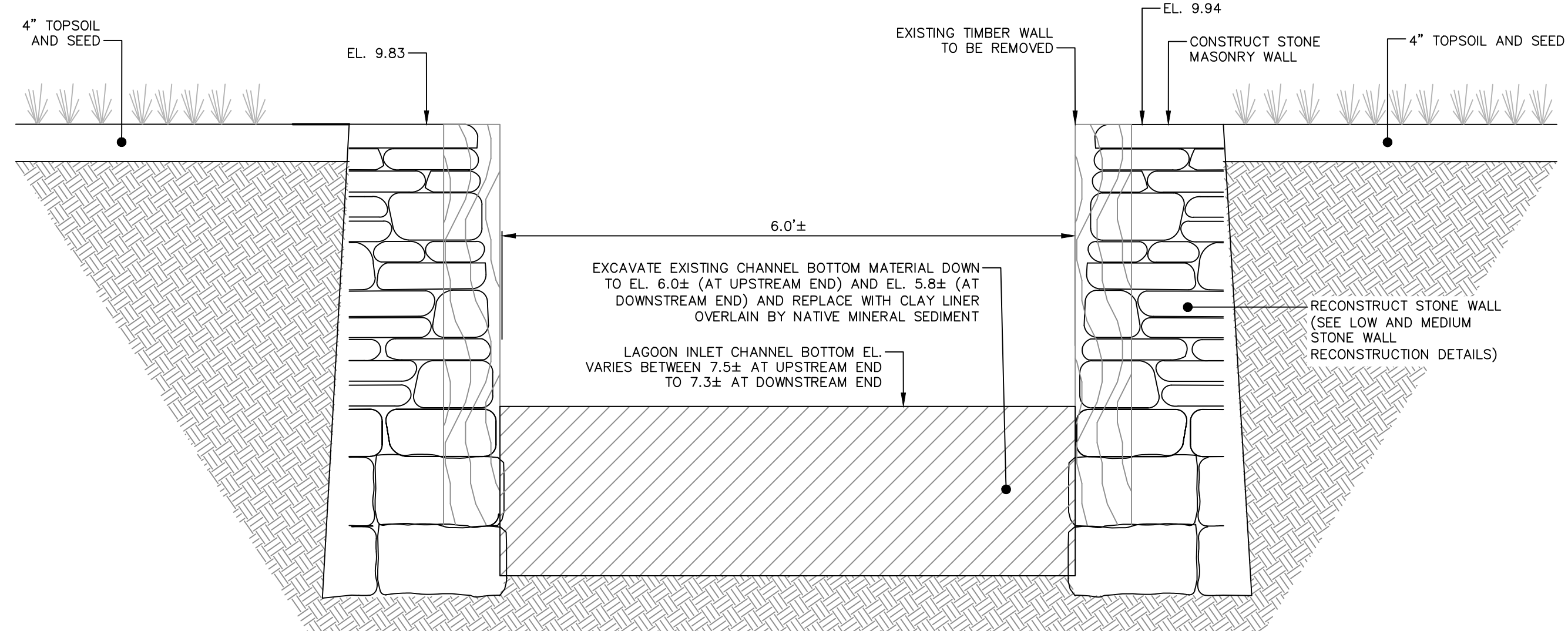
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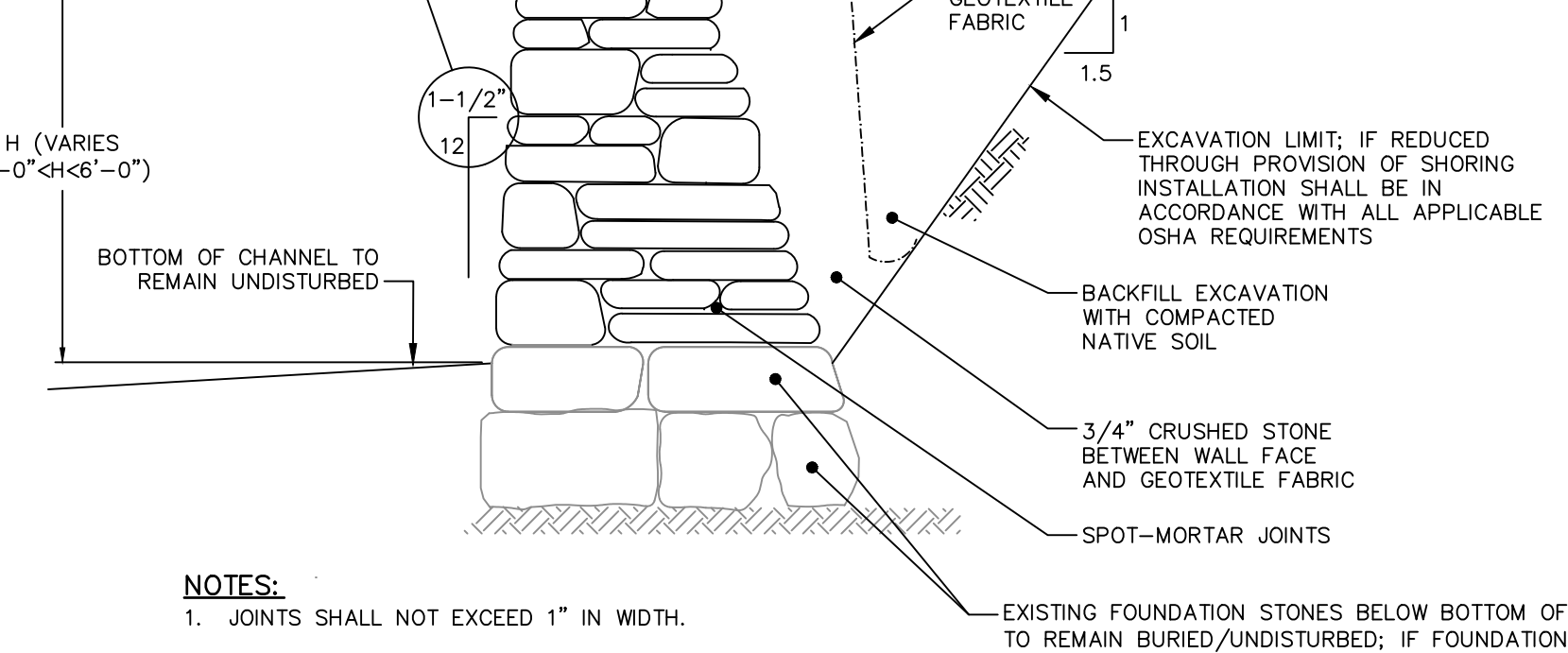
**IMPERMEABLE LAGOON CLAY LINER**  
NOT TO SCALE

**REPLACE EXISTING LAGOON INLET CHANNEL TIMBER WALLS WITH STONE MASONRY WALL**  
NOT TO SCALE

- NOTES:**
1. STAGGER VERTICAL JOINTS FROM COURSE TO COURSE SIX INCH MINIMUM HORIZONTALLY.
  2. THE SIZE, COURSE, ORIENTATION, AND PLACEMENT OF STONES SHALL MATCH THE EXISTING STONES AND BLEND WITH ADJACENT WALL SECTIONS. THE CONTRACTOR SHALL TAKE PRECONSTRUCTION PHOTOGRAPHS OF THE COMPLETE SURFACE OF EACH WALL TO BE REPAIRED FOR ARCHIVAL AND COMPARISON PURPOSES.
  3. GEOTEXTILE FABRIC SHALL BE AT LEAST 85 PERCENT BY WEIGHT OF PROPYLENE, ETHYLENE, ESTER, OR AMIDE. THE EDGES SHALL BE FINISHED TO PREVENT THE OUTER FIBER FROM PULLING AWAY FROM THE FABRIC. GEOTEXTILE FABRIC SHALL MEET THE FOLLOWING PHYSICAL REQUIREMENTS:
- |                               |             |                  |
|-------------------------------|-------------|------------------|
| WIDE WIDTH TENSILE STRENGTH   | ASTM D4595  | 2200 LBS/FT      |
| GRAB TENSILE STRENGTH         | ASTM D4632  | 325 LBS/FT       |
| BREAK ELONGATION              | ASTM D4632  | 15% MAX.         |
| MULLER BURST STRENGTH         | ASTM D3786  | 750 PSI          |
| PUNCTURE STRENGTH             | ASTM D4833  | 140 LBS          |
| UV RESISTANCE AFTER 500 HOURS | ASTM D4355  | 70%              |
| APPARENT OPENING SIZE         | ASTM D4751  | 50 US STD. SIEVE |
| % OPEN AREA                   | DW-22205-86 | 4%               |
| PERMITTIVITY                  | ASTM D4491  | 35 GAL/MIN/SF    |

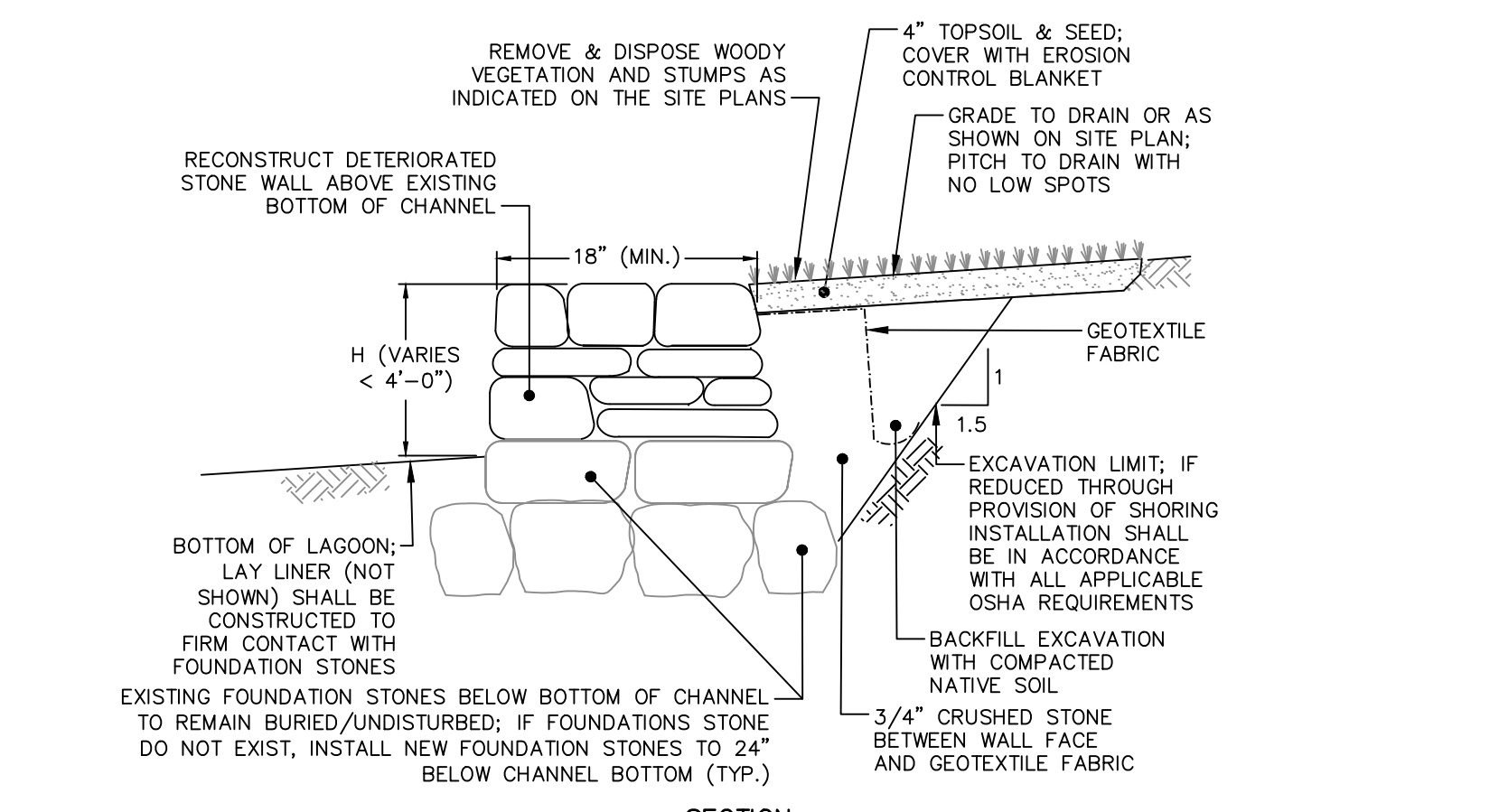
- SPOT-MORTAR NOTES:**
1. SPOT-MORTAR JOINTS BETWEEN PLACED FOUNDATION STONES AND INTERIOR PORTIONS OF REPAIRED WALL.
  2. MORTAR SHALL NOT BE PLACED IN FIRST COURSE ABOVE FOUNDATION STONES TO ENSURE FREE DRAINAGE.
  3. MORTAR SHALL BE PLACED IN JOINTS ABOVE FIRST COURSE TO SECURE STONES IN PLACE WHILE ALLOWING FREE DRAINAGE. MORTAR SHALL NOT BE VISIBLE ON THE WALL FACE.
  4. ALL MORTAR SHALL BE CAREFULLY REMOVED FROM EXPOSED JOINTS ON WALL FACE; NO MORTAR SHALL BE VISIBLE UPON COMPLETION OF WORK.

4. WALL RECONSTRUCTION CONSTRUCTION SEQUENCE:
  - A. INSTALL SECONDARY WATER CONTROL WITHIN WORK AREA.
  - B. REMOVE WOODY VEGETATION, INCLUDING STUMPS AND ROOTS, AS INDICATED ON THE SITE PLANS.
  - C. EXCAVATE BEHIND WALL AND DISASSEMBLE STONES, CLEAN AND STOCKPILE FOR REUSE. CONDUCT EXCAVATION AND STONE DISASSEMBLY SIMULTANEOUSLY IN ONE-FOOT INCREMENTS. HORIZONTAL LIMIT OF STONE DISASSEMBLY SHALL EXTEND PAST THE OUTERMOST LIMIT OF WALL RECONSTRUCTION AS REQUIRED TO RECONSTRUCT THE WALL IN STRUCTURALLY SOUND MANNER.
  - D. MONITOR GROUNDWATER, DEWATER, AND REMOVE ADDITIONAL ROOTS DURING EXCAVATION AS NECESSARY.
  - E. RESET STOCKPILED STONES; PLACE AND COMPACT BACKFILL IN ONE-FOOT INCREMENTS.
  - F. INSTALL FOUR-INCHES OF TOPSOIL AT TOP OF EXCAVATION AND SEED. DRESS TOPSOIL AND SEED OVER DISTURBED AREAS.
  - G. REMOVE DEBRIS AND SEDIMENT FROM CHANNEL.
  - H. DISASSEMBLE AND REMOVE WATER CONTROL, SANDBAGS, AND PIPES AND RESTORE AREA TO ORIGINAL GRADES AND CONDITIONS.
  - I. EXCAVATED MATERIALS SHALL BE PLACED IN A DESIGNATED LOCATION AND COVERED, OR OTHERWISE PROTECTED, AND ENCOMPASSED BY A STAKED STRAW WATTLE PERIMETER.
  - J. NOTIFY THE ENGINEER IMMEDIATELY IF ARCHEOLOGICAL ARTIFACTS ARE OBSERVED. COORDINATE WITH PROJECT ARCHEOLOGIST AND MASSACHUSETTS HISTORICAL COMMISSION TO PROTECT SUCH ARTIFACTS AND PROCEED WITH WORK ONLY AS DIRECTED.

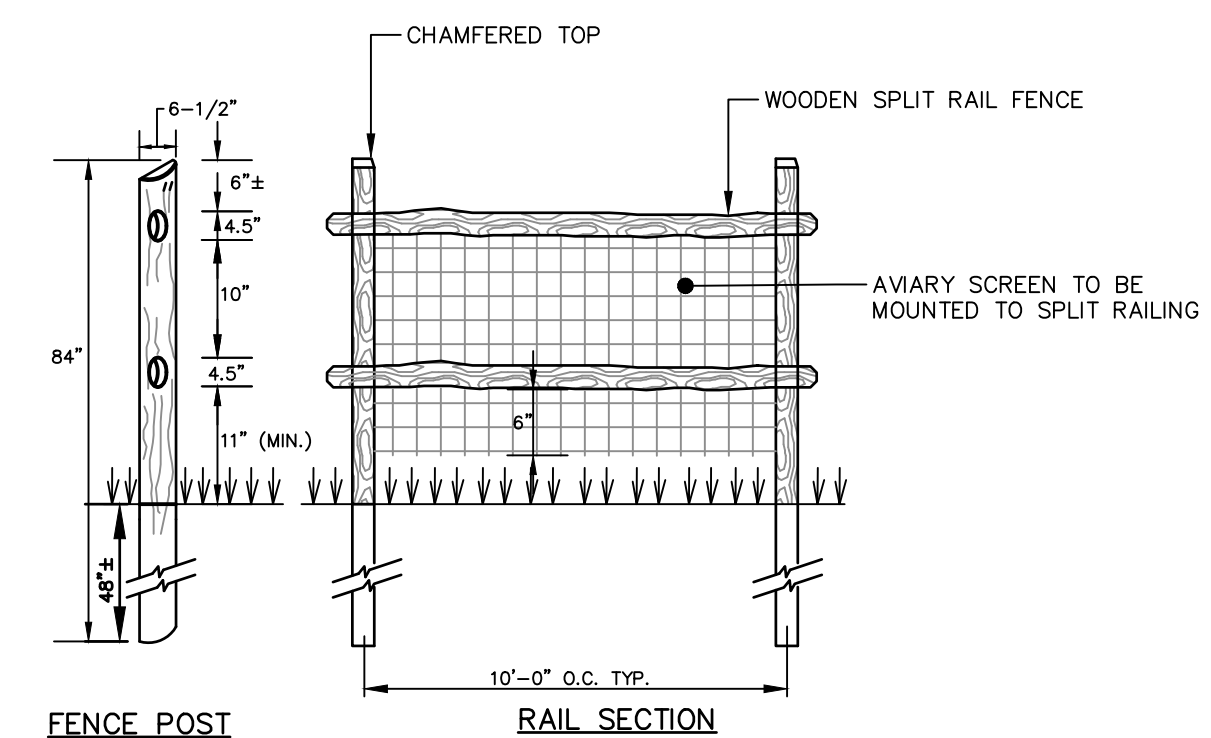


**RECONSTRUCT MEDIUM STONE WALL (4' < H < 6')**  
NOT TO SCALE

- LOW STONE WALL REPAIR NOTES:**
2. GENERAL CHINK WALL/RESET MISSING STONE CONSTRUCTION SEQUENCE:
    - A. INSTALL SECONDARY WATER CONTROL WITHIN WORK AREA AS REQUIRED.
    - B. REMOVE WOODY VEGETATION INCLUDING STUMPS AND ROOTS.
    - C. EXCAVATE BEHIND WALL AND DISASSEMBLE STONES, CLEAN AND STOCKPILE FOR REUSE. CONDUCT EXCAVATION AND STONE DISASSEMBLY SIMULTANEOUSLY IN ONE-FOOT INCREMENTS. HORIZONTAL LIMIT OF STONE DISASSEMBLY SHALL EXTEND FIVE FEET PAST OUTERMOST LIMIT OF WALL RECONSTRUCTION OR UNTIL STRUCTURALLY SOUND SEGMENT OF WALL IS REACHED, WHICHEVER IS GREATER. VERTICAL LIMIT OF EXCAVATION SHALL EXTEND STRUCTURALLY SOUND FOUNDATION STONES.
    - D. LOCATE AND PROTECT EXISTING LINER AND UNDERDRAIN PIPE BEHIND EXISTING WALL FORMING THE PERIMETER OF THE LAGOON.
    - E. MONITOR GROUNDWATER AND DEWATER AS NECESSARY.
    - F. RESET STOCKPILED STONES, BACKFILL, AND COMPACT BACKFILL IN ONE-FOOT INCREMENTS. CHINK ANY VOIDS GREATER THAN 4" IN ANY TWO DIMENSIONS.
    - G. INSTALL TOPSOIL AND SEED.
    - H. REMOVE DEBRIS AND SEDIMENT FROM CHANNEL RESULTING FROM REPAIR.
    - I. DISASSEMBLE SECONDARY WATER CONTROL.

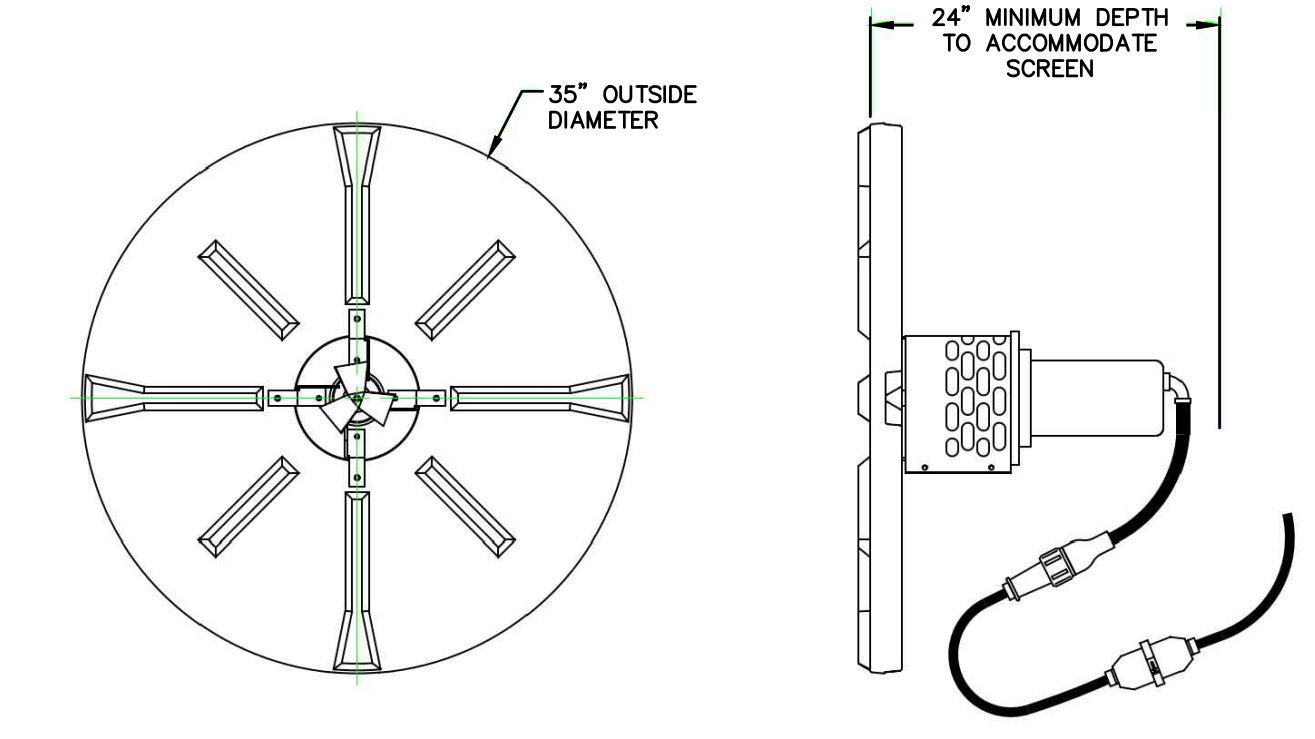


**RECONSTRUCT/CONSTRUCT LOW STONE WALL (H < 4')**  
NOT TO SCALE



- NOTES:**
1. DIMENSIONS SHOWN ARE APPROXIMATE ONLY AND ARE ONLY INTENDED TO REFLECT APPROXIMATE DIMENSIONS. CONTRACTOR SHALL MATCH DIMENSIONS OF EXISTING RAILS AND FENCE POSTS AS NECESSARY.
  2. FENCE RAILS AND POSTS SHALL CONSIST OF PRESSURE TREATED YELLOW PINE.
  3. INSTALL GALVANIZED 2"x4" 105WD WELDED WIRE MESH AVIARY SCREEN BETWEEN RAILS.

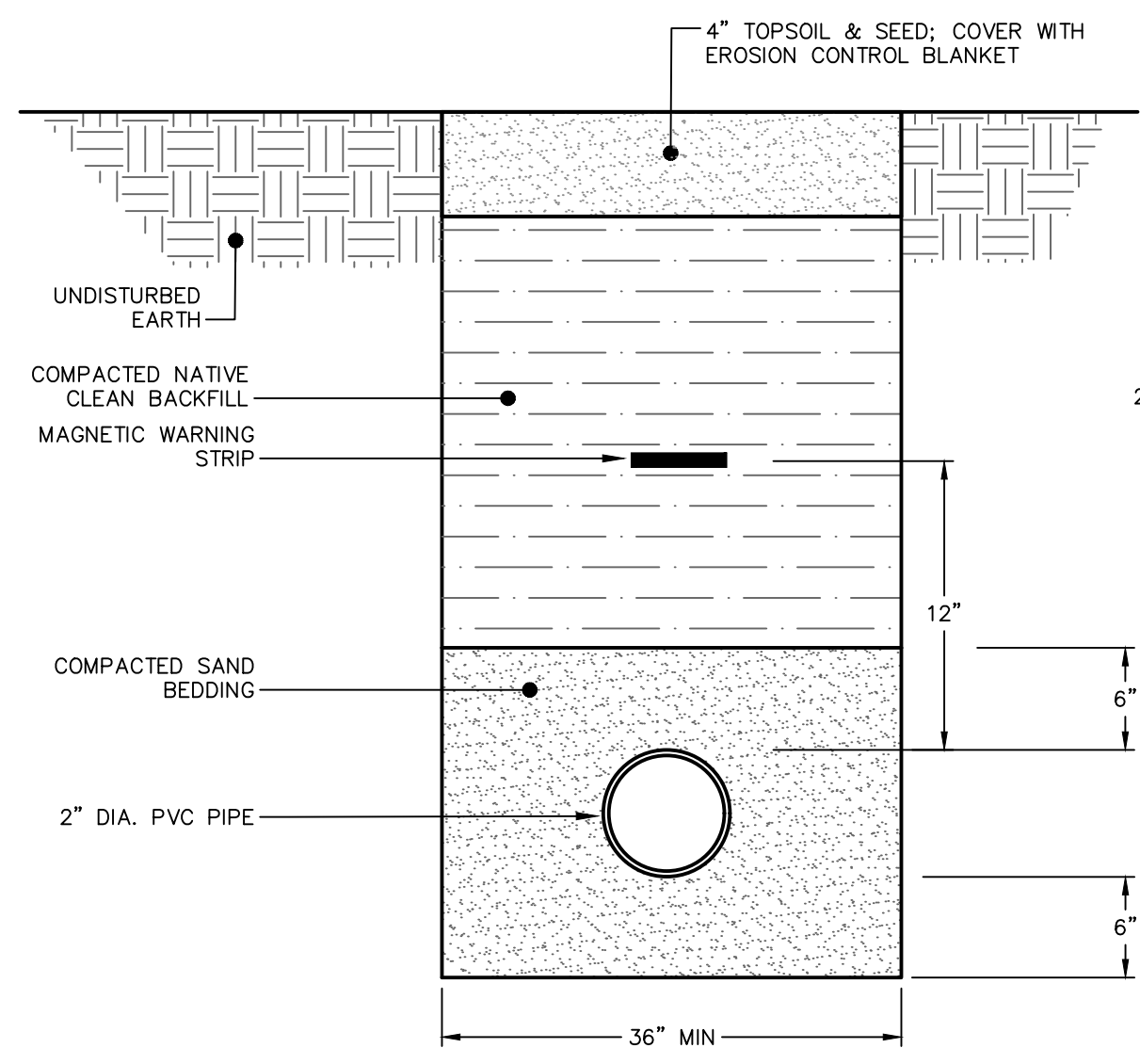
**TIMBER RAIL FENCE**  
NOT TO SCALE



- FOUNTAIN AND AERATOR NOTES**
1. THE TOWN'S EXISTING FOUNTAIN/AERATOR (PHOTOGRAPH) IS PLANNED FOR CONTINUED USE AFTER COMPLETION OF LAGOON IMPROVEMENTS. IN THE EVENT A REPLACEMENT UNIT IS REQUIRED AT THAT TIME, THE UNIT DEPICTED IN THE ABOVE SCHEMATIC IS PLANNED AS A REPLACEMENT. ANY REPLACEMENT UNIT SHALL COMPLY WITH THE FOLLOWING:
    - 1.A. UNIT SHALL RUN ON 120 VOLT SINGLE PHASE ELECTRIC SERVICE.
    - 1.B. UNIT SHALL BE CONSTRUCTED OF STAINLESS STEEL COMPONENTS DUE TO POTENTIAL CONTACT WITH BRACKISH WATER.
    - 1.C. FOUNTAIN INTAKE SHALL BE FITTED WITH 10 GAUGE, SERIES 316 STAINLESS STEEL INTAKE SCREEN.
    - 1.D. UNIT SHALL BE MANUFACTURED BY AQUAMASTER FOUNTAINS, OR APPROVED EQUAL:

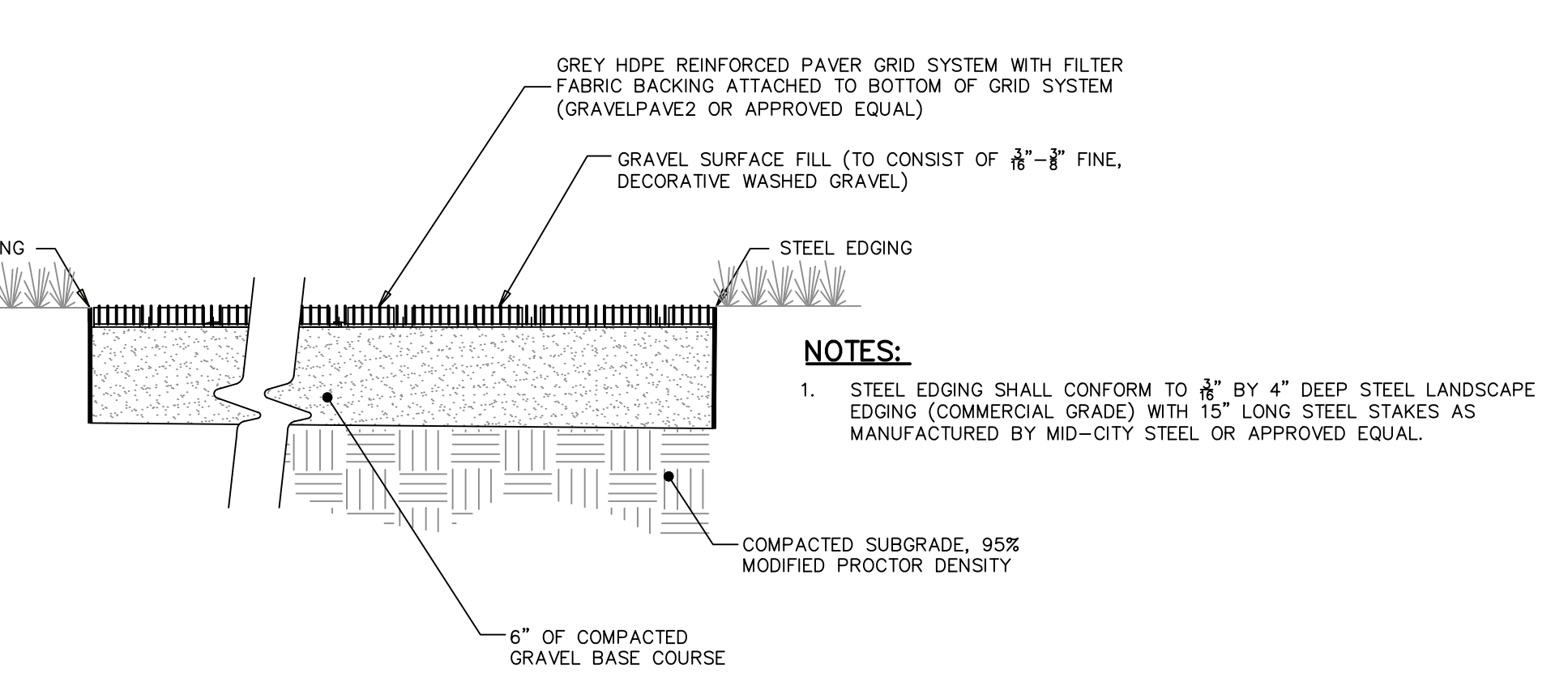
16204 COUNTY ROAD X  
Kell, WI 53042  
(800) 693-3144  
www.aquamasterfountains.com

STYLE : HYDROMAX SERIES (OR APPROVED EQUAL)  
AERATOR : VOLCANO II FLOATING SURFACE AERATOR  
PATTERN : ETNA SPRAY PATTERN ADAPTER  
SIZE : 1/2 HP  
MINIMUM DEPTH: REQUIRES MIN. 2' WATER DEPTH TO OPERATE.



**TYPICAL SUPPLEMENTAL WATER SYSTEM PUMP DISCHARGE PIPE TRENCH**  
NOT TO SCALE

**FLOATING FOUNTAIN/AERATOR WITH INTAKE SCREEN**  
NOT TO SCALE



**REINFORCED PERVIOUS ADA-ACCESSIBLE WALKWAY**  
NOT TO SCALE

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401.861.3070  
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TOWN OF MARSHFIELD  
DIVISION OF ECOLOGICAL RESTORATION

**CONSTRUCTION DETAILS**

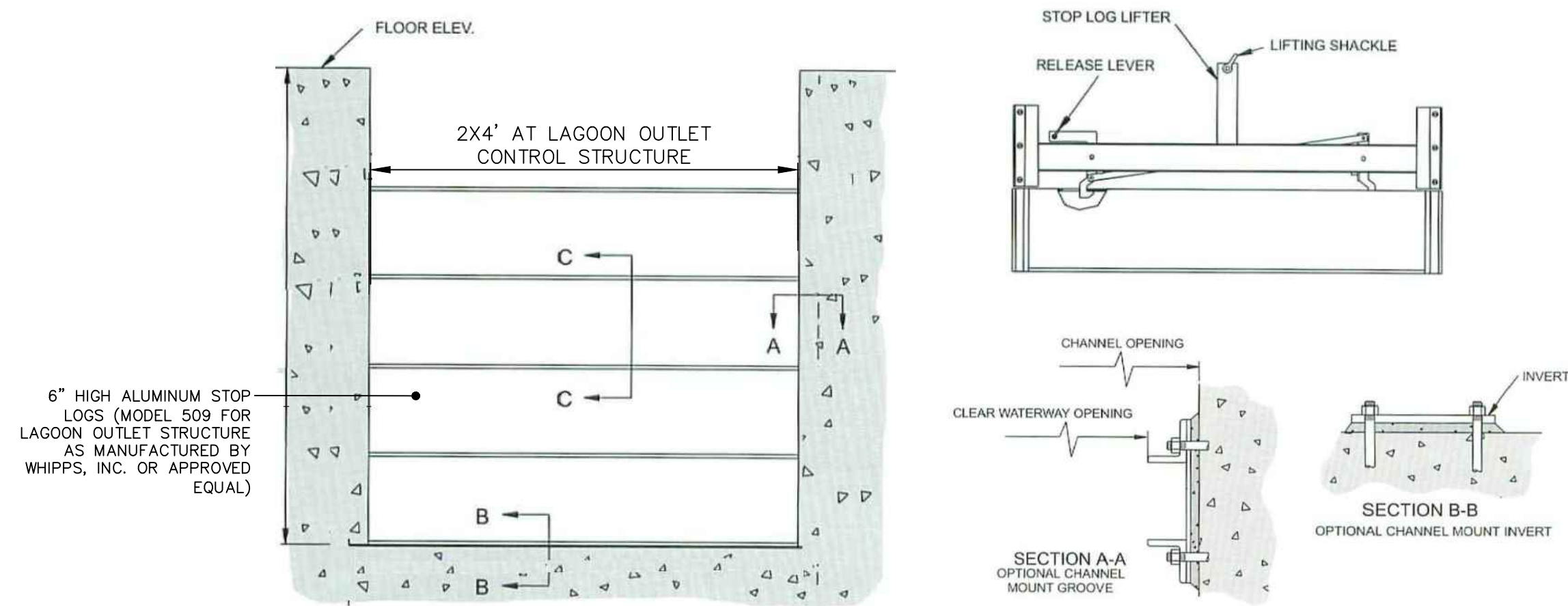
SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319A23  
DATE: AUGUST 2, 2024

**CD-501**

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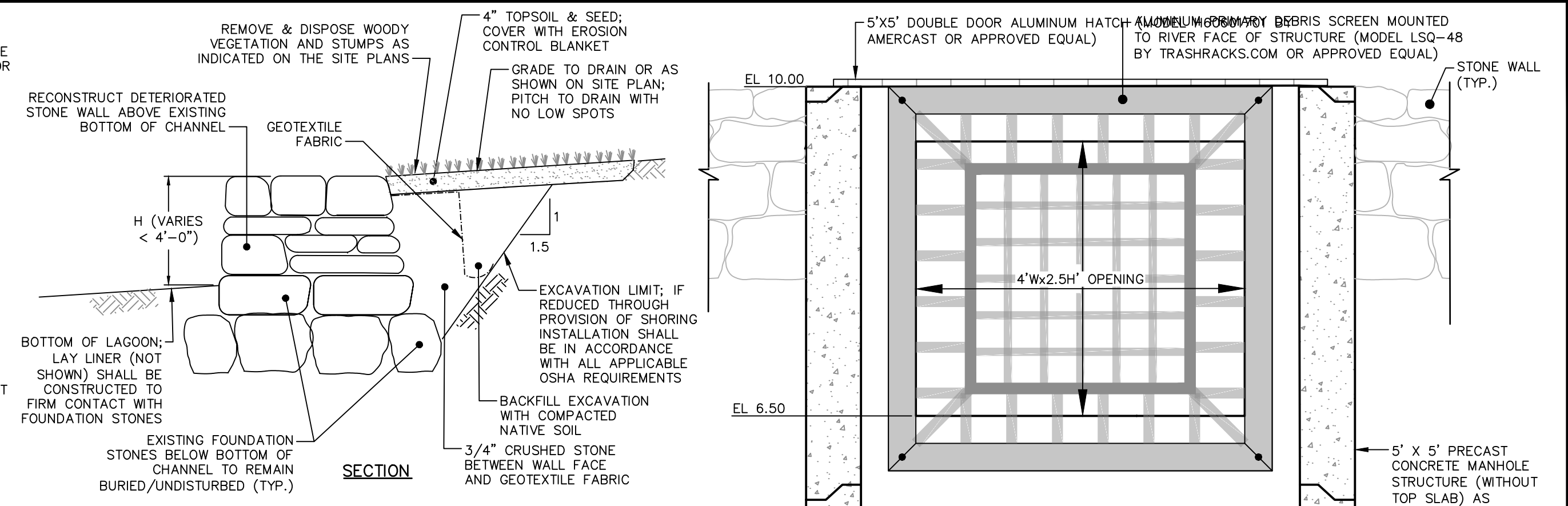
**STOP LOG CONTROL STRUCTURE DETAILS (LAGOON OUTLET CONTROL STRUCTURE)**

NOT TO SCALE  
STOP LOG NOTES:

- STOP LOGS SHALL BE MINIMUM 6" HIGH ALUMINUM STOP LOGS (MODEL 509 AS MANUFACTURED BY WHIPPS, INC. OR APPROVED EQUAL).
- STOP LOG CHANNEL MOUNTED GROOVES SHALL BE CONSTRUCTED OF FORMED STAINLESS STEEL.

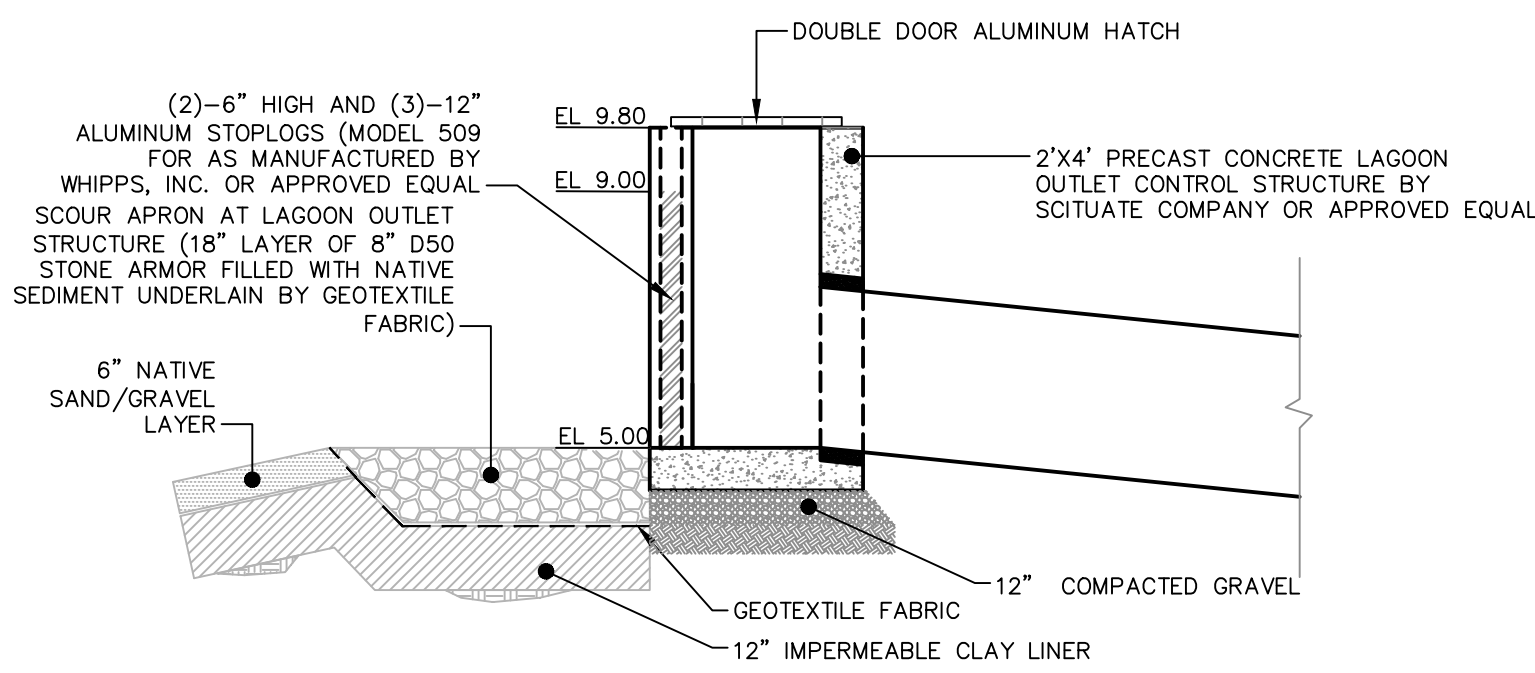
**LOW STONE WALL REPAIR NOTES:**

- THE SIZE, COURSE, ORIENTATION, AND PLACEMENT OF STONES SHALL MATCH THE EXISTING STONES AND BLEND WITH ADJACENT WALL SECTIONS. THE CONTRACTOR SHALL TAKE PRECONSTRUCTION PHOTOGRAPHS OF THE COMPLETE SURFACE OF EACH WALL TO BE REPAIRED FOR ARCHIVAL AND COMPARISON PURPOSES.
- GENERAL CHINK WALL/RESET MISSING STONE CONSTRUCTION SEQUENCE:
  - INSTALL SECONDARY WATER CONTROL WITHIN WORK AREA AS REQUIRED.
  - REMOVE WOODY VEGETATION INCLUDING STUMPS AND ROOTS.
  - EXCAVATE BEHIND WALL AND DISASSEMBLE STONES, CLEAN AND STOCKPILE FOR REUSE. CONDUCT EXCAVATION AND STONE DISASSEMBLY SIMULTANEOUSLY IN ONE-FOOT INCREMENTS. HORIZONTAL LIMIT OF STONE DISASSEMBLY SHALL EXTEND FIVE FEET PAST OUTERMOST LIMIT OF WALL RECONSTRUCTION OR UNTIL STRUCTURALLY SOUND SEGMENT OF WALL IS REACHED, WHICHEVER IS GREATER. VERTICAL LIMIT OF EXCAVATION SHALL EXTEND STRUCTURALLY SOUND FOUNDATION STONES.
  - LOCATE AND PROTECT EXISTING LINER AND UNDERDRAIN PIPE BEHIND EXISTING WALL FORMING THE PERIMETER OF THE LAGOON.
  - MONITOR GROUNDWATER AND DEWATER AS NECESSARY.
  - RESET STOCKPILED STONES, BACKFILL, AND COMPACT BACKFILL IN ONE-FOOT INCREMENTS. CHINK ANY VOIDS GREATER THAN 4" IN ANY TWO DIMENSIONS.
  - INSTALL TOPSOIL AND SEED.
  - REMOVE DEBRIS AND SEDIMENT FROM CHANNEL RESULTING FROM REPAIR.
  - DISASSEMBLE SECONDARY WATER CONTROL.



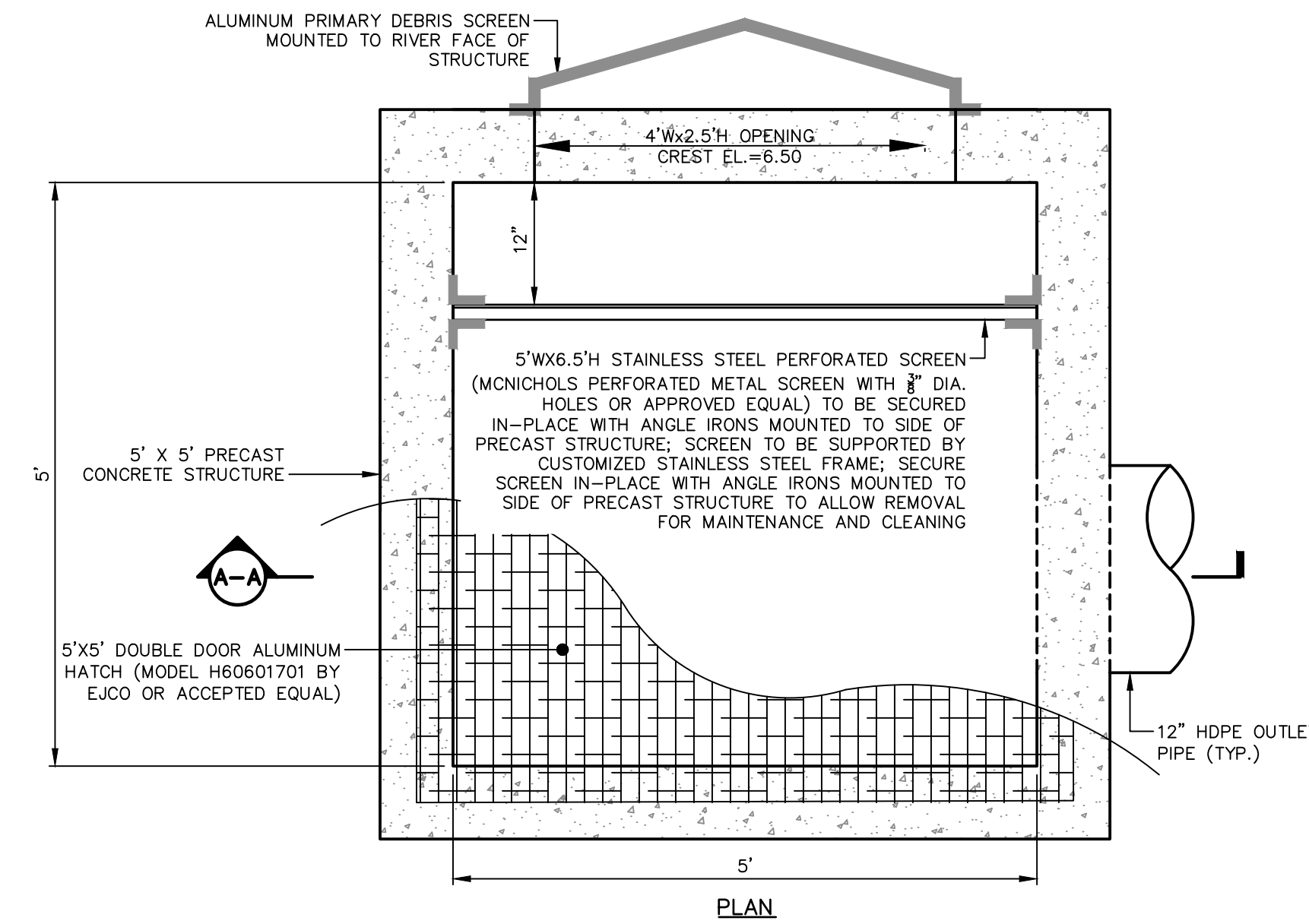
**RECONSTRUCT/CONSTRUCT LOW STONE WALL**

NOT TO SCALE



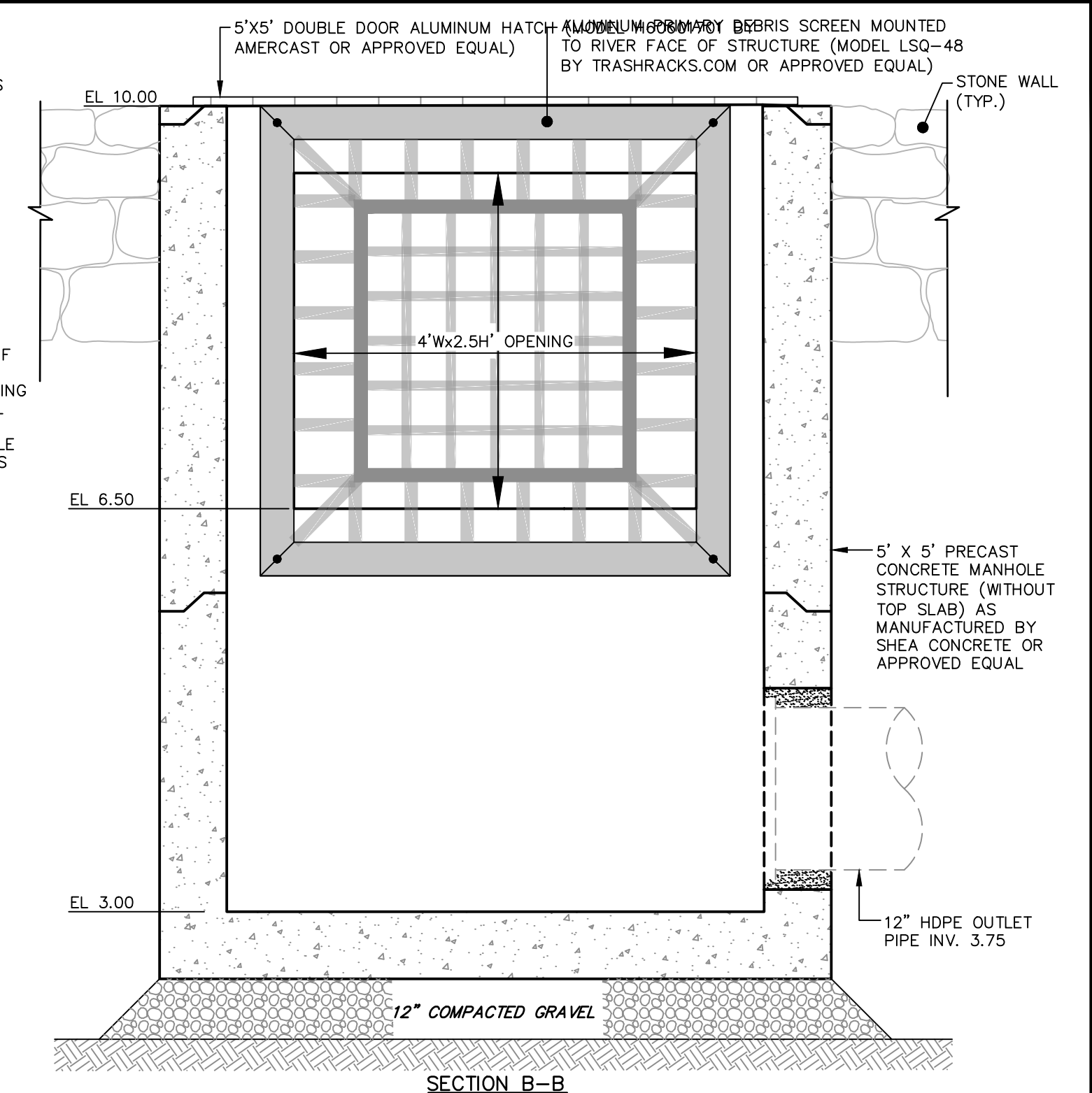
**LAGOON OUTLET CONTROL STRUCTURE**

NOT TO SCALE



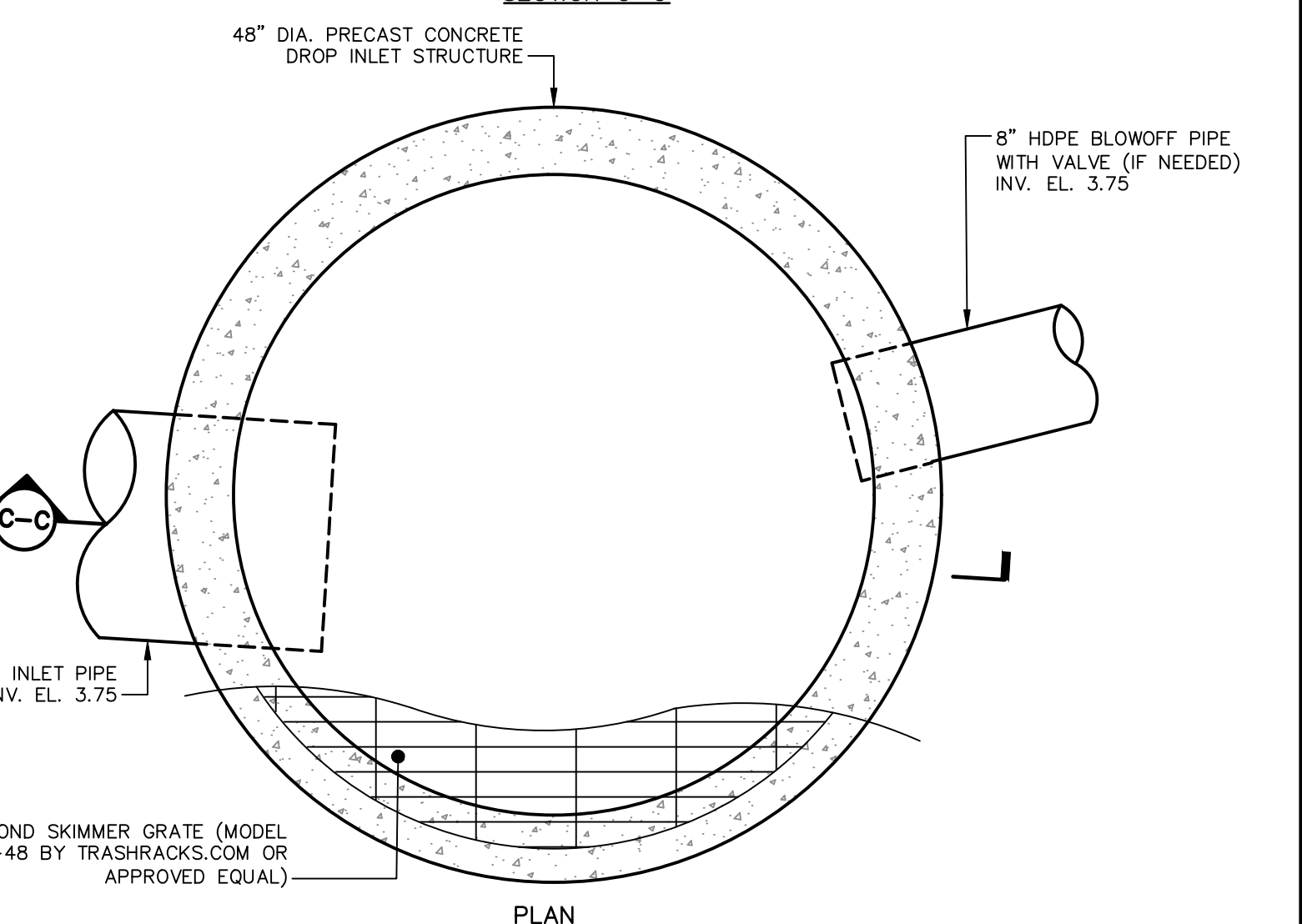
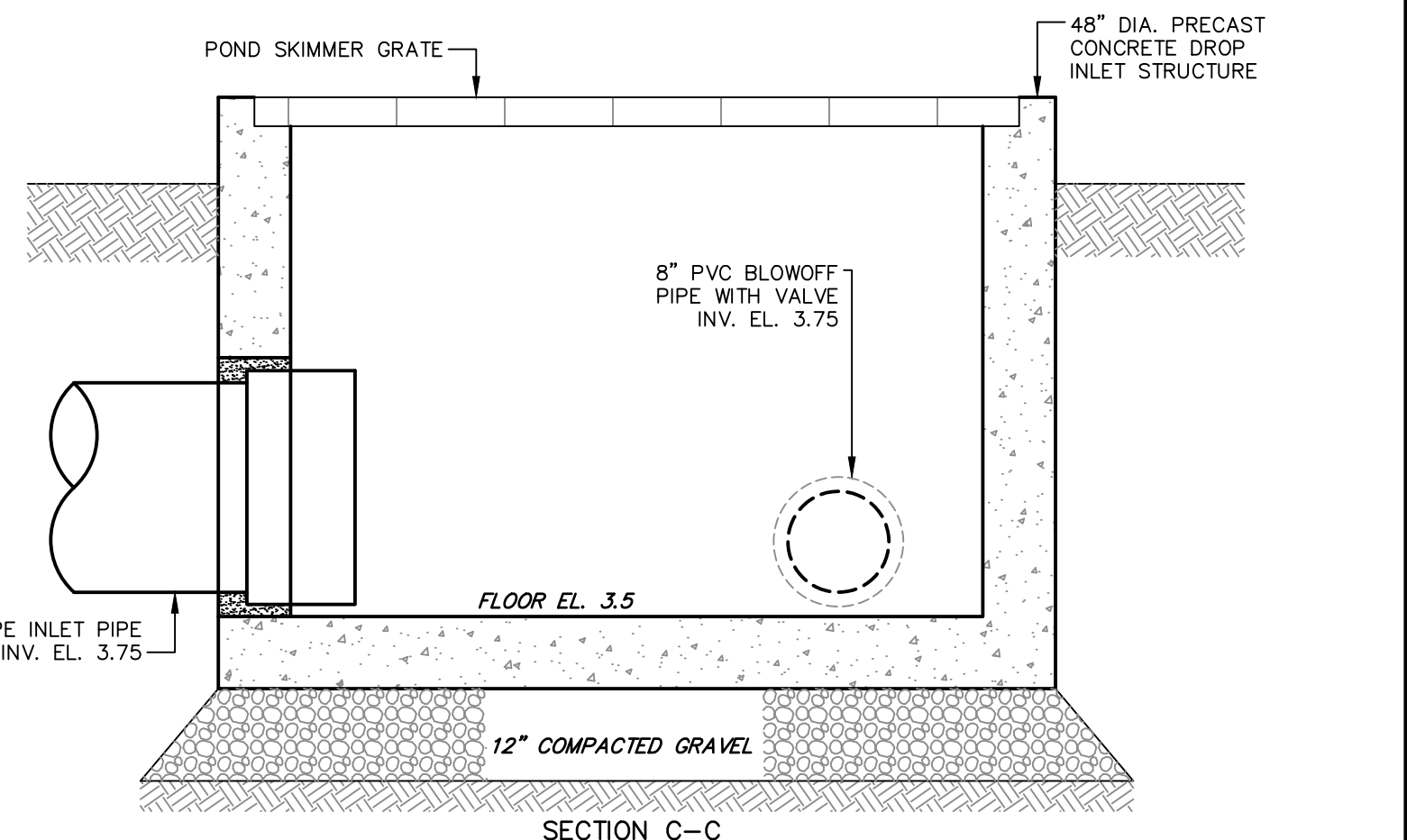
**5'X5' PRECAST CONCRETE INLET STRUCTURE**

NOT TO SCALE



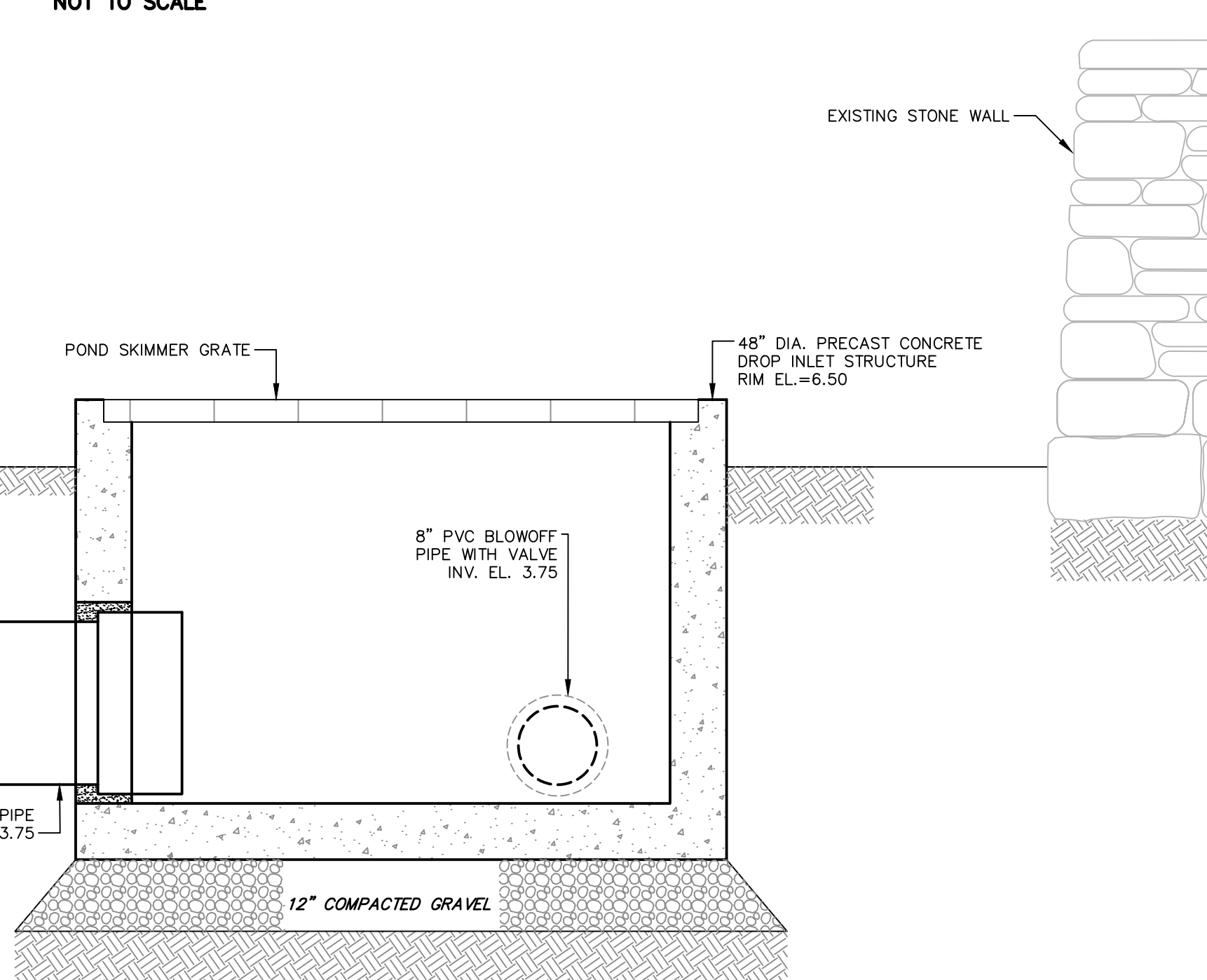
**PRECAST CONCRETE INLET STRUCTURE**

NOT TO SCALE



**48" DIA. PRECAST CONCRETE OUTLET STRUCTURE**

NOT TO SCALE



**48" DIA. PRECAST CONCRETE OUTLET STRUCTURE**

NOT TO SCALE

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MS VIEW: LAYER STATE: PLOTTER: NONE CTB FILE: FO.STB

No.	DATE	ISSUED FOR BIDDING	DESCRIPTION	DRN/SDA	NSW	DESIGNER	REVIEWER
0.	8/2/2024	ISSUED FOR BIDDING					

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DATUM:	HORZ.:
	VERT.:
	GRAPHIC SCALE

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TOWN OF MARSHFIELD  
DIVISION OF ECOLOGICAL RESTORATION

**CONSTRUCTION DETAILS**

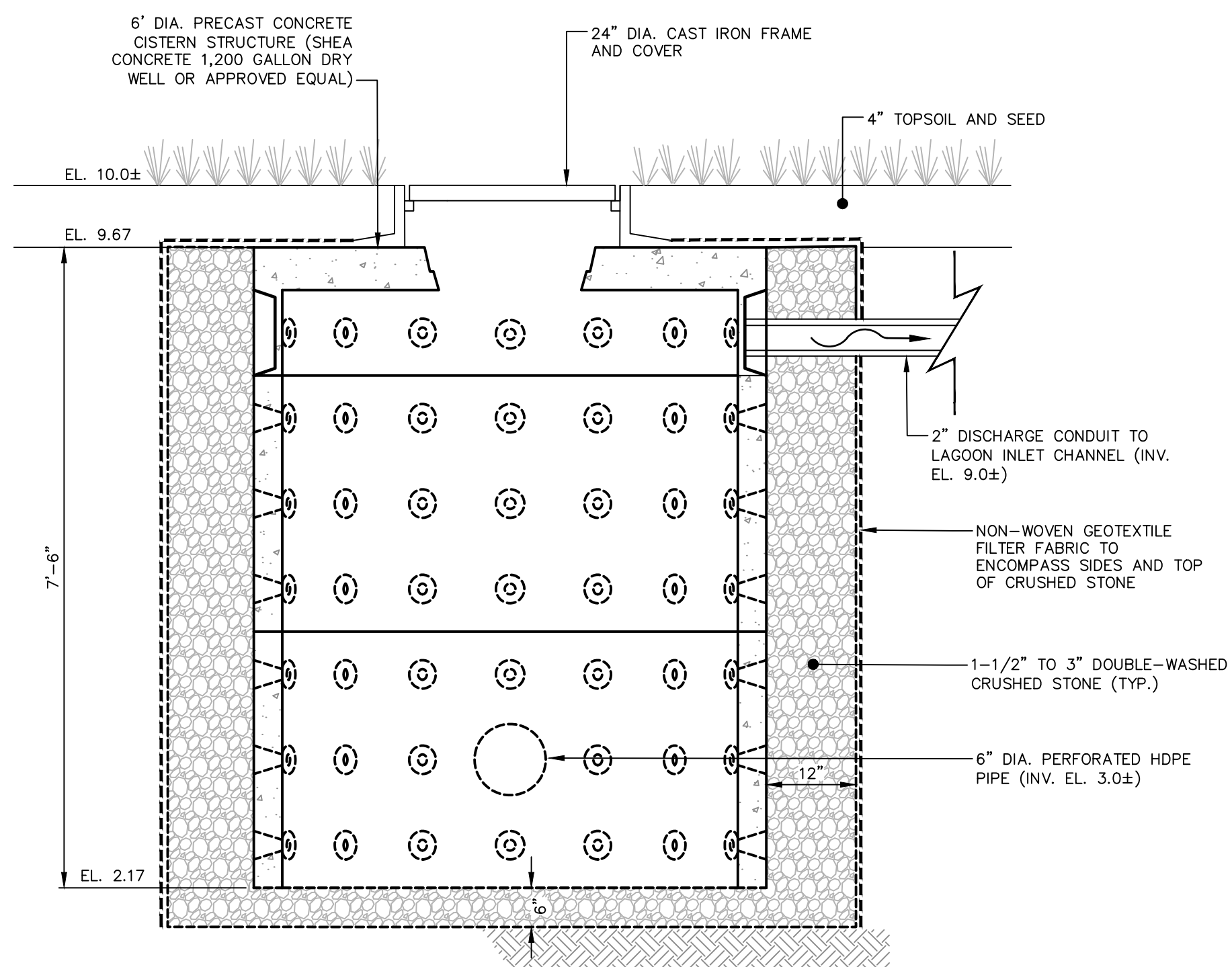
SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319.A23  
DATE: AUGUST 2, 2024

CD-502

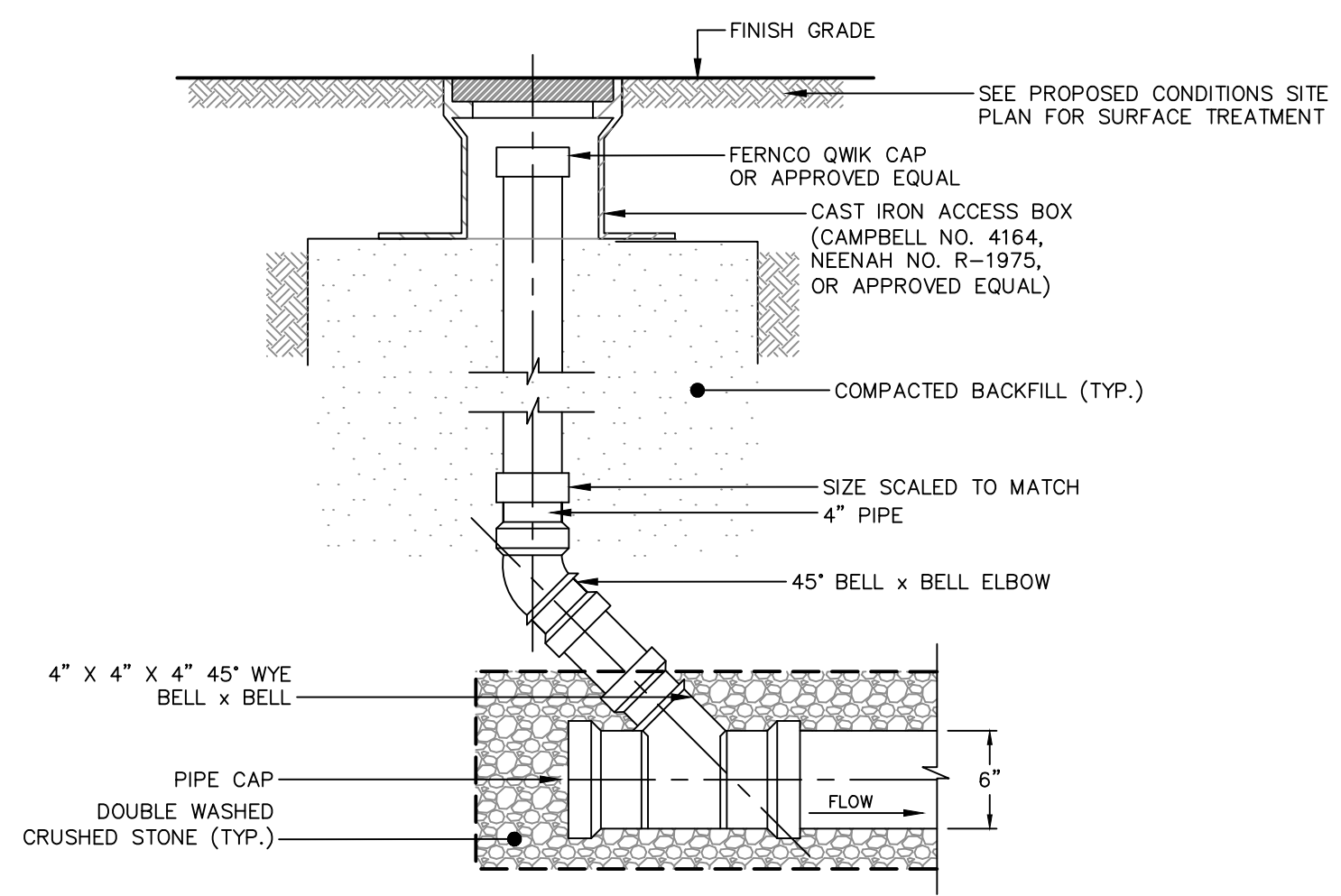
14 OF 21



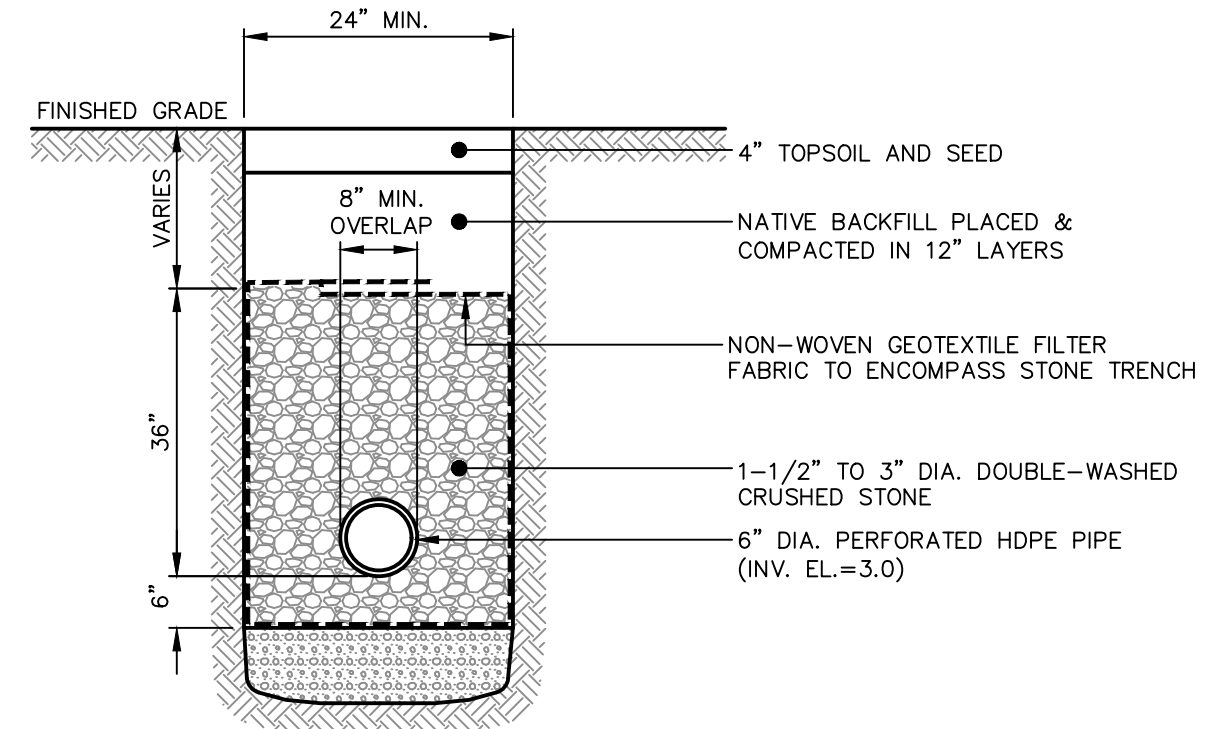


NOTE:  
SUBMERSIBLE PUMP, ELECTRICAL CONDUIT AND DISCHARGE HOSE INSIDE CISTERN NOT SHOWN FOR CLARITY.

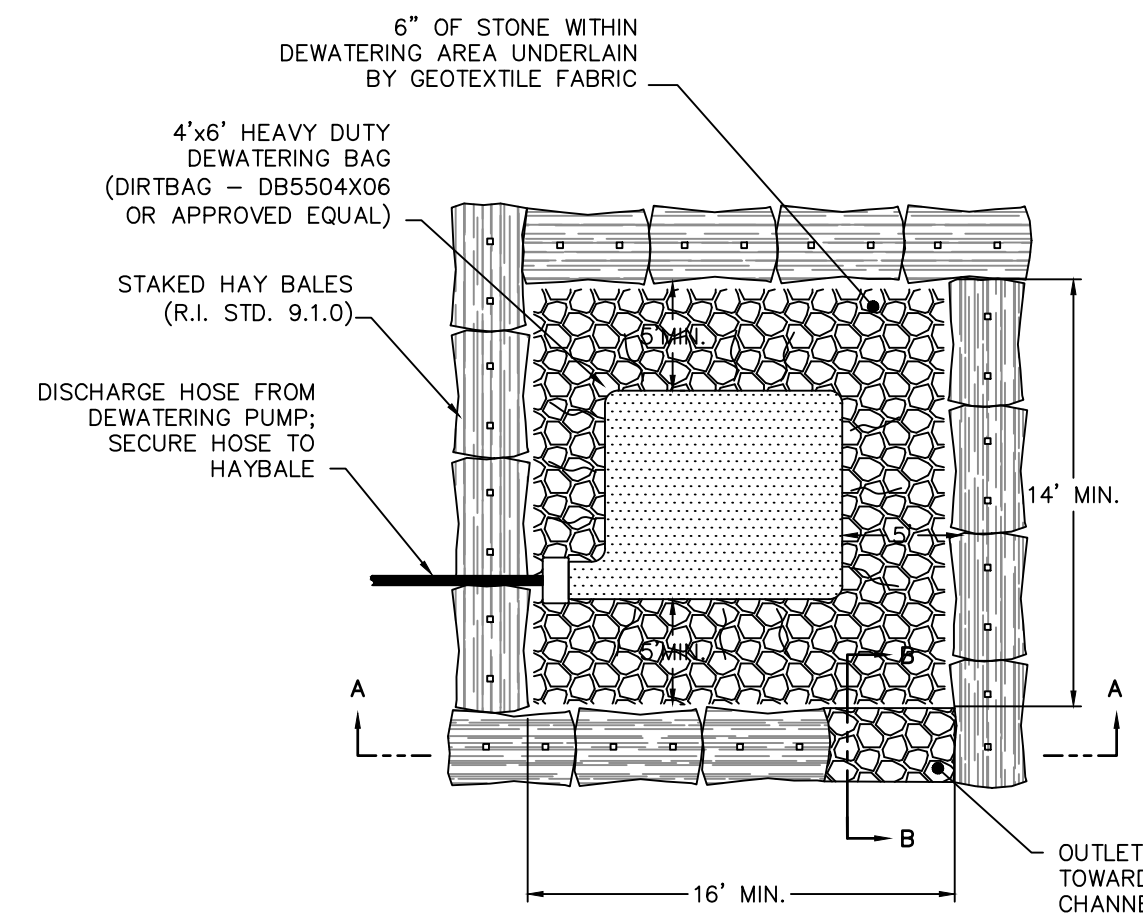
**PRECAST CONCRETE CISTERN**  
NOT TO SCALE



**UNDERDRAIN CLEANOUT**  
NOT TO SCALE

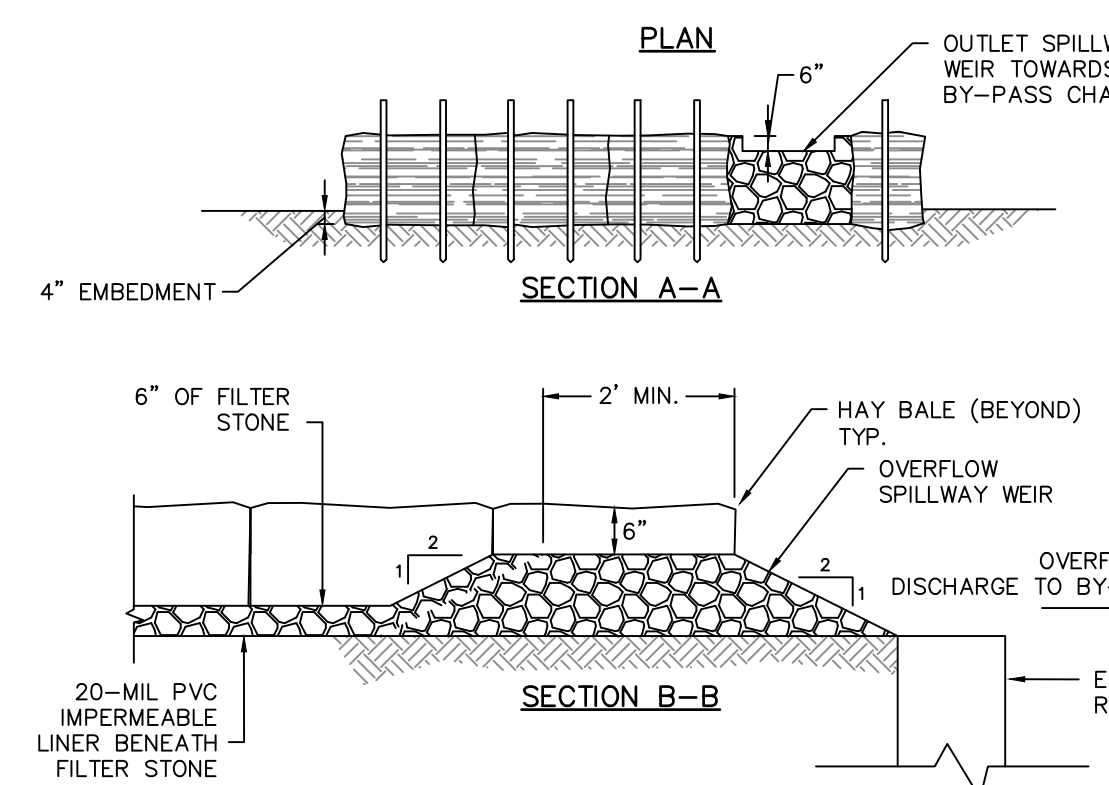


**PERFORATED CISTERN UNDERDRAIN**  
NOT TO SCALE

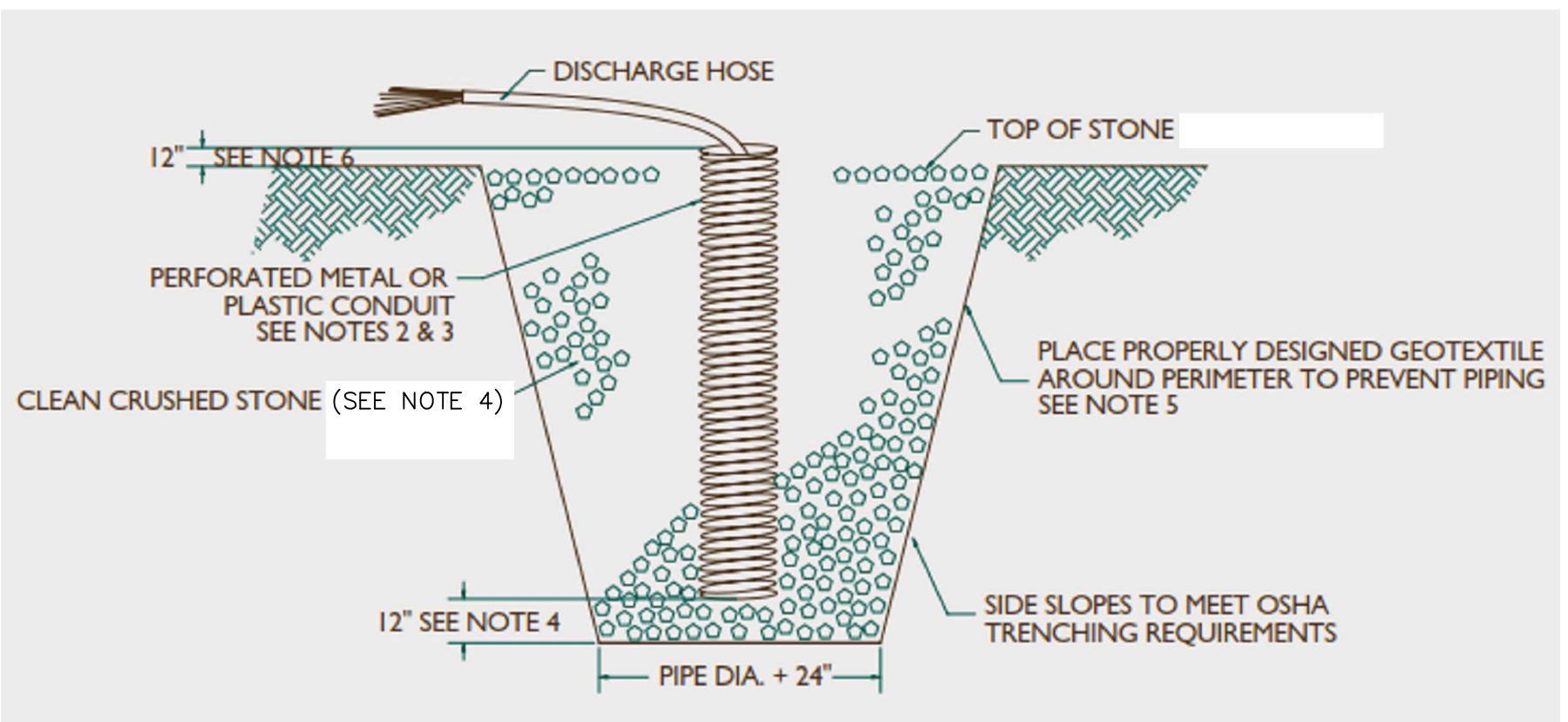
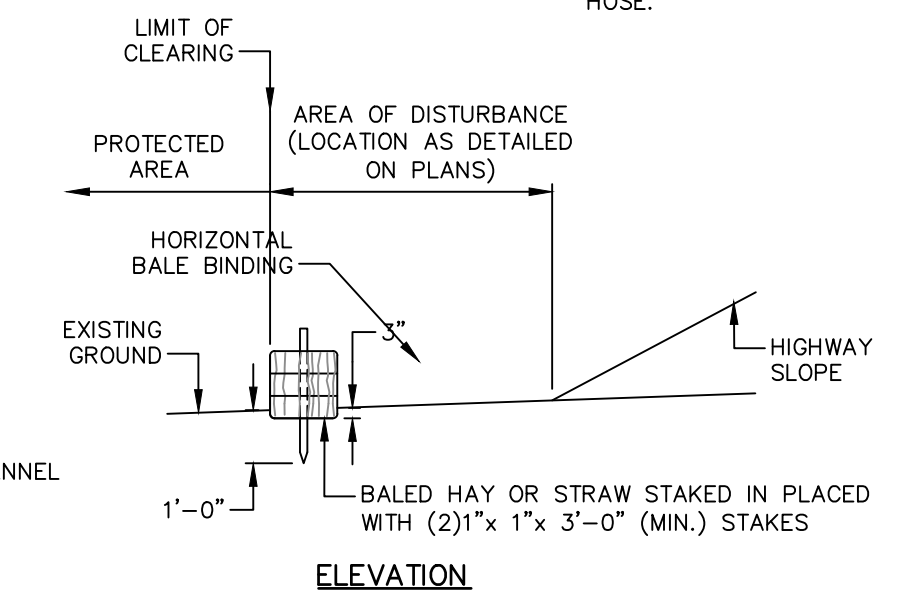


- NOTES:**
- HAY BALES FOR EROSION CONTROL SHALL CONFORM TO SECTION 767 OF THE MASSDOT STANDARD SPECIFICATIONS INCLUDING MATERIALS AND CONSTRUCTION METHODS.
  - BALES OF HAY SHALL BE FASTENED WITH WIRE AND HAVE A MINIMUM SIZE OF 1'x1.5'x3'.
  - FILTER STONE SHALL CONSIST OF 1-INCH MINUS STONE CONFORMING TO SUBSECTION M2.01.4 OF THE STANDARD SPECIFICATIONS.
  - FILTER FABRIC SHALL BE A NON-WOVEN GEOTEXTILE FILTER FABRIC AND SHALL CONFORM TO TYPE IV FABRIC PER SECTION M9.50.0 OF THE STANDARD SPECIFICATIONS.

- NOTES:**
- THE DEWATERING BAG, DIRTBAG® DB55 OR APPROVED EQUAL, SHALL BE HEAVY DUTY AND CONSIST OF A NONWOVEN BAG SEWN WITH A DOUBLE NEEDLE MATCHING USING A HIGH STRENGTH THREAD.
  - EACH DEWATERING BAG SHALL HAVE A FILL SPOUT LARGE ENOUGH TO ACCOMMODATE A 4-INCH DISCHARGE HOSE. THE BAG SHALL BE PROVIDED WITH STRAPS TO SECURE THE HOSE AND PREVENT PUMPED WATER FROM ESCAPING WITHOUT BEING FILTERED.
  - MAINTAIN DEWATERING BAG(S) AS NECESSARY TO EFFICIENTLY FILTER SEDIMENT OR PASS WATER AT A REASONABLE RATE. USE OF EXCESSIVE FLOW RATES OR OVERFILLING DIRTBAG® WITH SEDIMENT WILL CAUSE RUPTURES OF THE BAGS OR FAILURE OF THE HOSE ATTACHMENT STRAPS.
  - DISPOSE OF DEWATERING BAG AND CONTENTS AT OFF-SITE DISPOSAL FACILITY IN ACCORDANCE WITH THE APPROVED SOIL MANAGEMENT PLAN OR AS DIRECTED BY ENGINEER.
  - INSTALL DEWATERING BAG AND CRUSHED STONE BEDDING WITH A SLOPE SO INCOMING WATER FLOWS DOWNHILL THROUGH THE BAG WITHOUT CREATING MORE EROSION. STRAP THE NECK OF DEWATERING BAG TIGHTLY TO THE DISCHARGE HOSE.

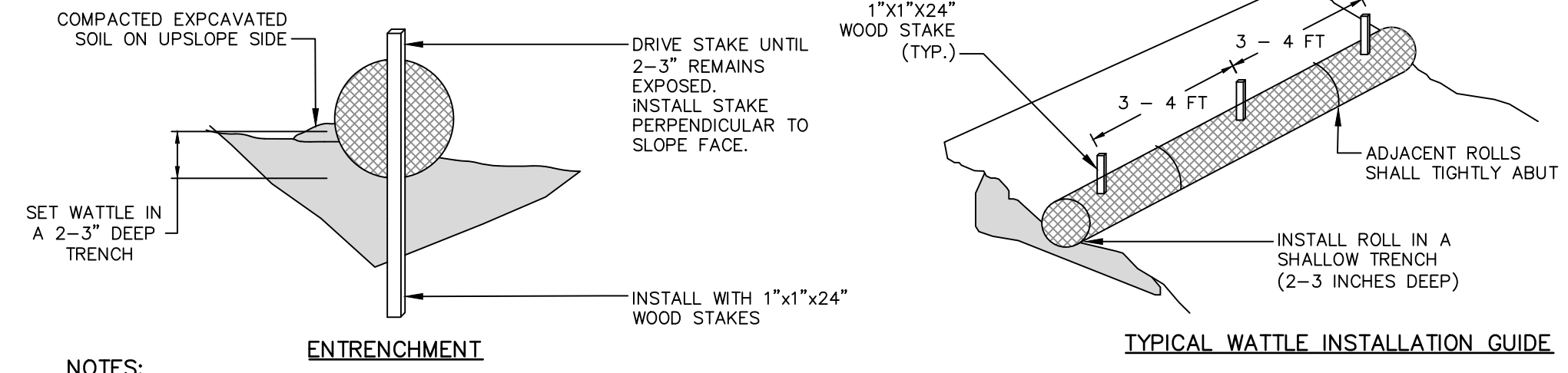


**DEWATERING AREA WITH FILTER BAG**  
NOT TO SCALE



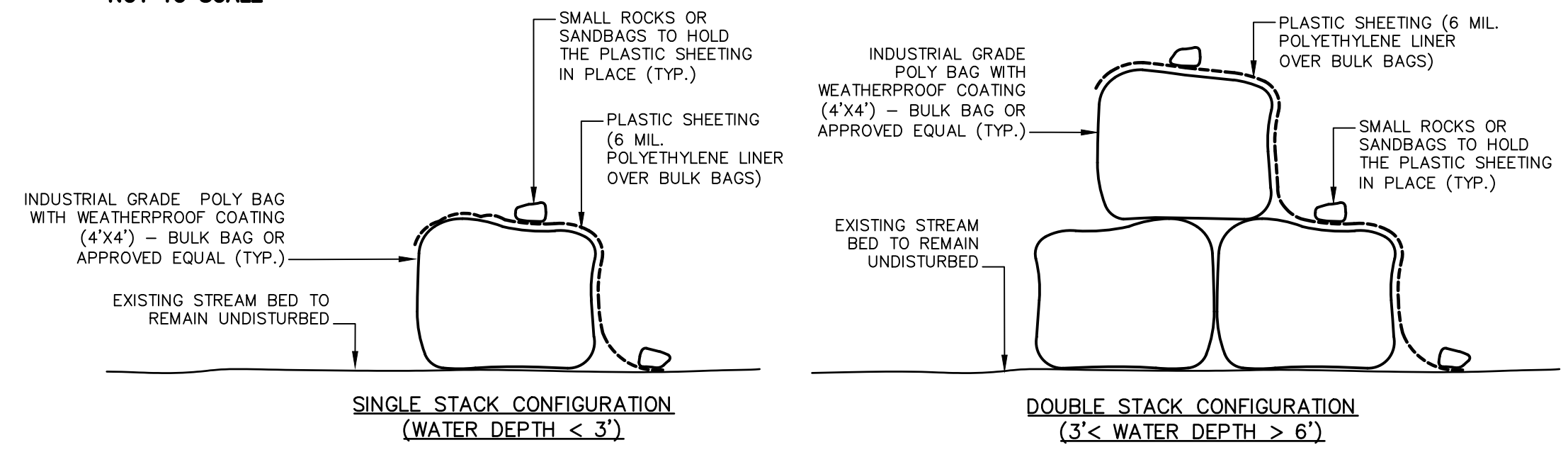
- OVERALL SUMP PIT DIMENSIONS SHALL BE COMPATIBLE WITH ANTICIPATED SEEPAGE RATES AND PUMP SIZE TO BE USED.
- THE STANDPIPE DIAMETER AND NUMBER OF PERFORATIONS SHALL BE COMPATIBLE WITH THE PUMP SIZE BEING USED.
- PERFORATIONS IN THE STANDPIPE SHALL BE EITHER CIRCULAR OR SLOTS. PERFORATION SIZE SHALL NOT EXCEED 1/2" IN DIAMETER.
- CRUSHED STONE SHALL CONFORM TO THE GRADATION LISTED FOR M2.01.0 OF THE MASSDOT STANDARD SPECIFICATIONS. CRUSHED STONE SHALL EXTEND A MINIMUM OF 12" BELOW THE BOTTOM OF THE STANDPIPE.
- IF EXCESSIVE MOVEMENT OF FINE SOIL PARTICLES FROM THE SURROUNDING EXISTING SOILS IS ANTICIPATED, A PROPERLY DESIGNED GEOTEXTILE SHALL BE PLACED BETWEEN THE EXISTING SOILS AND THE CRUSHED STONE OR GRAVEL BACKFILL.
- THE STANDPIPE SHALL EXTEND A MINIMUM OF 12" ABOVE THE SURROUNDING GROUND.

**TEMPORARY CRUSHED STONE DEWATERING SUMP DETAIL**  
NOT TO SCALE

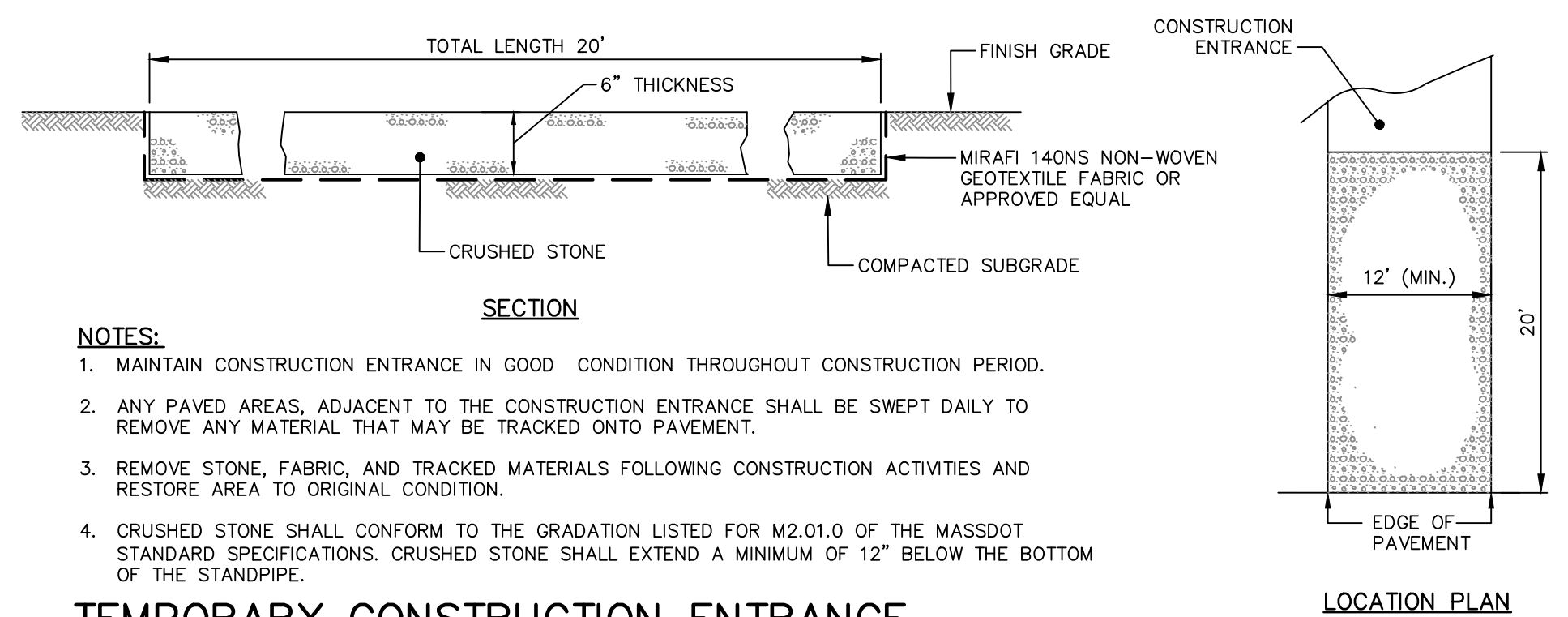


- NOTES:**
- BIODEGRADABLE COIR ROLL SHALL BE INSTALLED AT LOCATIONS AS INDICATED ON THE DRAWINGS.
  - BIODEGRADABLE COIR ROLL SHALL BE TRENCHED APPROXIMATE 2-3 INCHES AND STAKED SUCH THAT WATTLES DIRECTLY CONTACT SOIL AND PRECLUDE UNDERMINING OR BLOWOUTS. THE TRENCH SHALL BE APPROXIMATELY 9 INCHES WIDE. STAKES SHALL BE DRIVEN THROUGH THE CENTER OF THE BIODEGRADABLE COIR ROLL AT A SPACING OF 3-4 FEET ON CENTER AND NO GREATER THAN 6" FROM THE EACH END OF THE BIODEGRADABLE COIR ROLL. COMPACT SOIL EXCAVATED TO CREATE TRENCH ON UPHILL SIDE.
  - ENDS OF ADJACENT BIODEGRADABLE COIR ROLL SHALL BE TIGHTLY BUTTED OR OVERLAPPED SO THAT NO OPENING EXISTS FOR WATER TO PASS THROUGH. BIODEGRADABLE COIR ROLL SHALL BE FREE OF DAMAGE OR DEFECTS WHEN DELIVERED TO THE SHIPPER. NO VEHICLES SHALL BE DRIVEN OVER BIODEGRADABLE COIR ROLL.
  - BIODEGRADABLE COIR ROLL SHALL BE 12-INCH PREMIUM FIBER ROLL MANUFACTURED BY US CONSTRUCTION FABRICS LLC, OR APPROVED EQUAL.

**BIODEGRADABLE FIBER ROLL**  
NOT TO SCALE



**TEMPORARY COFFERDAM STRUCTURE (BULK BAGS OR APPROVED EQUAL)**  
NOT TO SCALE



- NOTES:**
- MAINTAIN CONSTRUCTION ENTRANCE IN GOOD CONDITION THROUGHOUT CONSTRUCTION PERIOD.
  - ANY PAVED AREAS, ADJACENT TO THE CONSTRUCTION ENTRANCE SHALL BE SWEEP DAILY TO REMOVE ANY MATERIAL THAT MAY BE TRACKED ONTO PAVEMENT.
  - REMOVE STONE, FABRIC, AND TRACKED MATERIALS FOLLOWING CONSTRUCTION ACTIVITIES AND RESTORE AREA TO ORIGINAL CONDITION.
  - CRUSHED STONE SHALL CONFORM TO THE GRADATION LISTED FOR M2.01.0 OF THE MASSDOT STANDARD SPECIFICATIONS. CRUSHED STONE SHALL EXTEND A MINIMUM OF 12" BELOW THE BOTTOM OF THE STANDPIPE.

**TEMPORARY CONSTRUCTION ENTRANCE**  
NOT TO SCALE

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SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
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PROJ. No.: 20180319.A23  
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**CD-503**  
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1 DOWNSTREAM CHANNEL WALL REPAIR  
NOT TO SCALE



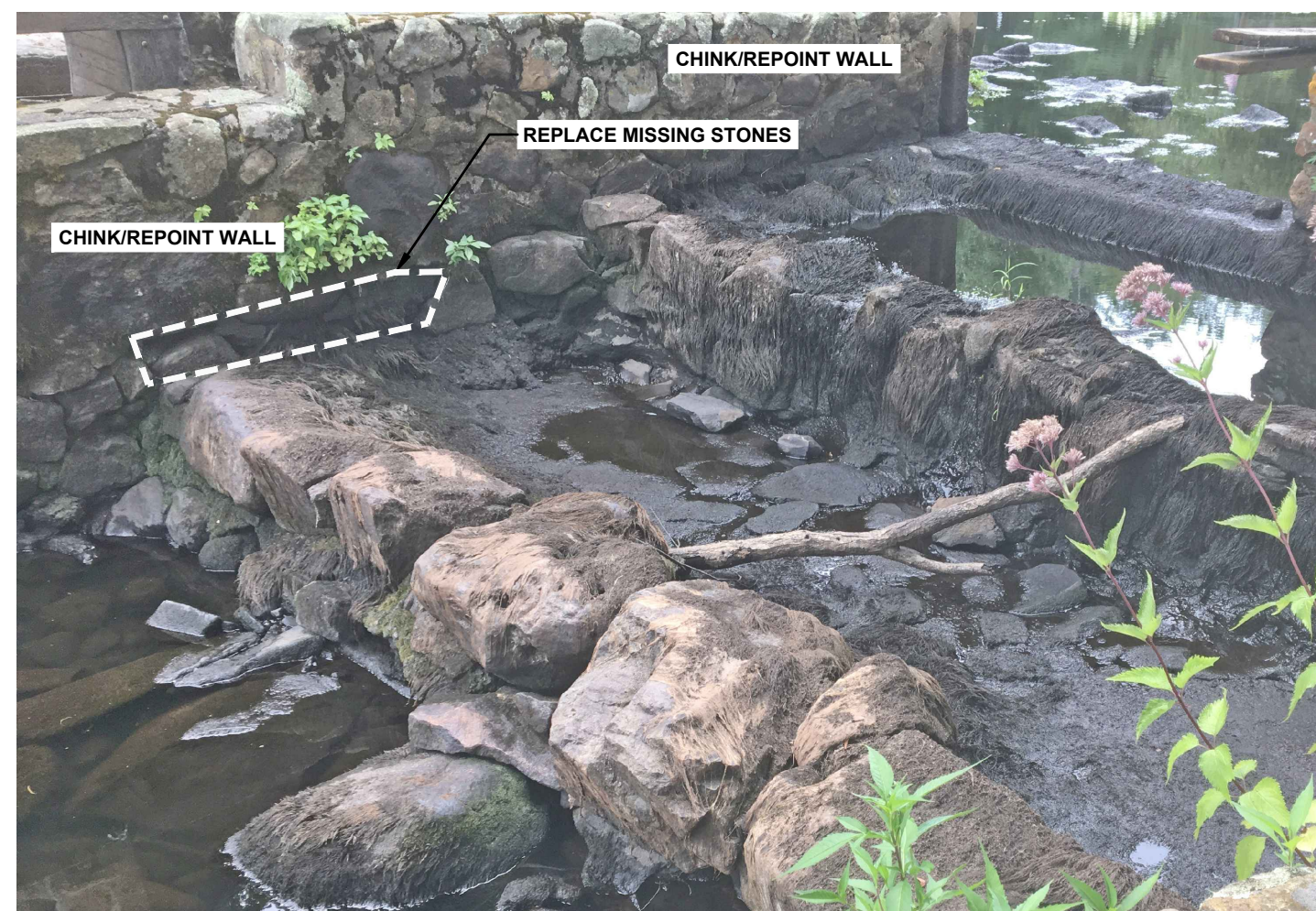
2 DOWNSTREAM CHANNEL WALL REPAIR  
NOT TO SCALE



3 WATER WHEEL SUPPORT WALL REPAIR  
NOT TO SCALE

**REPAIR NOTES**

1. PHOTOGRAPHIC DEPICTIONS ON SHEETS CD-504 DO NOT SHOW ALL WORK REQUIRED FOR EACH REPAIR.
2. PHOTOGRAPHIC DEPICTIONS ONLY DISPLAY WORK ASSOCIATED WITH THE REPAIRS REFERENCED IN THE INDIVIDUAL PHOTOGRAPHIC DEPICTION TITLE.
3. ALL AREAS SHOWN ON PHOTOGRAPHIC DEPICTIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
4. ALL WOODY VEGETATION SHALL BE CUT FLUSH TO EXISTING WALL AND COATED WITH A SEALANT TO PREVENT REGROWTH.



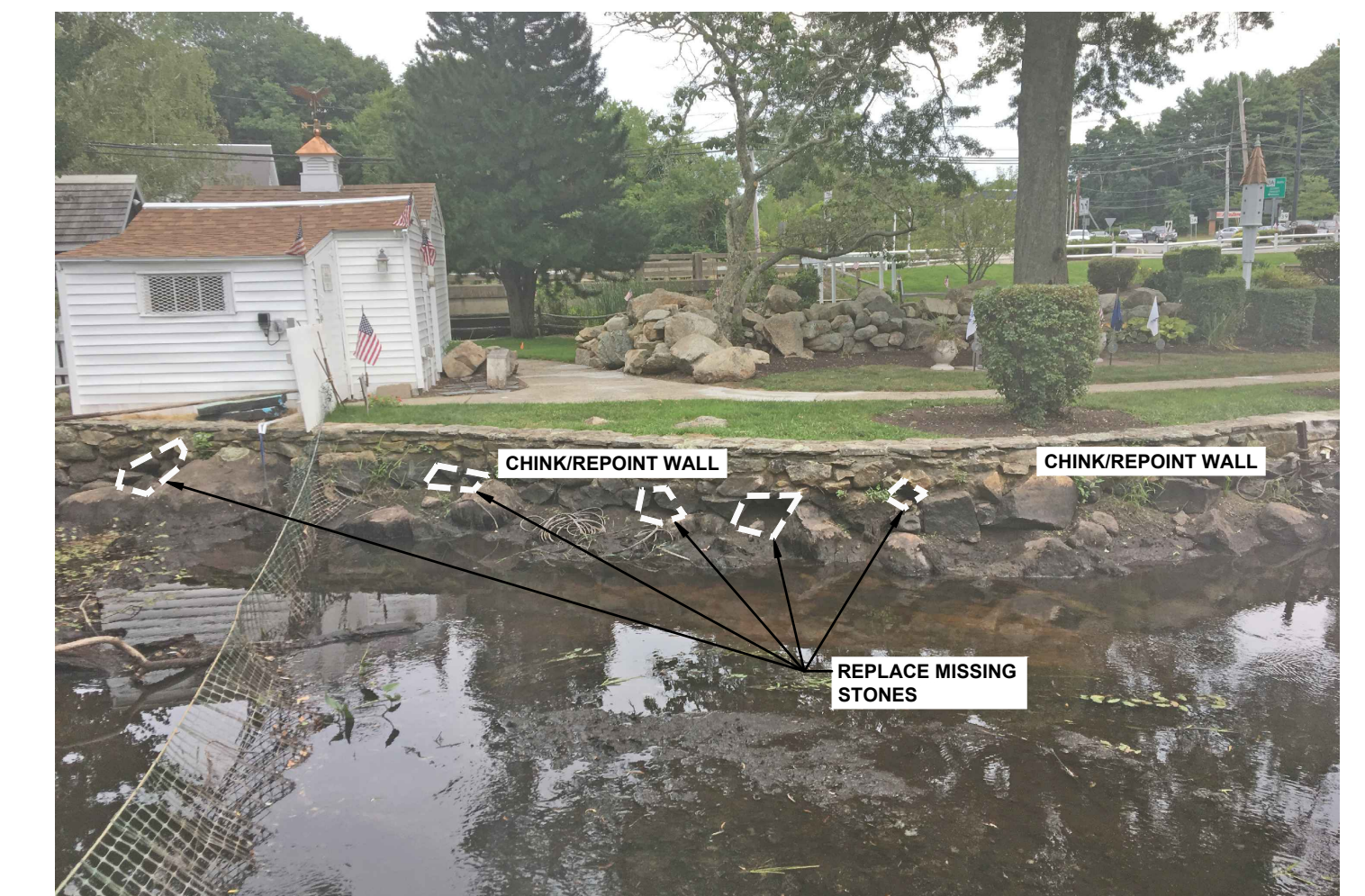
2 WATER WHEEL SUPPORT WALL REPAIR  
NOT TO SCALE



5 RIVER CHANNEL WALL CONSTRUCTION  
NOT TO SCALE



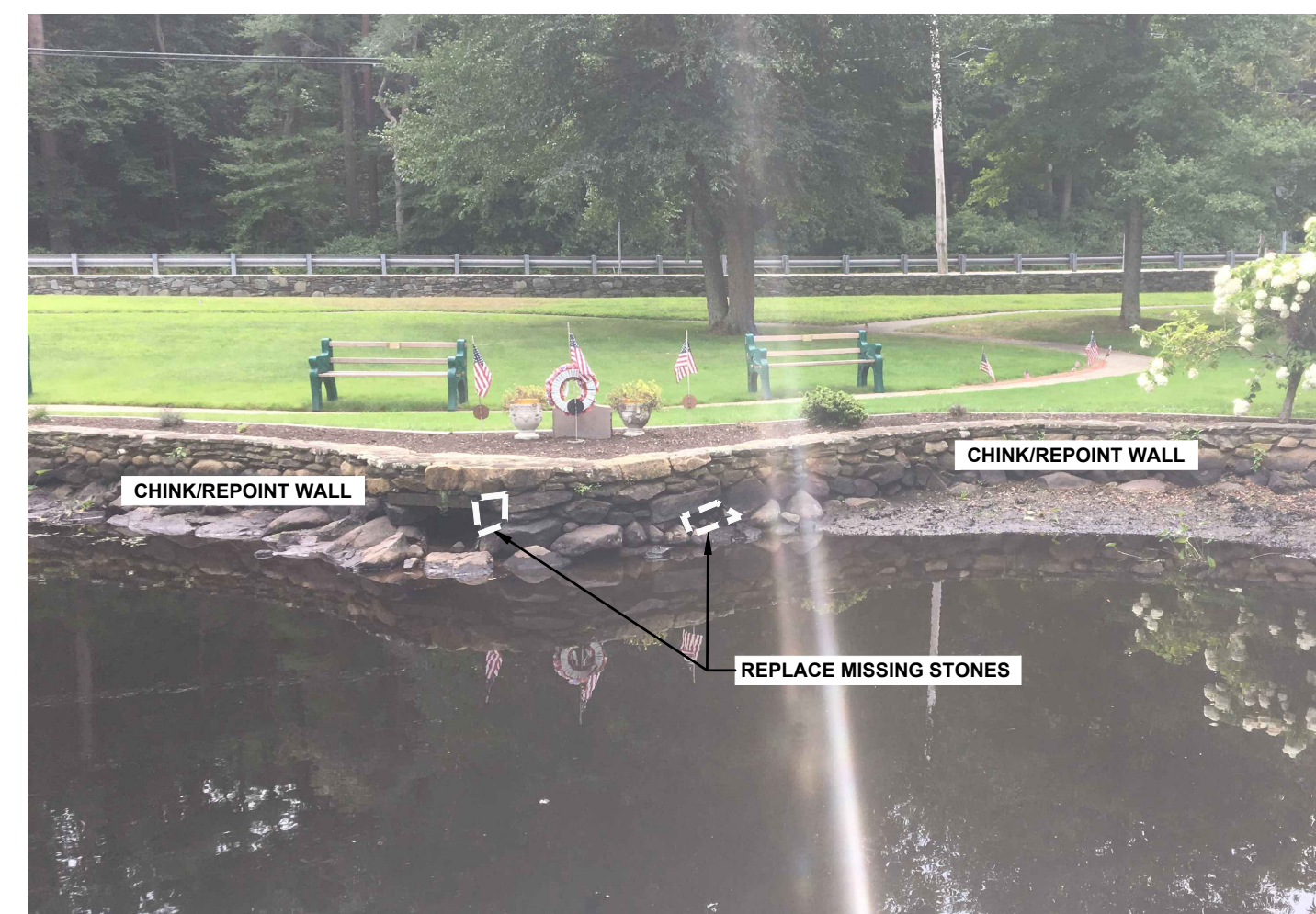
6 WATER WHEEL HEADRACE CHANNEL WALL REPAIR  
NOT TO SCALE



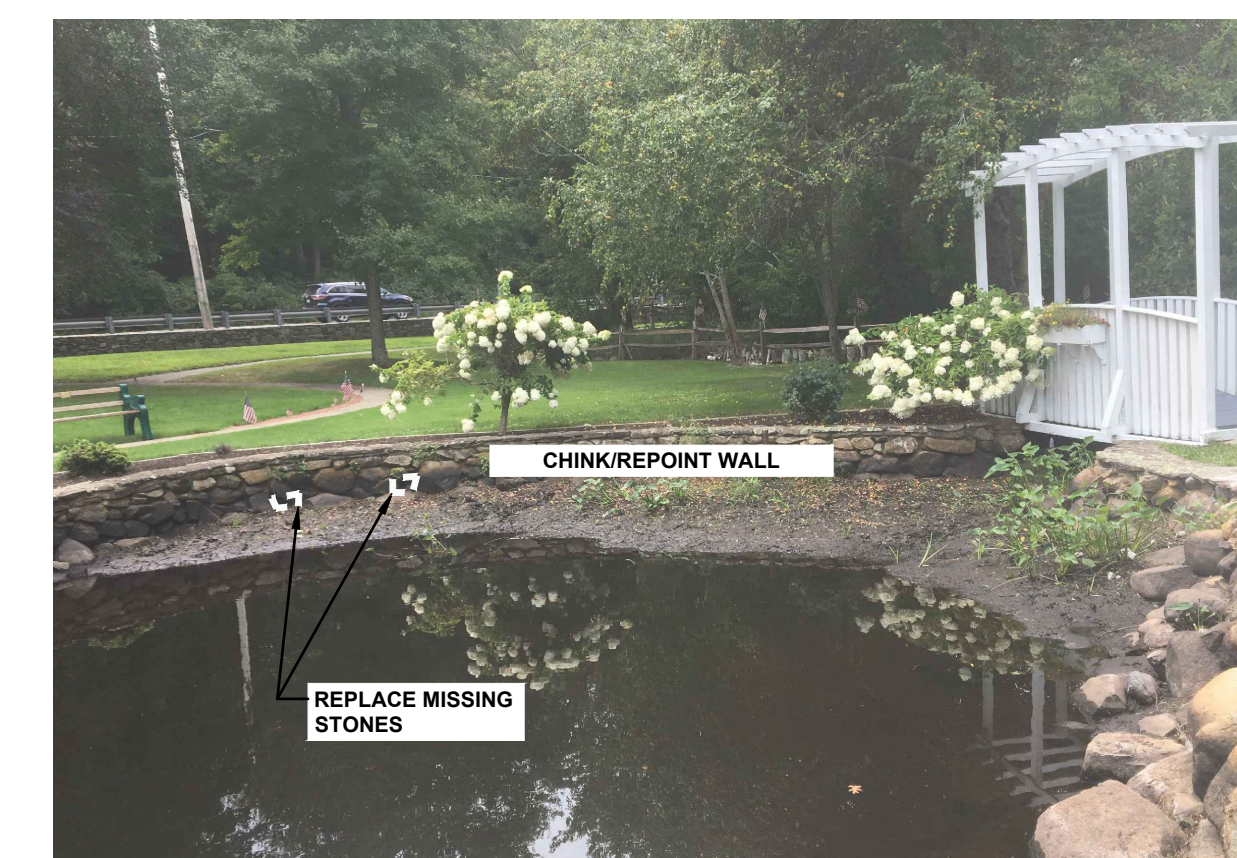
7 LAGOON WALL REPAIR  
NOT TO SCALE



8 LAGOON WALL REPAIR  
NOT TO SCALE



9 LAGOON WALL REPAIR  
NOT TO SCALE



10 LAGOON WALL REPAIR  
NOT TO SCALE



11 LAGOON WALL RECONSTRUCTION  
NOT TO SCALE

File Path: J:\DWG\20180319A23\Civil\Plan\20180319A23\_DET01.dwg Plotted: Fri, August 02, 2024 - 11:59 AM User: derek.newhall  
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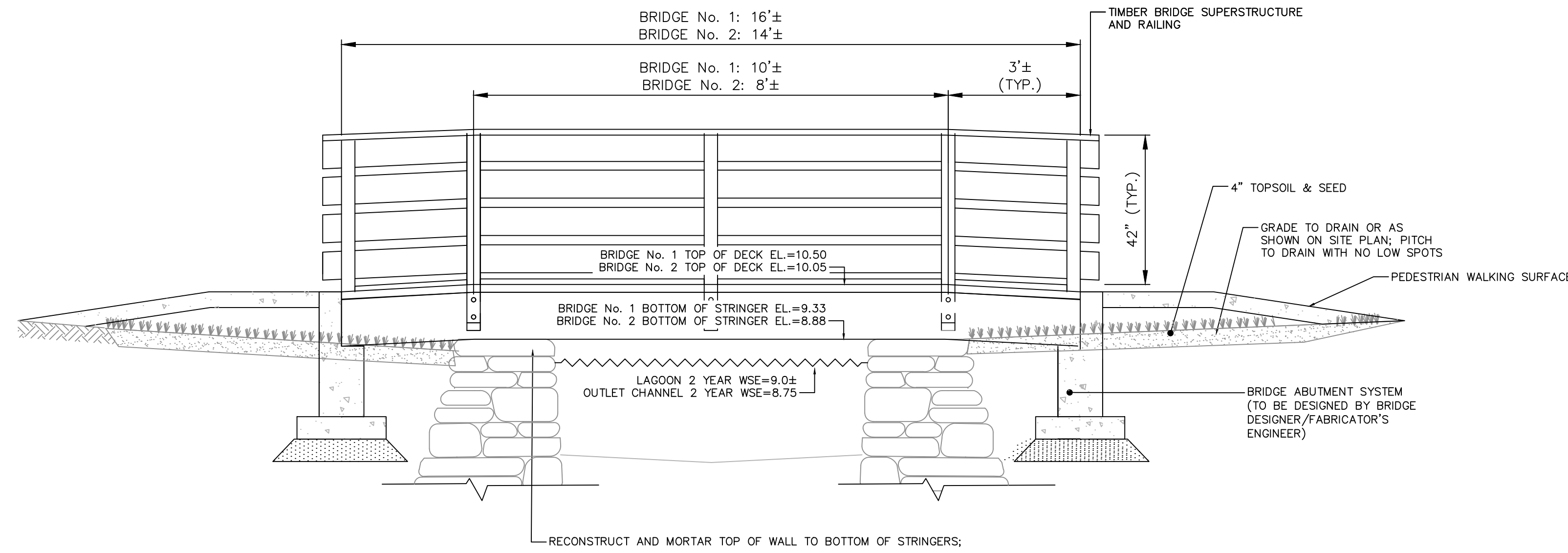
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PHOTOGRAPHIC WORK REPAIR DEPICTIONS  
SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
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MARSHFIELD MASSACHUSETTS

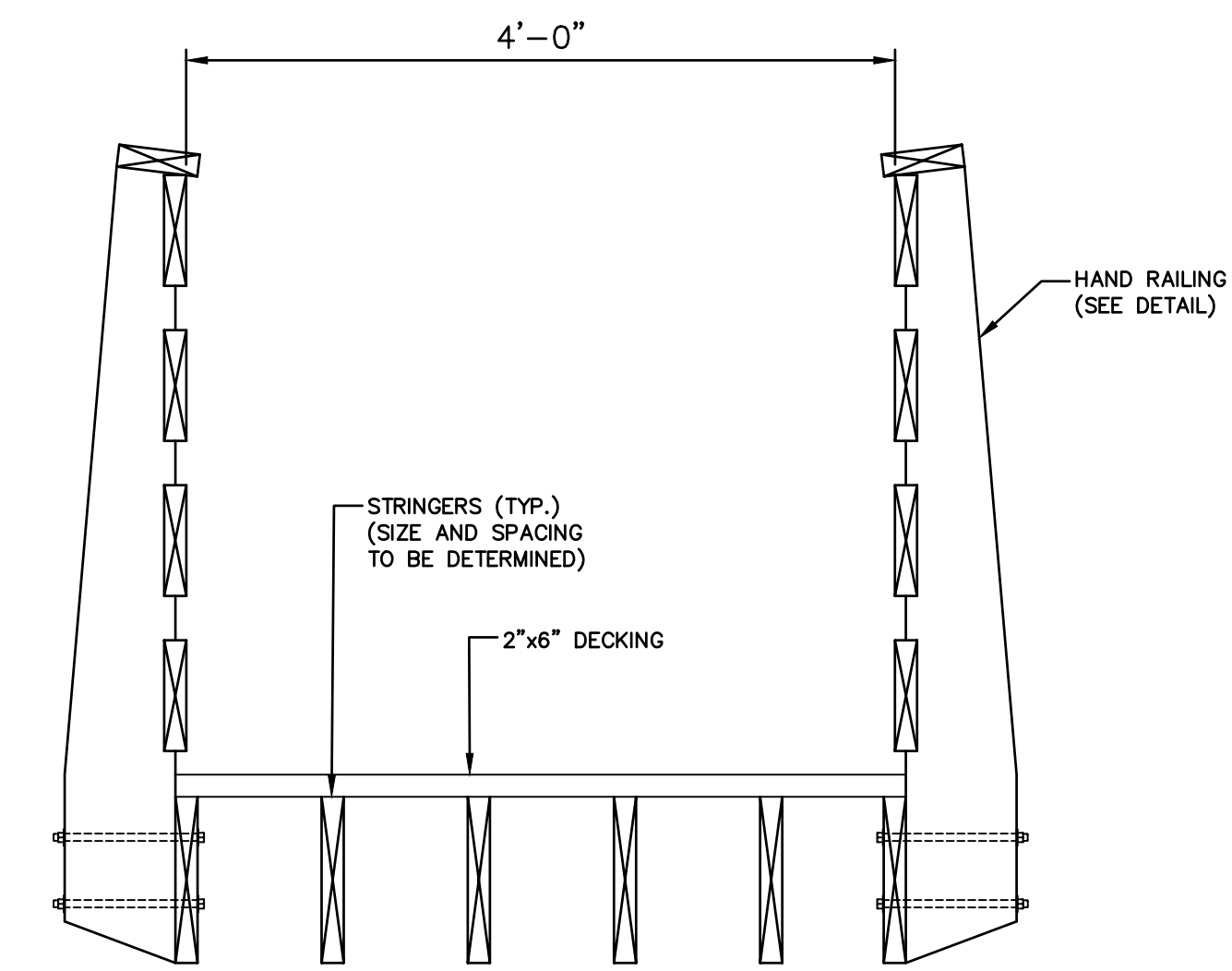
PROJ. No.: 20180319.A23  
DATE: AUGUST 2, 2024  
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**TIMBER PEDESTRIAN BRIDGE DETAIL**  
NOT TO SCALE

- NOTES:**
1. TIMBER PEDESTRIAN BRIDGE SHALL BE MODEL #FWBTR0416 AS MANUFACTURED BY FIFTHROOM.COM OR APPROVED EQUAL.
  2. CONTRACTOR'S BRIDGE DESIGNER/FABRICATOR'S ENGINEER TO DETERMINE BRIDGE CONSTRUCTION MATERIALS. USE OF PRESSURE TREATED LUMBER OR GLUE LAMINATED TIMBERS WILL BE ALLOWED.
  3. THE MAXIMUM FACTORED BEARING CAPACITY TO BE UTILIZED IN THE BRIDGE ABUTMENT SYSTEM SHALL BE 1,500 PSF.



**TYPICAL PEDESTRIAN BRIDGE SECTION**  
SCALE: 1"= 1'-0"

**NOTES:**

**TREATED TIMBER**

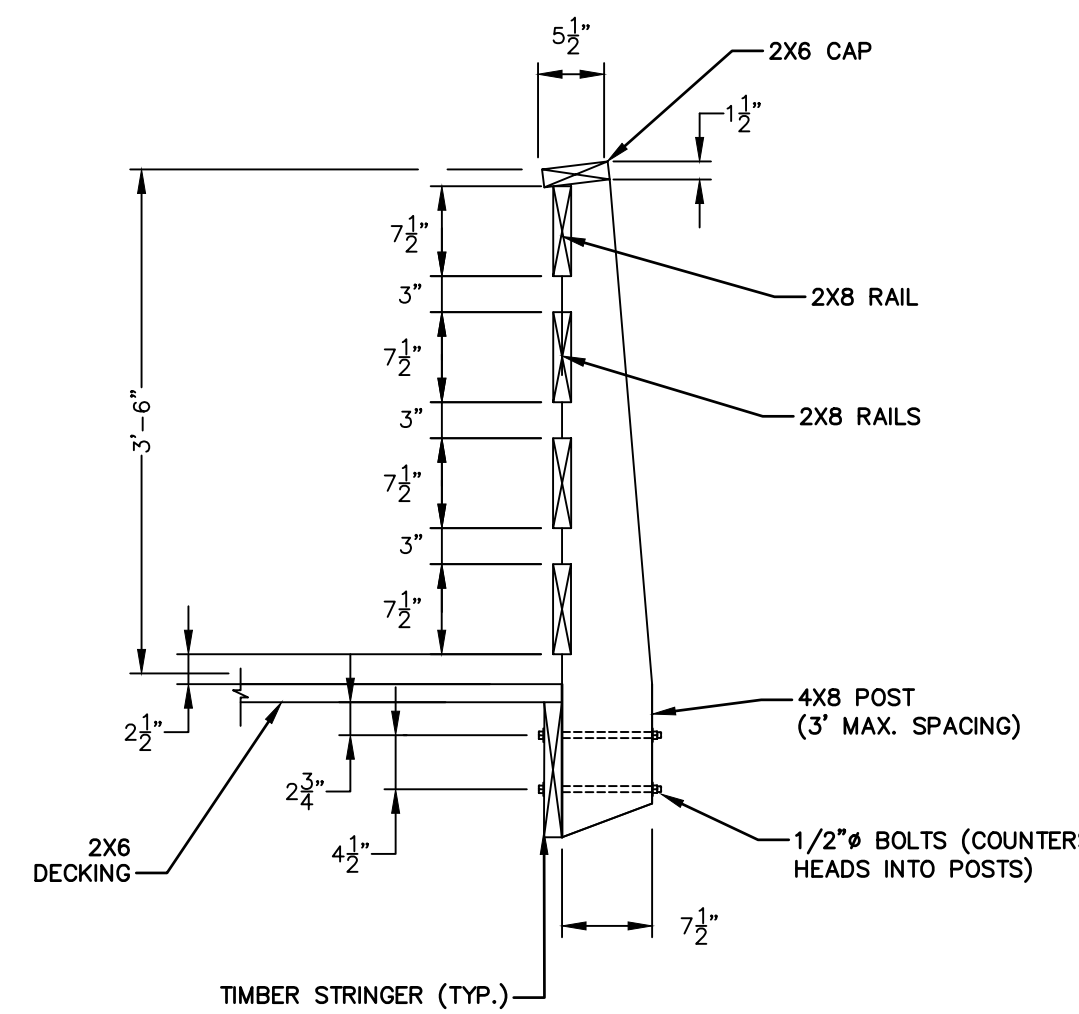
1. ALL TIMBER SHALL BE SOUTHERN PINE NO.1 AND SHALL BE PRESSURE TREATED IN ACCORDANCE WITH AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) UCA4. ALL TIMBER AND GLULAM SHALL COMPLY WITH AASHTO M168.
  - a. ACCEPTABLE PRESERVATIVE CHEMICALS: ALKALINE COPPER QUATERNARY (ACQ-D).
2. KILN-DRY MATERIAL AFTER TREATMENT TO A MAXIMUM MOISTURE CONTENT OF 19 PERCENT FOR LUMBER.
3. MARK EACH TREATED ITEM WITH THE TREATMENT QUALITY MARK OF AN INSPECTION AGENCY APPROVED BY THE AMERICAN LUMBER STANDARDS COMMITTEE BOARD OF REVIEW.
4. UNLESS OTHERWISE INDICATED APPROVED BY THE ENGINEER, GLULAM LAMINATIONS SHALL BE SOUTHERN PINE COMB. NO 48 OR GLULAM TIMBER MANUFACTURED FROM NORTHERN RED OAK, RED MAPLE OR ANOTHER TREATABLE DENSE HARDWOOD SPECIES.
5. STRUCTURAL GLUED LAMINATED TIMBER SHALL BE MANUFACTURED USING WET-USE ADHESIVES AND SHALL COMPLY WITH THE REQUIREMENTS OF ANSI A190.1.
6. EACH PIECE OF GLUE LAMINATED TIMBER SHALL BE DISTINCTIVELY MARKED AND PROVIDED WITH A CERTIFICATE OF CONFORMANCE BY AN ACCREDITED INSPECTIONS AND TESTING AGENCY, INDICATED THAT THE REQUIREMENTS OF ANSI A190.1 HAVE BEEN MET.
7. GLUE LAMINATED TIMBER SHALL BE TREATED WITH WOOD PRESERVATIVES AND ACCORDANCE WITH AASHTO M133.
8. EACH PIECE OF GLUE LAMINATED TIMBER SHALL BE STAMPED "TOP" AT THE TOP OF BOTH ENDS, TO ENSURE LOADING IS APPLIED OPPOSITE TO THE NATURAL CAMBER.
9. FIELD CUTTING IS NOT PERMITTED UNLESS APPROVED BY THE ENGINEER. WHEN PERMITTED, TREAT WITH AN APPROVED PRESERVATIVE SYSTEM.
10. SUBMIT SHOP DRAWINGS SHOWING DETAILS OF ALL GLULAM CONSTRUCTION FOR APPROVAL TO THE ENGINEER PRIOR TO FABRICATION OPERATIONS.

**HARDWARE**

1. FASTENERS
  - A. NAILS SHALL MEET THE REQUIREMENTS OF ASTM F1667. THREADED NAILS INCLUDE HELICAL (SPIRAL) AND ANNULAR (RING-SHANK) NAILS.
  - B. WOOD SCREWS SHALL MEET THE REQUIREMENTS OF ANSI/ASME B18.6.1.
  - C. BOLTS AND LAG SCREWS SHALL MEET THE REQUIREMENTS OF ANSI/ASME B18.2.1. ALL SCREWS, BOLTS AND NAILS FOR USE WITH PRESERVATIVE TREATED WOOD SHALL BE HOT-DIPPED, ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER. FASTENERS TO BE HOT-DIPPED GALVANIZED SHALL MEET THE REQUIREMENTS OF ASTM A153, CLASS D FOR FASTENERS  $\frac{3}{8}$ " DIAMETER AND SMALLER OR CLASS C FOR FASTENERS WITH DIAMETERS OVER  $\frac{3}{8}$ ".
2. CONNECTORS
  - A. ALL CONNECTORS (JOIST HANGERS, TIES, PLATES, ANCHORS, ETC.) SHALL BE GALVANIZED OR SHALL BE STAINLESS STEEL. HARDWARE TO BE HOT-DIPPED GALVANIZED PRIOR TO FABRICATION SHALL MEET THE REQUIREMENTS OF ASTM A653, G-185 COATING. HARDWARE TO BE HOT-DIPPED GALVANIZED AFTER FABRICATION SHALL MEET THE REQUIREMENTS OF ASTM A123.
  - B. ALL CONNECTORS SHALL BE FASTENED TO THE MEMBERS IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

**GENERAL CRITERIA**

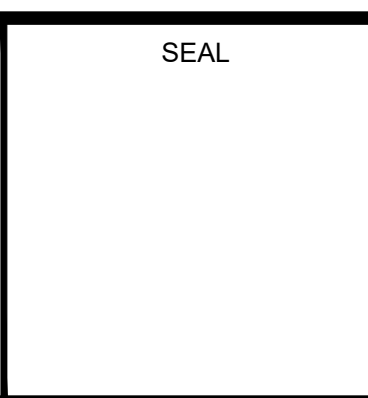
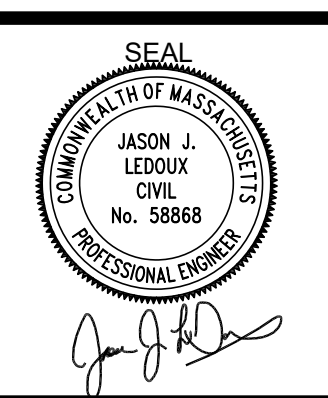
1. DESIGN CODES
  - A. AASHTO LRFD GUIDE SPECIFICATIONS FOR DESIGN OF PEDESTRIAN BRIDGES, 2009 WITH 2015 INTERIM REVISIONS.
  - B. AASHTO LRFD 9TH EDITION, 2020 WITH LATEST INTERIMS FOR TIMBER FRAMING DESIGN.
2. DESIGN LOADS
  - A. PEDESTRIAN LIVE LOAD: 90 PSF
  - B. VEHICULAR LIVE LOAD: NONE
  - C. WIND LOAD: 50 PSF
  - D. HANDRAILS:
    - UNIFORM LOAD: 50 PLF IN ANY DIRECTION
    - CONCENTRATED LOAD: 200 LB IN ANY DIRECTION, NOT CONCURRENT WITH UNIFORM LOAD.



**PEDESTRIAN BRIDGE HAND RAILING**  
SCALE: 3/4"= 1'-0"

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**BRIDGE DETAILS**

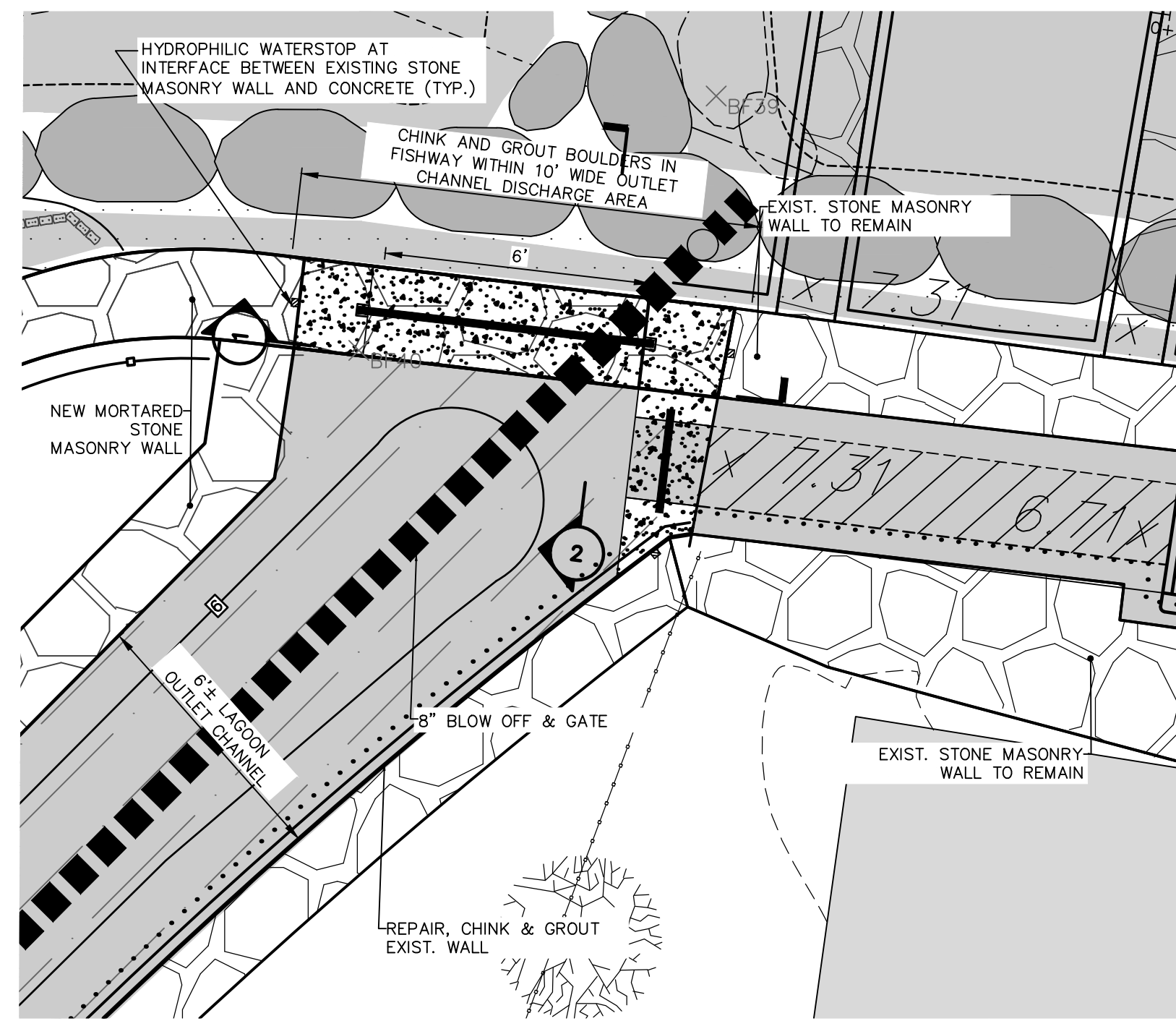
SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
MARSHFIELD MASSACHUSETTS

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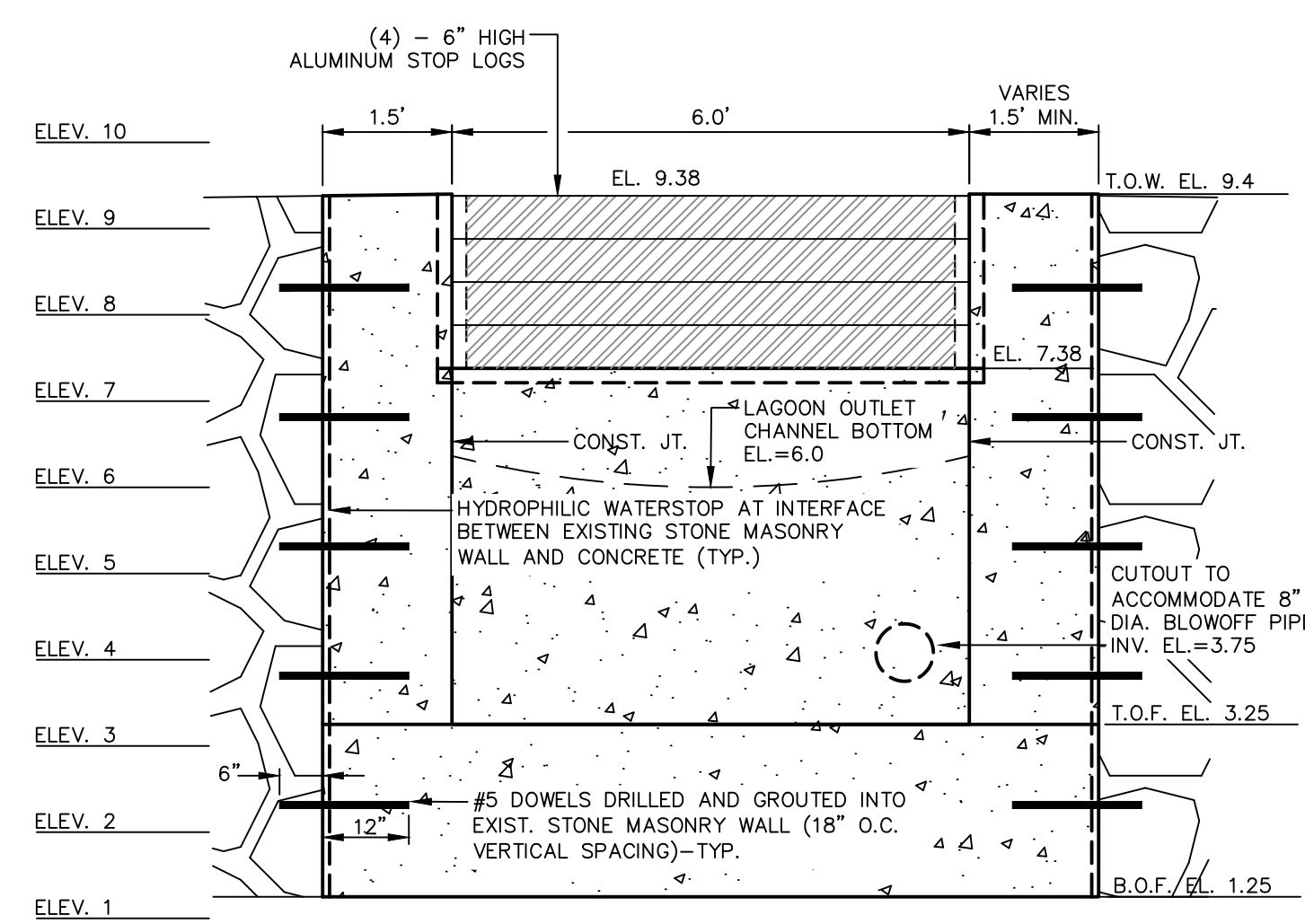
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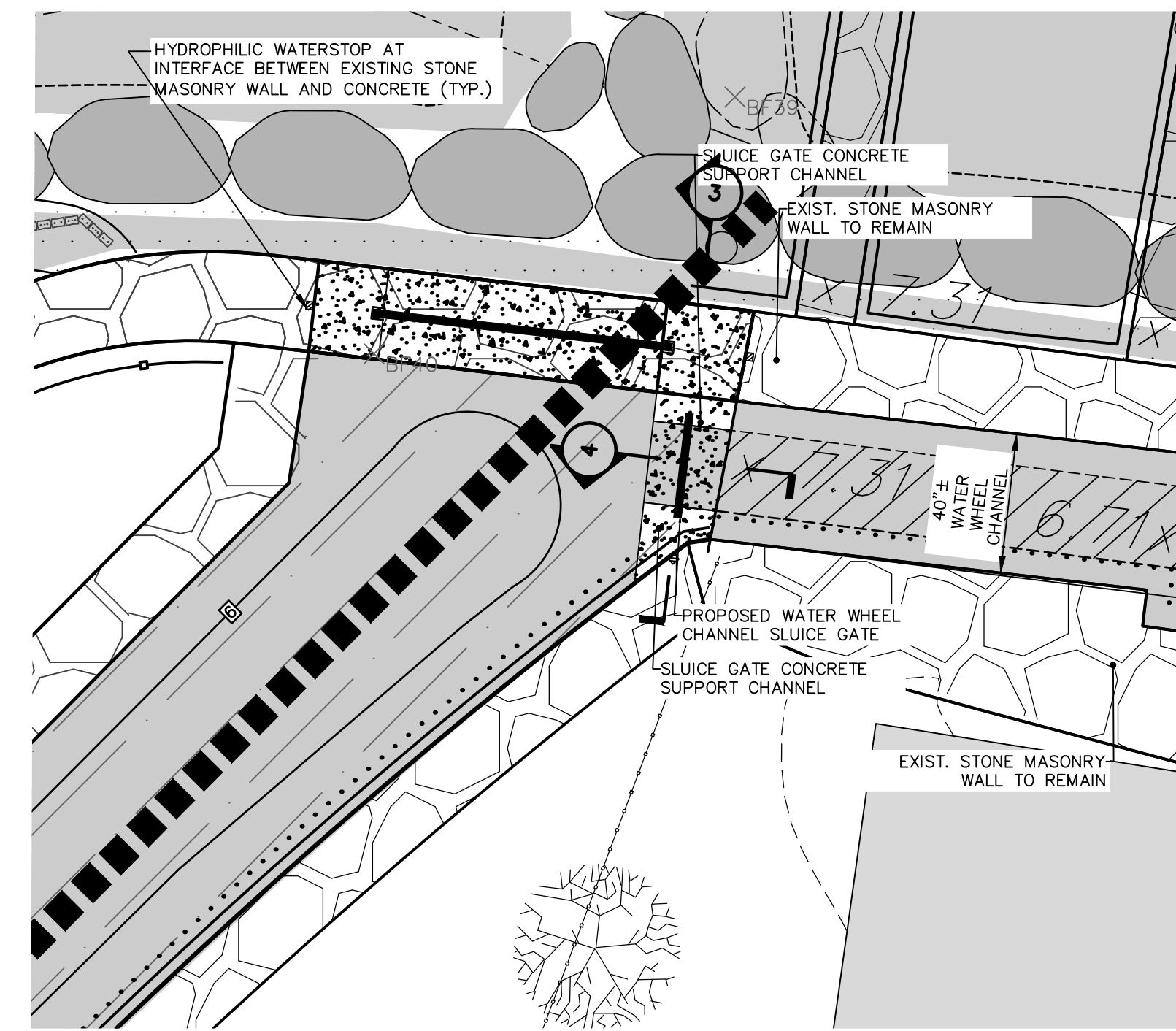


**LAGOON OUTLET WEIR LAYOUT AND DETAIL**  
NOT TO SCALE

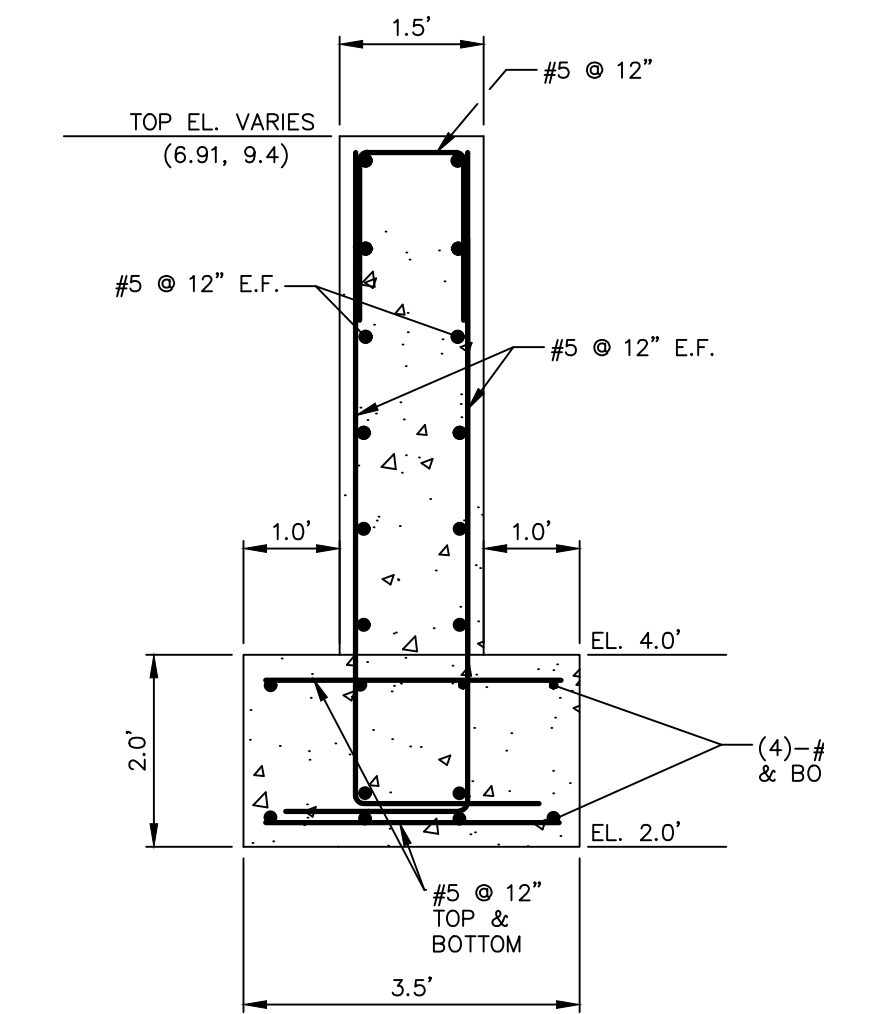


NOTE:  
1. REINFORCEMENT NOT SHOWN IN THIS VIEW FOR CLARITY PURPOSES.

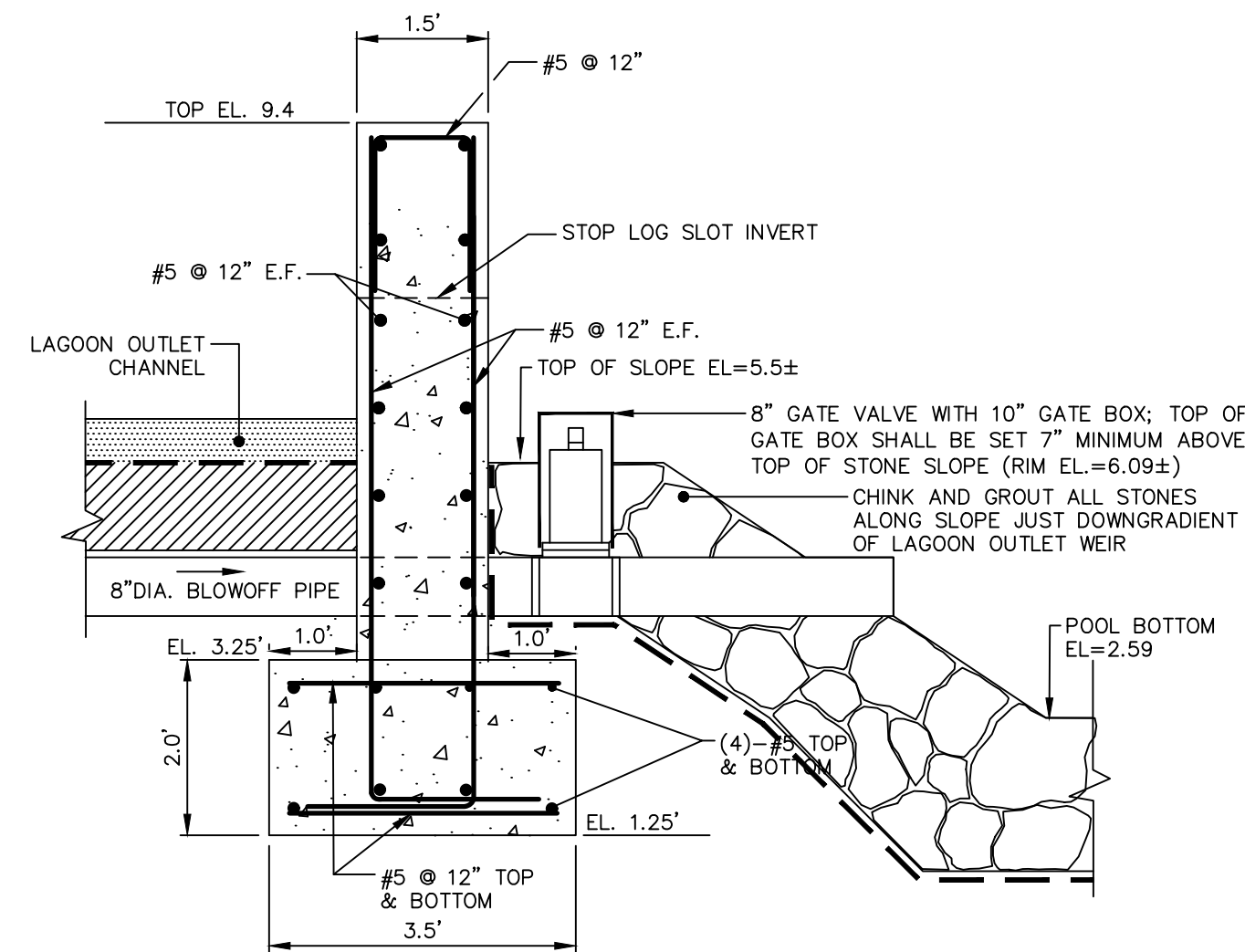
**LAGOON OUTLET WEIR SECTION**  
SCALE: 1/2" = 1'-0"



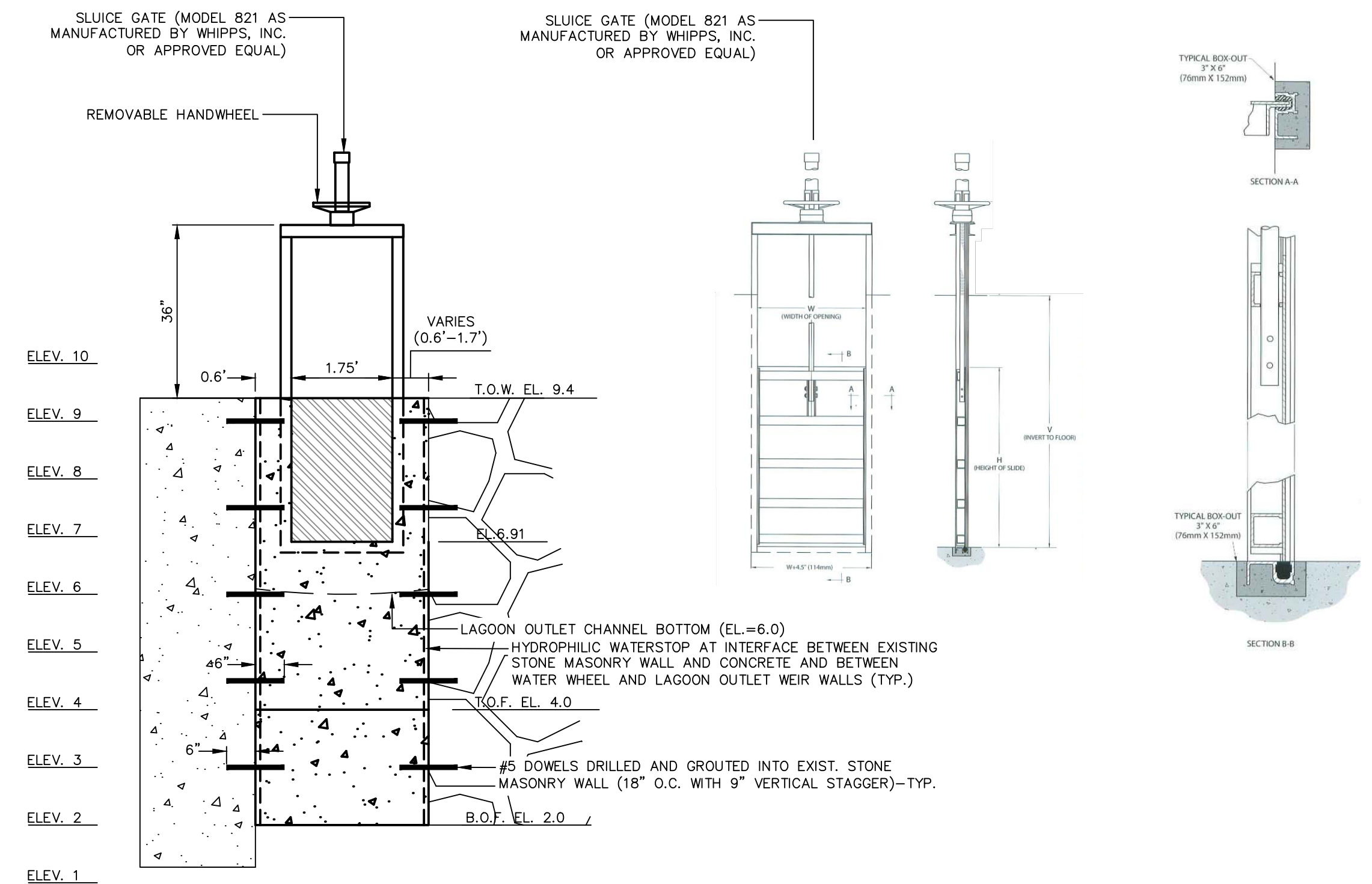
**WATER WHEEL OUTLET WEIR LAYOUT AND DETAIL**  
NOT TO SCALE



**TYPICAL WATER WHEEL OUTLET WEIR SECTION**  
SCALE: 1/2" = 1'-0"

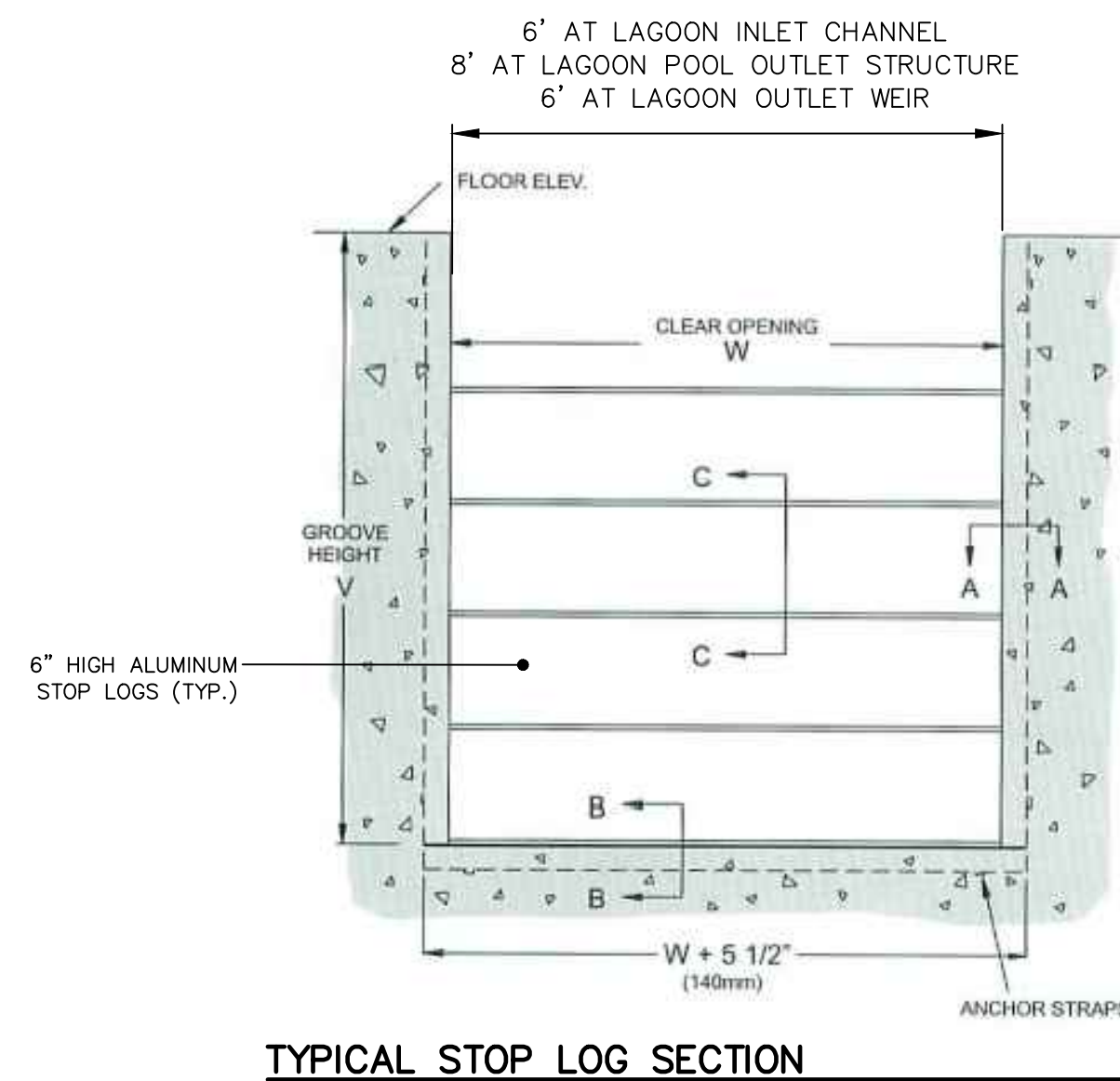


**LAGOON OUTLET WEIR SECTION**  
SCALE: 1/2" = 1'-0"



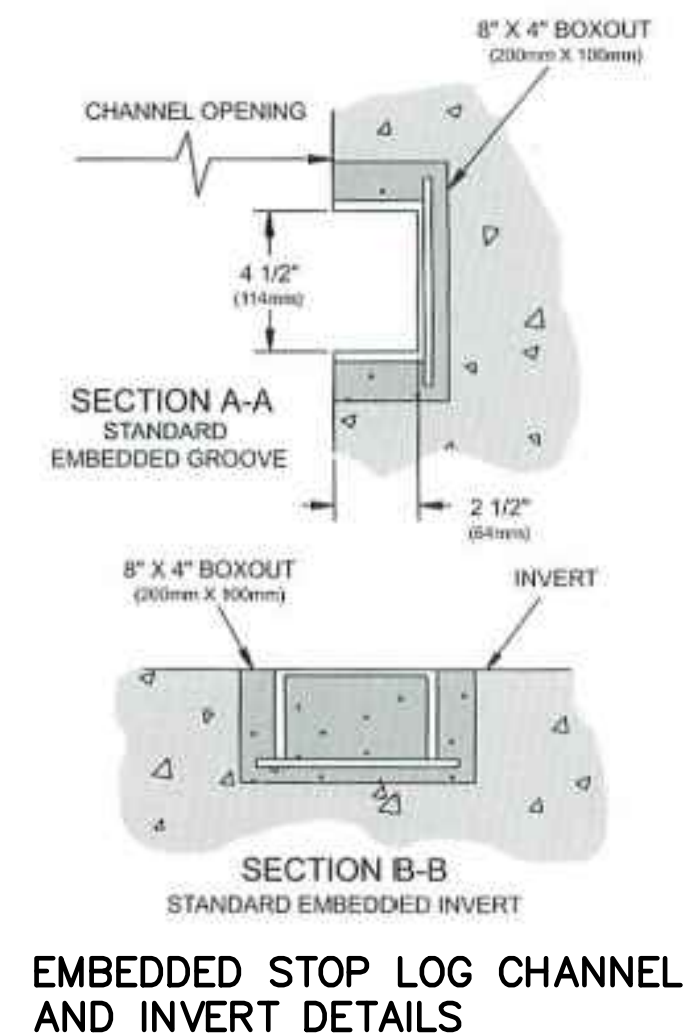
**SLUDGE GATE NOTES:**  
1. SLUDGE GATE SHALL BE ALUMINUM (ALLOY 6061-T6) WITH STAINLESS STEEL STEMS AND HARDWARE ALONG WITH FLEXIBLE ULTRA HIGH MOLECULAR WEIGHT (UHMW) SEAT/SEALS WITH A RESILIENT BOTTOM SEAL (MODEL B21 AS MANUFACTURED BY WHIPPS, INC. OR APPROVED EQUAL).  
2. GATE FRAMES SHALL BE EMBEDDED IN CHANNEL WALLS.  
3. STEEL REINFORCEMENT NOT SHOWN FOR CLARITY.

**WATER WHEEL OUTLET WEIR SECTION AND SLUDGE GATE**  
SCALE: 1/2" = 1'-0"



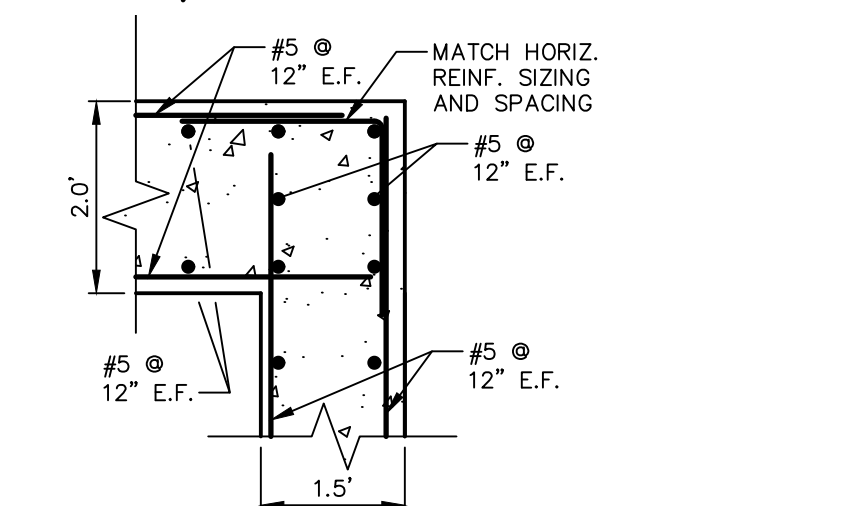
**STOP LOG NOTES:**  
1. STOP LOGS SHALL BE 6" HIGH ALUMINUM STOP LOGS (MODEL 509 AS MANUFACTURED BY WHIPPS, INC. OR APPROVED EQUAL).  
2. STOP LOG EMBEDDED CHANNELS SHALL BE CONSTRUCTED OF FORMED STAINLESS STEEL AND SHALL BE FORMED AND WELDED WITH INTEGRAL CONCRETE ANCHORS FOR EMBEDDED APPLICATIONS.

**TYPICAL STOP LOG CONTROL STRUCTURE DETAILS**  
NOT TO SCALE

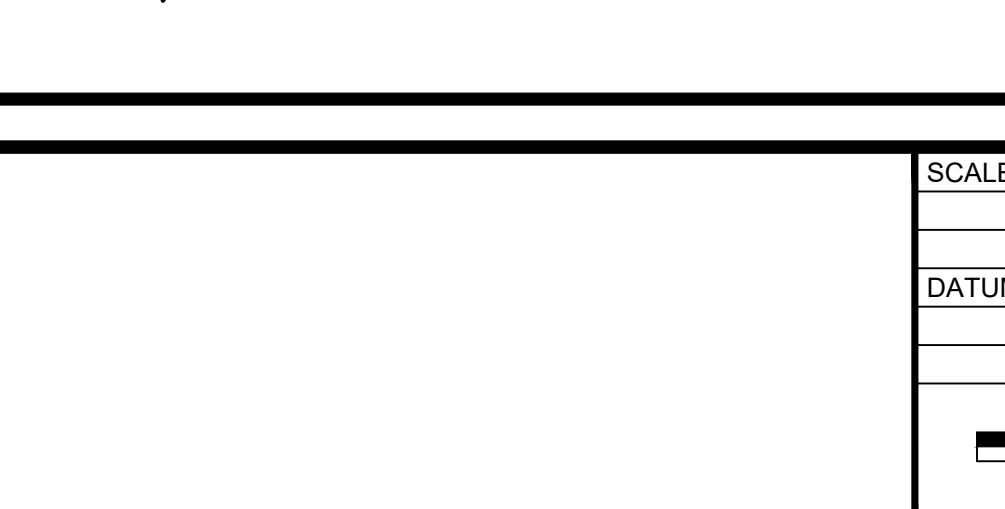


**EMBEDDED STOP LOG CHANNEL AND INVERT DETAILS**

**LAGOON/WATER WHEEL OUTLET WEIR UPPER CORNER DETAIL**  
SCALE: 1/2" = 1'-0"

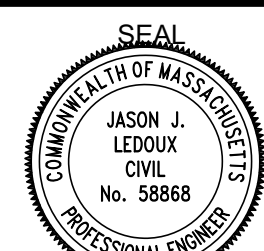


**LAGOON/WATER WHEEL OUTLET WEIR SHARED LOWER CORNER DETAIL**  
SCALE: 1/2" = 1'-0"



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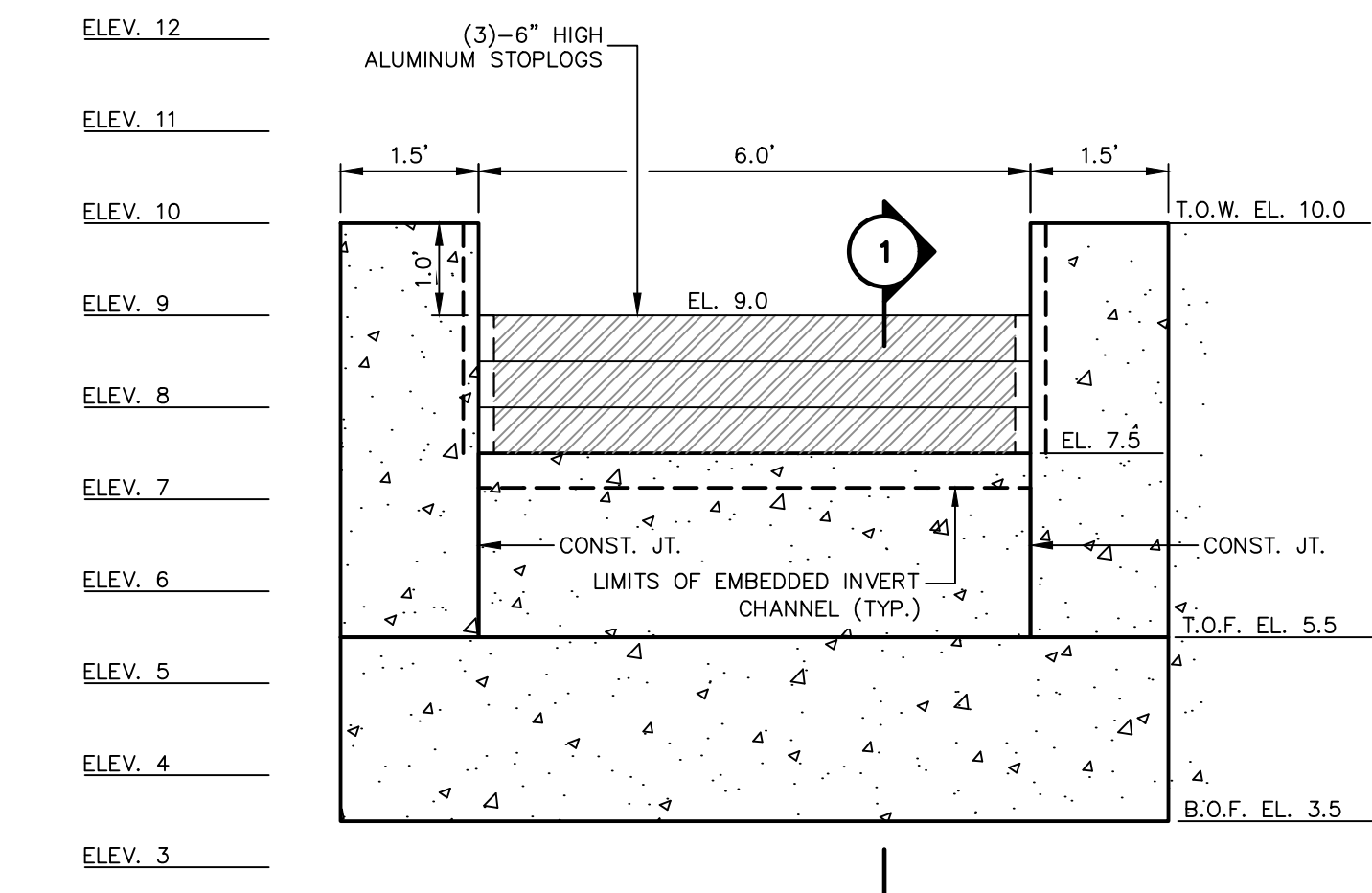
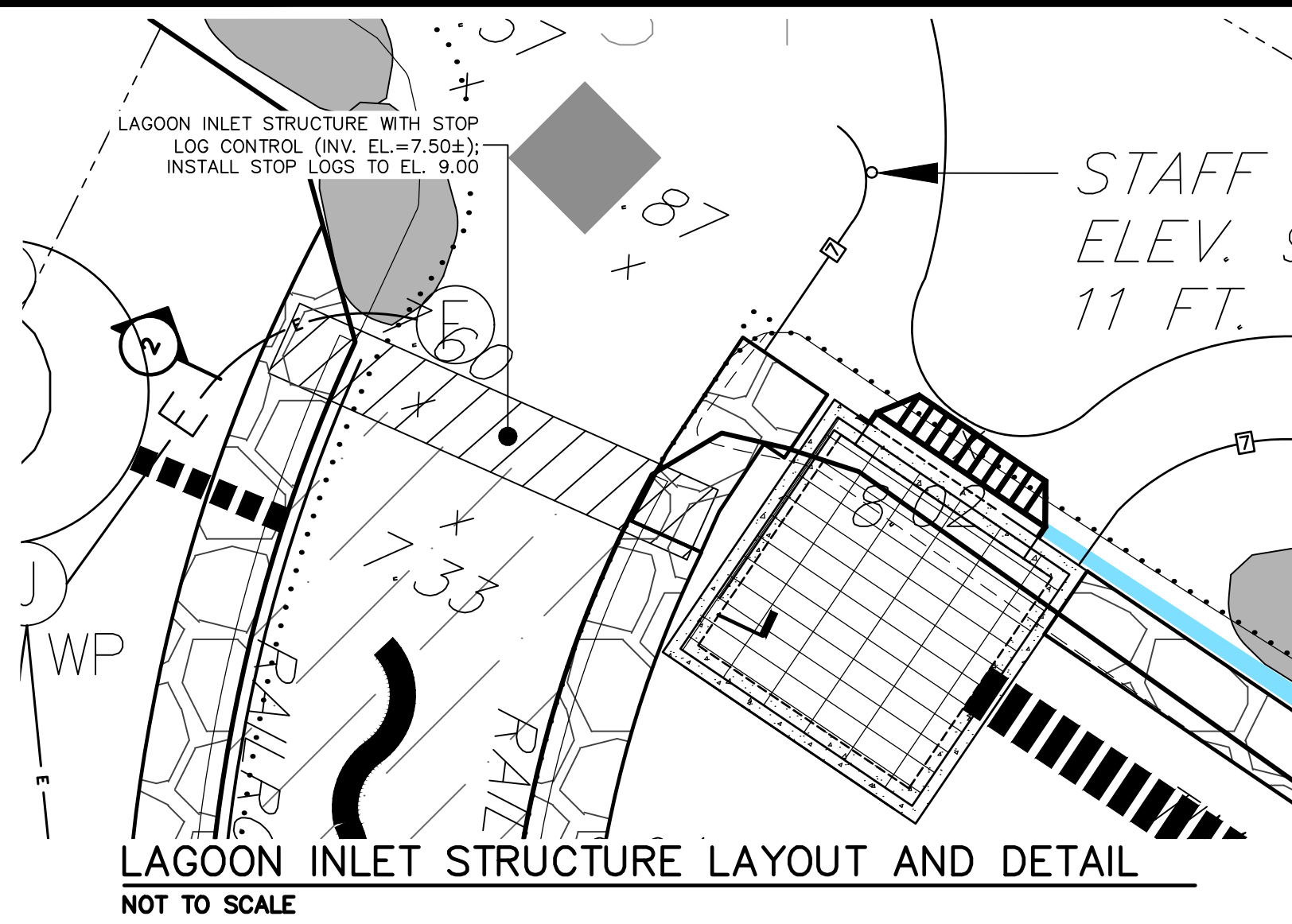
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**FLOW CONTROL STRUCTURE DETAILS**  
SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
MARSHFIELD MASSACHUSETTS

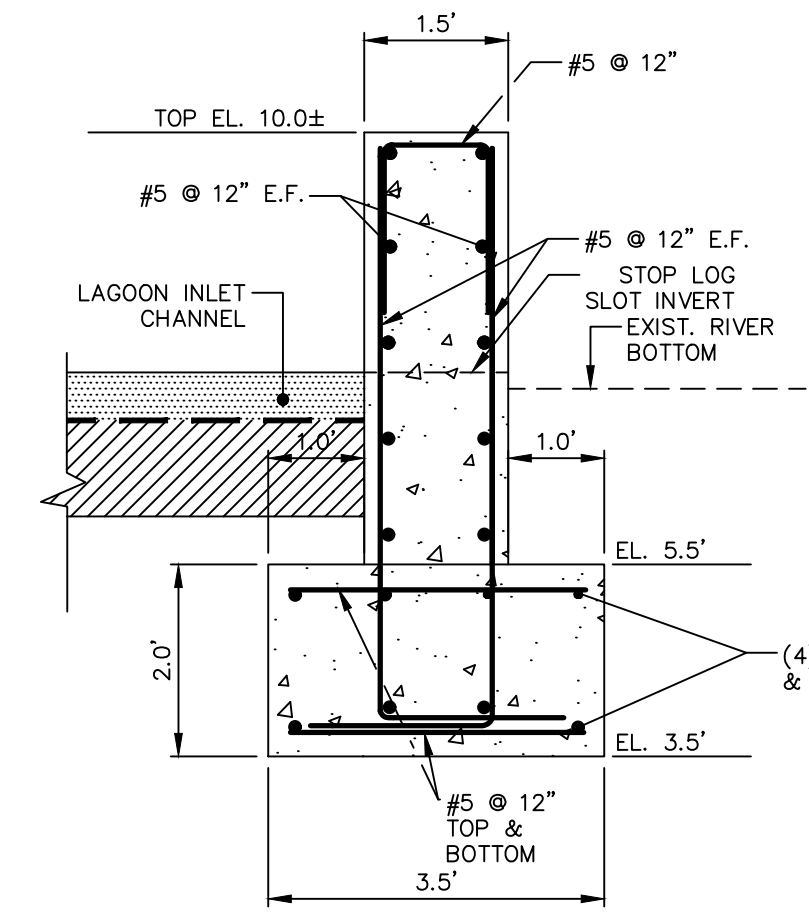
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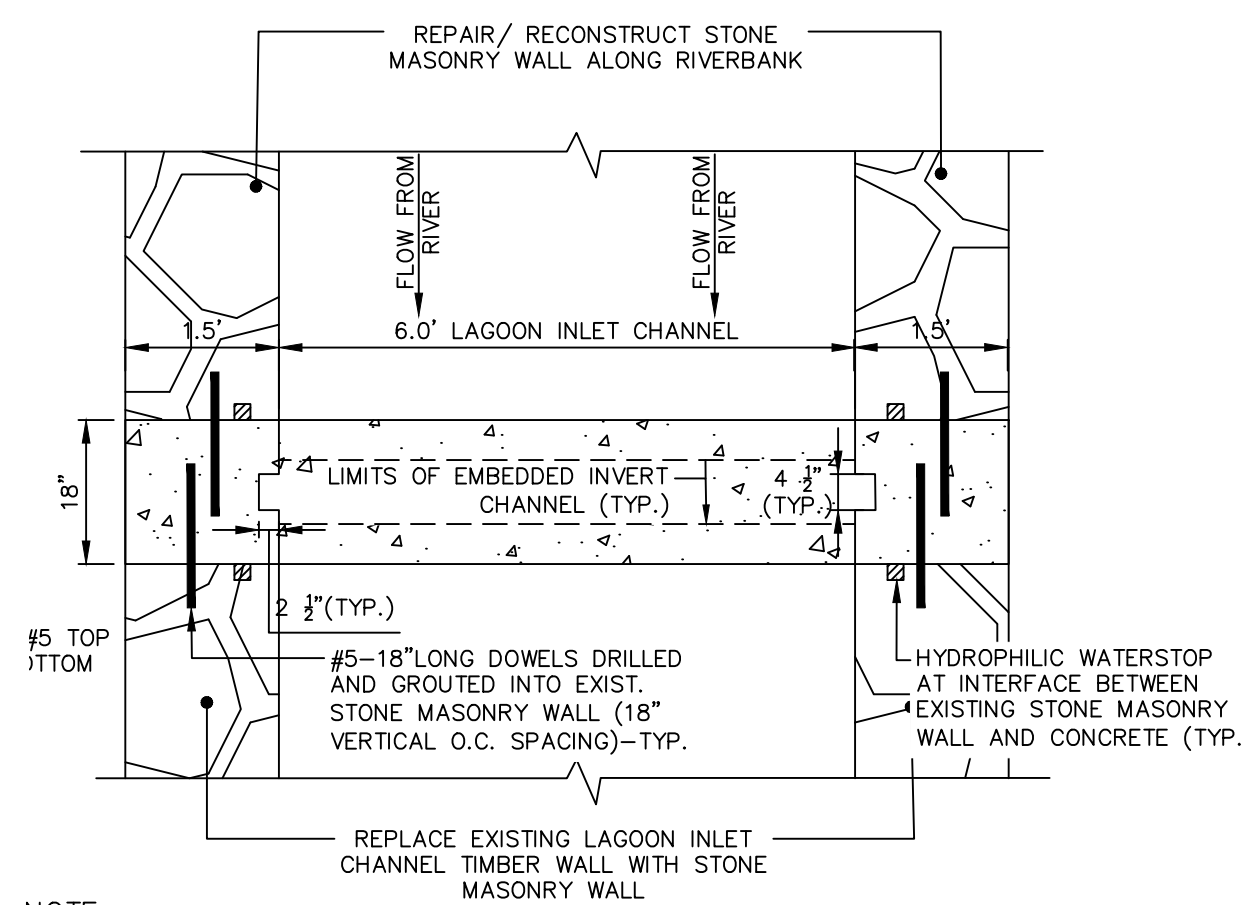


NOTE:  
1. REINFORCEMENT, DOWELS AND WATERSTOPS NOT SHOWN IN THIS VIEW FOR CLARITY PURPOSES.

**LAGOON INLET STRUCTURE ELEVATION**  
SCALE: 1/2" = 1'-0"

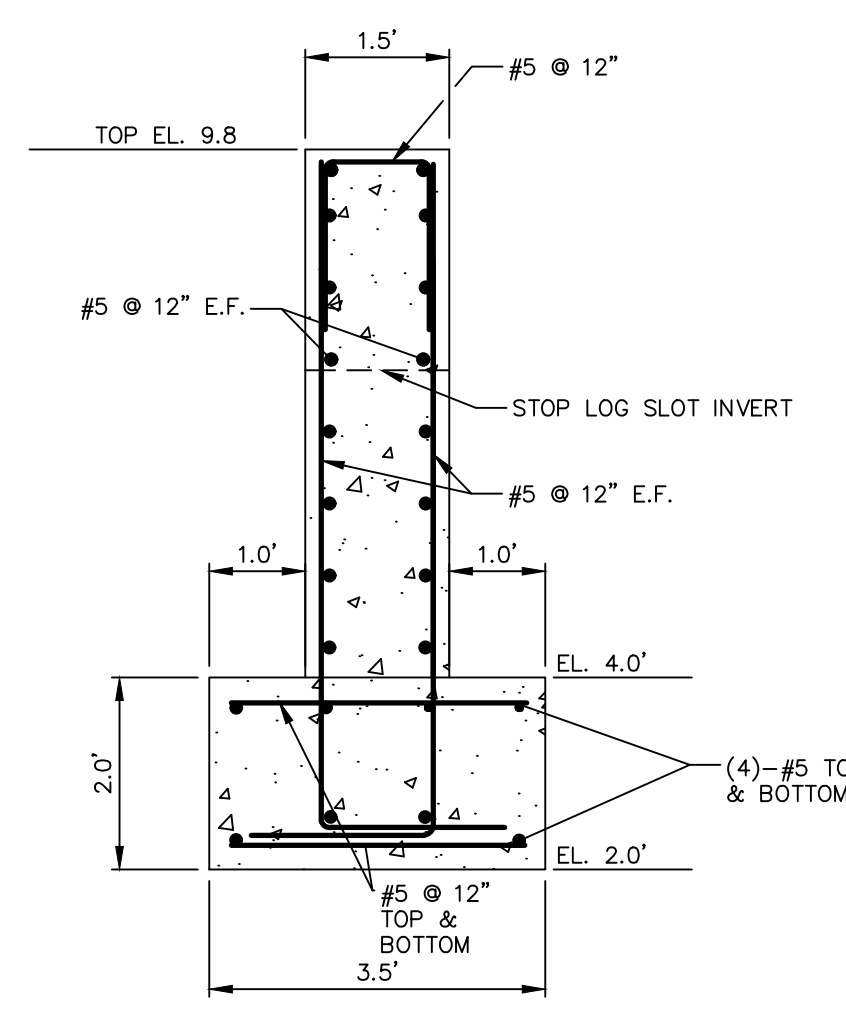
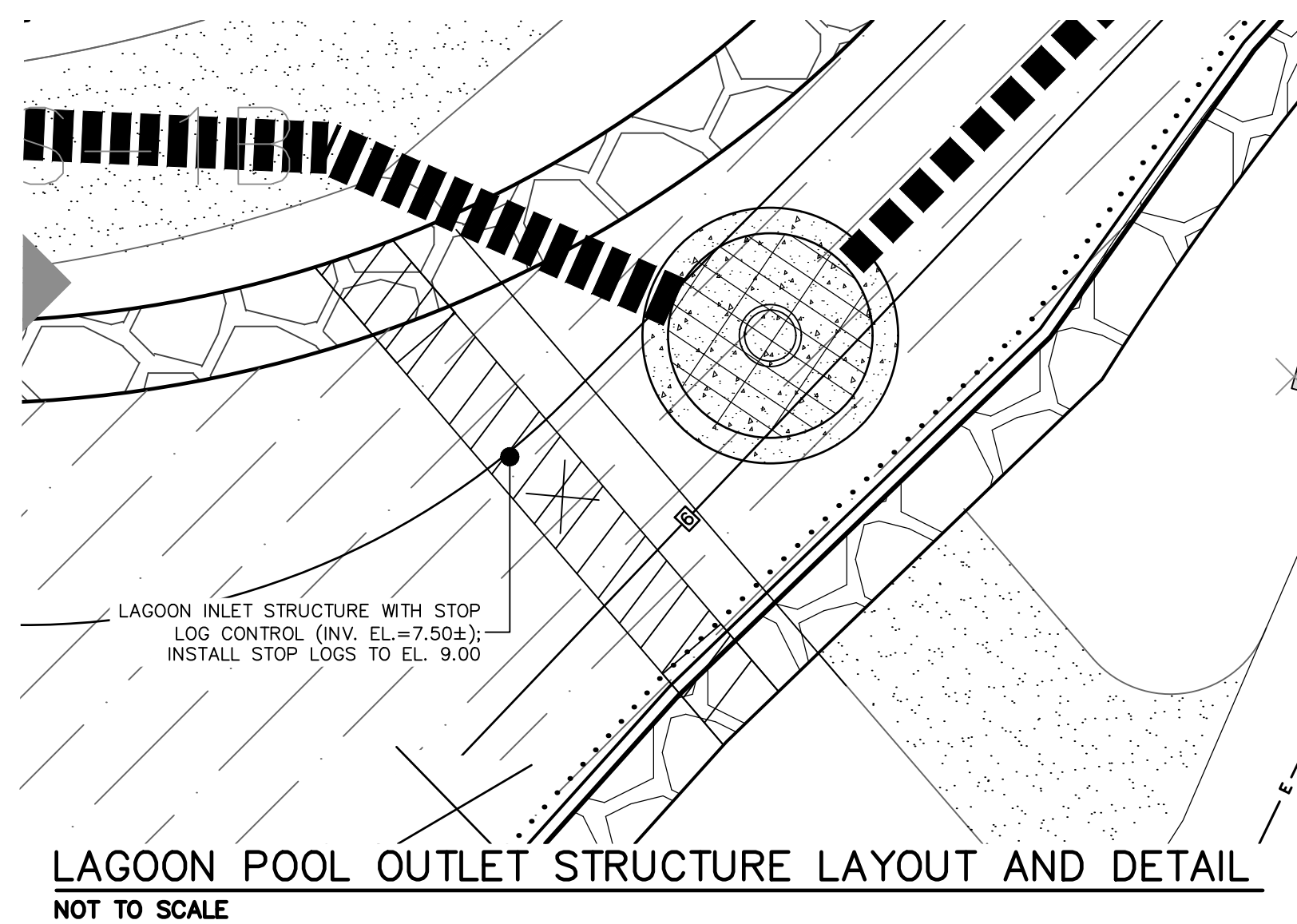


**TYPICAL LAGOON INLET STRUCTURE SECTION**  
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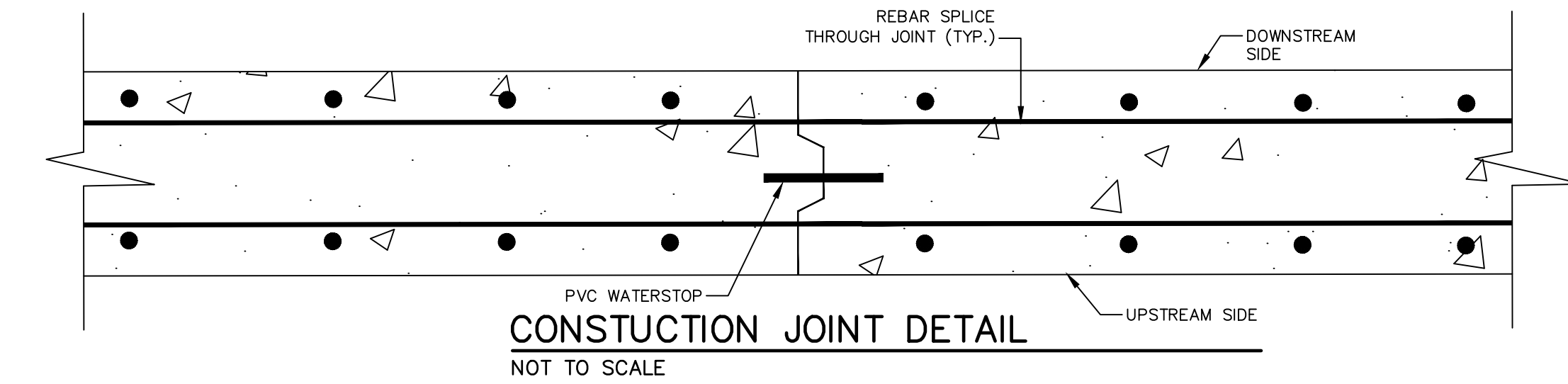


NOTE:  
1. REINFORCEMENT, DOWELS AND WATERSTOPS NOT SHOWN IN THIS VIEW FOR CLARITY PURPOSES.

**LAGOON INLET STRUCTURE PLAN VIEW**  
SCALE: 1/2" = 1'-0"



**TYPICAL LAGOON POOL OUTLET STRUCTURE SECTION**  
SCALE: 1/2" = 1'-0"

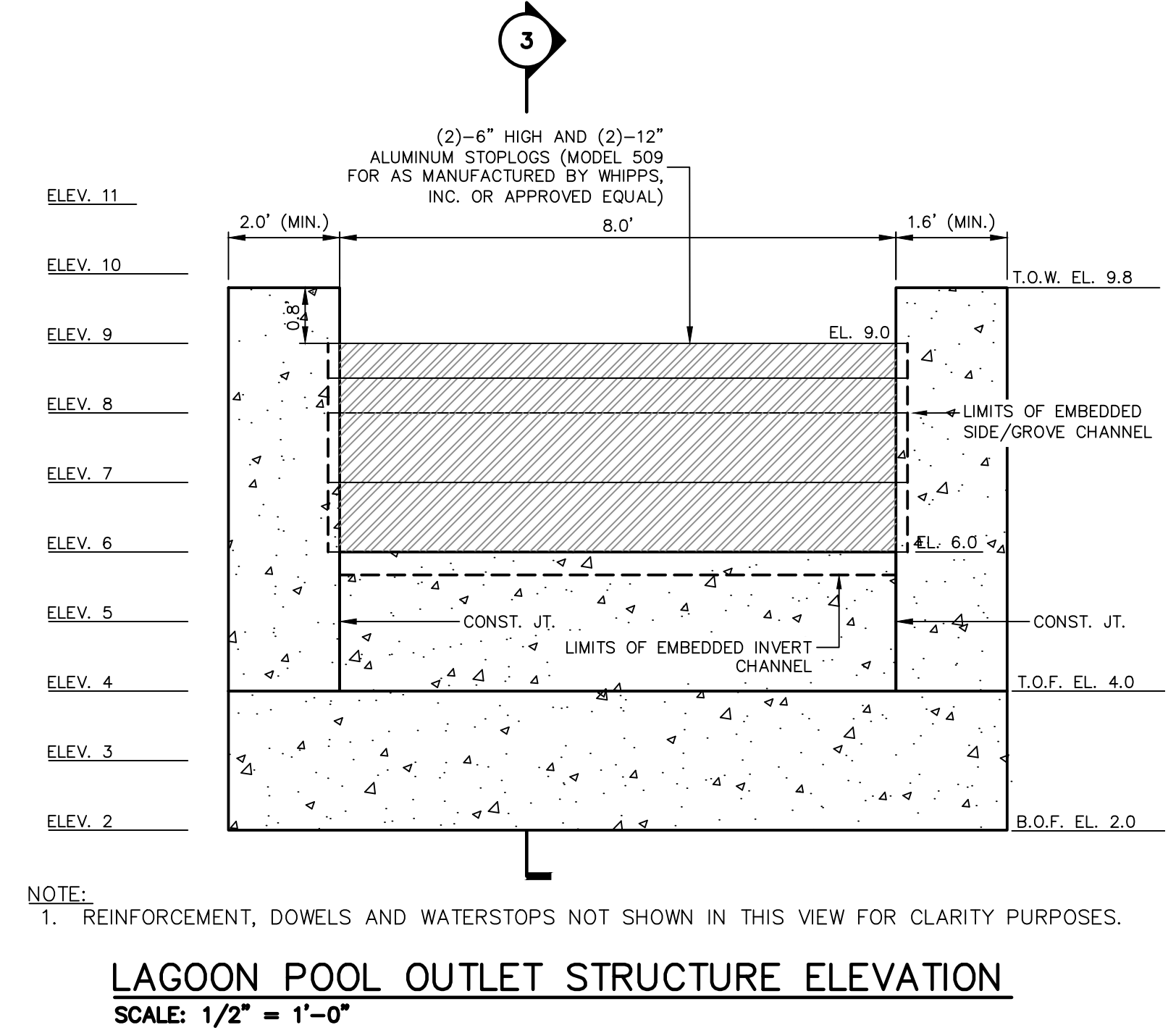


- GENERAL NOTES:**
- THE WORK SHOWN ON THESE DRAWINGS HAS BEEN DESIGNED IN ACCORDANCE WITH THE 780 CRM, MASSACHUSETTS STATE BUILDING CODE, 9TH EDITION.
  - ALL STRUCTURAL WORK SHOWN OR SPECIFIED ON THESE DRAWINGS IS SUBJECT TO REVIEW BY THE STRUCTURAL ENGINEER OF RECORD. ASPECTS OF THE WORK FOUND NOT IN CONFORMANCE WITH THE STRUCTURAL DOCUMENTS SHALL BE CORRECTED AS DIRECTED BY THE ENGINEER.
  - DIMENSIONS OF EXISTING STRUCTURES SHOWN ON THESE PLANS HAVE BEEN TAKEN FROM THE ORIGINAL DESIGN DRAWINGS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS IN THE FIELD.
  - THE TERM "BEYOND" WHEN USED IN SECTION VIEWS OF STRUCTURAL ELEMENTS INDICATES THAT SAID ELEMENT IS NOT IN THE LINE OF THE SECTION CUT; HOWEVER, IT PROVIDES A GREATER UNDERSTANDING OF THE STRUCTURE.
  - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS FOR REVIEW BEFORE PROCEEDING WITH WORK. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND ACCEPT FULL RESPONSIBILITY FOR DIMENSIONAL CORRECTNESS. SHOP DRAWINGS SHALL BEAR THE REVIEW AND APPROVAL STAMP OF THE CONTRACTOR, IN ACCORDANCE WITH THE SPECIFICATIONS.
  - STRUCTURAL PLANS SHALL NOT BE REPRODUCED IN WHOLE OR IN PART FOR USE AS SHOP DRAWINGS OR ERECTION PLANS. (THERE WILL BE NO RELAXATION OF THIS RESTRICTION FOR ANY TRADE).
  - A TESTING AGENCY SHALL BE HIRED BY THE CONTRACTOR TO PERFORM TESTS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

- COLD WEATHER CONSTRUCTION PROCEDURES:**
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTINUOUSLY PROTECT SOILS, CONCRETE, MASONRY AND OTHER BUILDING MATERIALS FROM DAMAGE DUE TO COLD TEMPERATURES, UNTIL THE STRUCTURES HAVE BEEN TURNED OVER TO THE OWNER. THIS SHALL INCLUDE TEMPORARY ENCLOSURES, INSULATED BLANKETS, AND TEMPORARY HEATING, AS REQUIRED.
  - IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE ANY DAMAGED OR DEFECTIVE WORK, IN A MANNER APPROVED BY THE ENGINEER.
  - CAST-IN-PLACE CONCRETE SHALL NOT BE CONSTRUCTED ON FROZEN GROUND. ALL FROZEN SOIL SHALL BE REMOVED AND REPLACED WITH COMPACTED CRUSHED STONE.
  - FROZEN MATERIALS OR MATERIALS CONTAINING ICE SHALL NOT BE USED.
  - ALL PROTECTIVE AND CORRECTIVE WORK SHALL BE DONE AT THE EXPENSE OF THE CONTRACTOR.

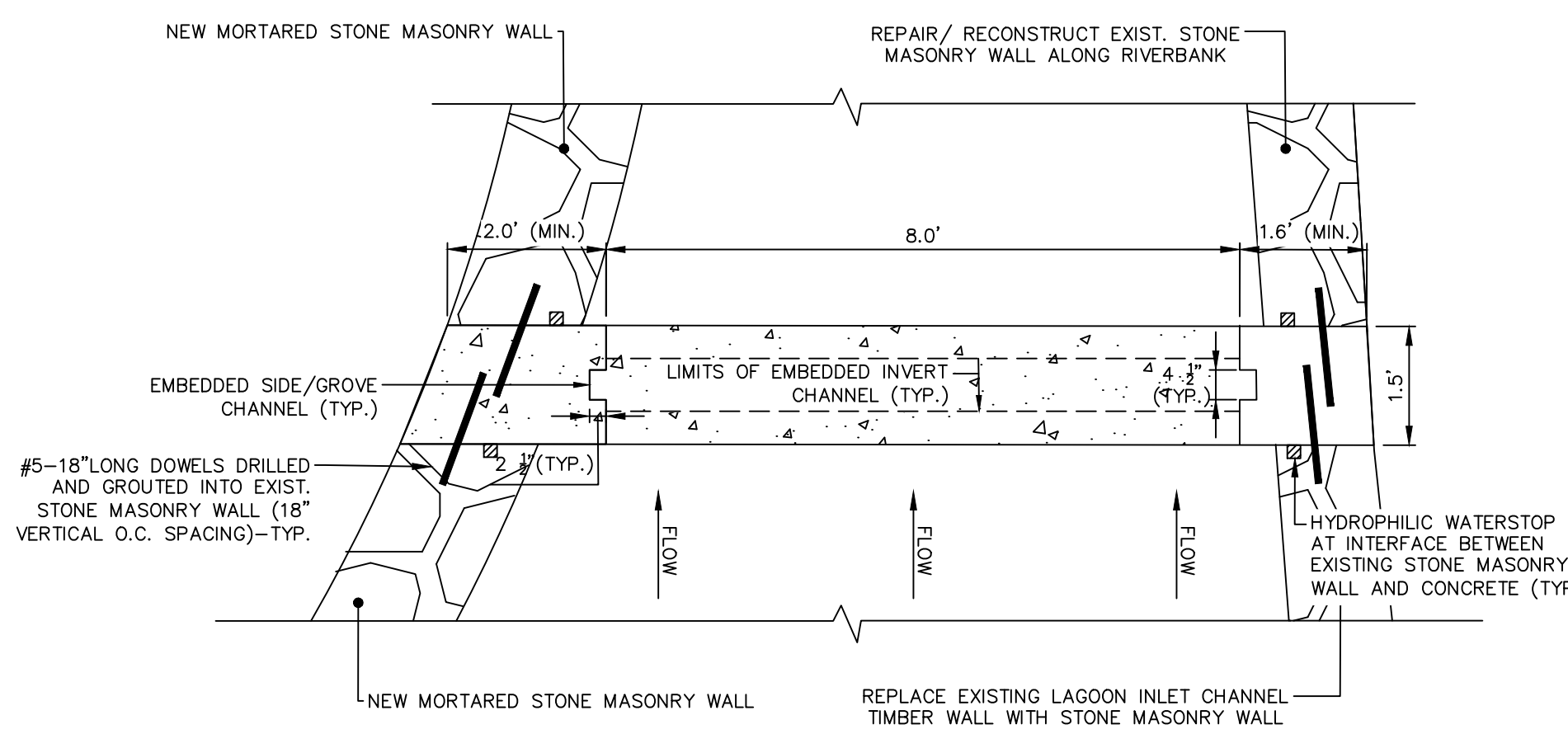
- CONCRETE NOTES:**
- ALL CONCRETE WORK SHALL CONFORM TO ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS".
  - ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE SPECIFICATIONS, AND SHALL CONFORM TO ASTM A615 GRADE 60, AND SHALL BE DETAILED IN ACCORDANCE WITH ACI 315 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".
  - REINFORCING STEEL SHALL HAVE A MINIMUM CONCRETE COVER AS FOLLOWS:  
- CONCRETE DEPOSITED AGAINST GROUND = 3 IN.  
- CONCRETE EXPOSED TO WEATHER OR IN CONTACT WITH GROUND = 2 IN.
  - ALL REINFORCING STEEL SHALL BE CONTINUOUS AND LAPPED A MINIMUM OF 48 BAR DIAMETERS AT ALL SPLICES, CORNERS, AND INTERSECTIONS UNLESS NOTED OTHERWISE.
  - ALL REINFORCEMENT SHALL BE SECURELY TIED IN ITS PROPOSED LOCATION PRIOR TO AND DURING PLACEMENT OF CONCRETE USING APPROVED CHAIRS, SPACERS AND TIE WIRE AS REQUIRED. NO BARS SHALL BE CUT OR OMITTED IN THE FIELD WITHOUT THE APPROVAL OF THE ENGINEER.
  - CAST-IN-PLACE MARINE CONCRETE SHALL BE NORMAL WEIGHT CONCRETE AND SHALL DEVELOP A COMPRESSIVE STRENGTH OF 5,000 PSI IN 28 DAYS. CONCRETE SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 3/8 INCH, A MINIMUM CEMENTITIOUS CONTENT OF 710 LBS/CU YD., AND A MAXIMUM SLUMP OF 4 INCHES.
  - ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 1 INCH CHAMFER UNLESS NOTED OTHERWISE.
  - ALL CONCRETE SHALL BE AIR-ENTRAINED.
  - CONSTRUCTION JOINTS SHALL BE DETAILED AND LOCATED ON SHOP DRAWINGS AND APPROVED BY THE ENGINEER. UNLESS SHOWN OTHERWISE, CONSTRUCTION JOINTS ARE TO BE KEPT AND PROVIDED FOR CONTINUITY OF REINFORCING STEEL. CONSTRUCTION JOINTS ARE TO BE LOCATED WHERE CONSTRUCTION OPERATIONS ARE SUSPENDED FOR 30 MINUTES OR MORE.
  - DOWELS: PROVIDE, PLACE, AND SPACE TO MATCH REINFORCING.

- DOWEL ANCHORS:**
- ALL ANCHOR DOWELS INDICATED ON THE STRUCTURAL PLANS SHALL BE OF THE SIZE INDICATED AND EPOXY COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
  - EPOXY DOWEL ANCHORS WHERE INDICATED ON THE PLANS SHALL HAVE THE FOLLOWING EMBEDMENTS UNLESS NOTED OTHERWISE OR SUPERSEDED BY THE MANUFACTURERS MINIMUM EMBEDMENT REQUIREMENTS:  
1/2" DIA. = 3"      3/4" DIA. = 3"      1" DIA. = 4"  
3/8" DIA. = 5"      1/2" DIA. = 7"



NOTE:  
1. REINFORCEMENT, DOWELS AND WATERSTOPS NOT SHOWN IN THIS VIEW FOR CLARITY PURPOSES.

**LAGOON POOL OUTLET STRUCTURE ELEVATION**  
SCALE: 1/2" = 1'-0"



**LAGOON POOL OUTLET STRUCTURE PLAN VIEW**  
SCALE: 1/2" = 1'-0"

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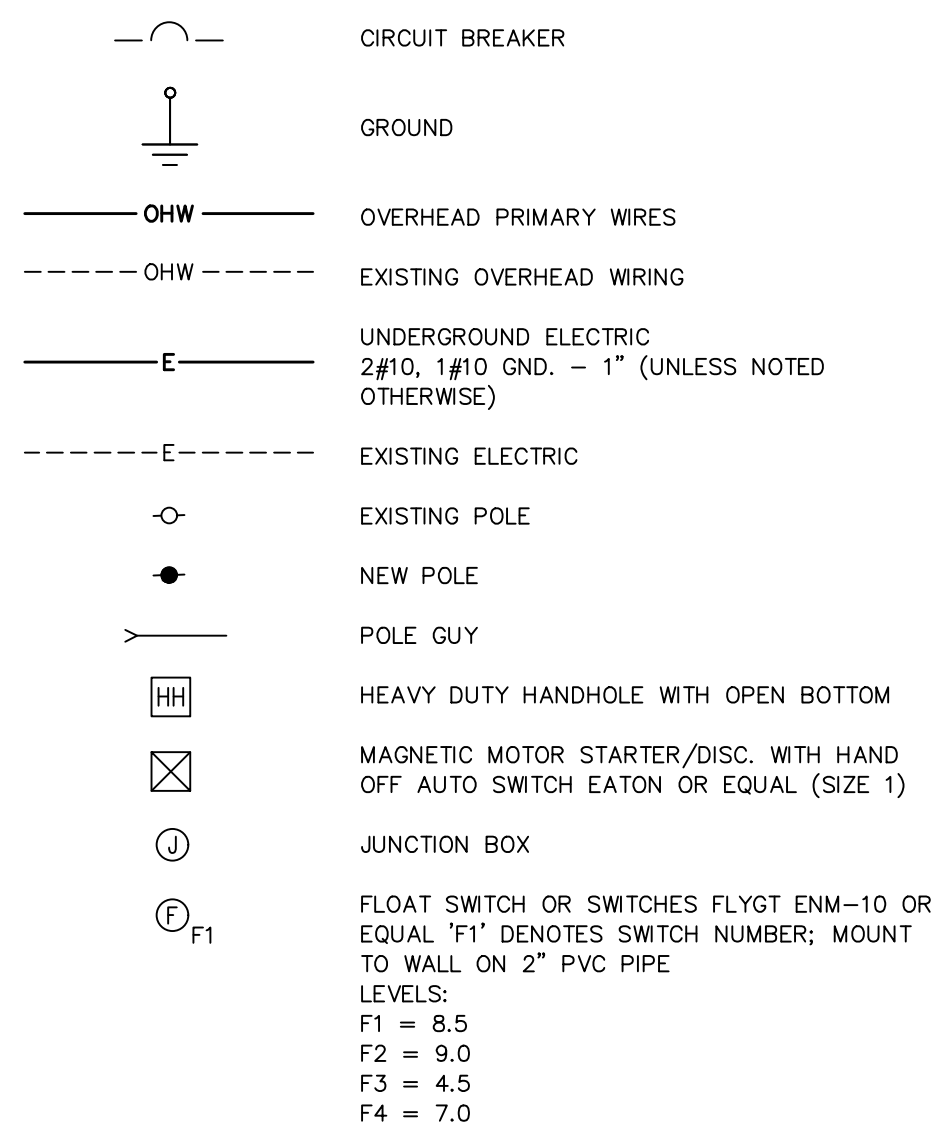
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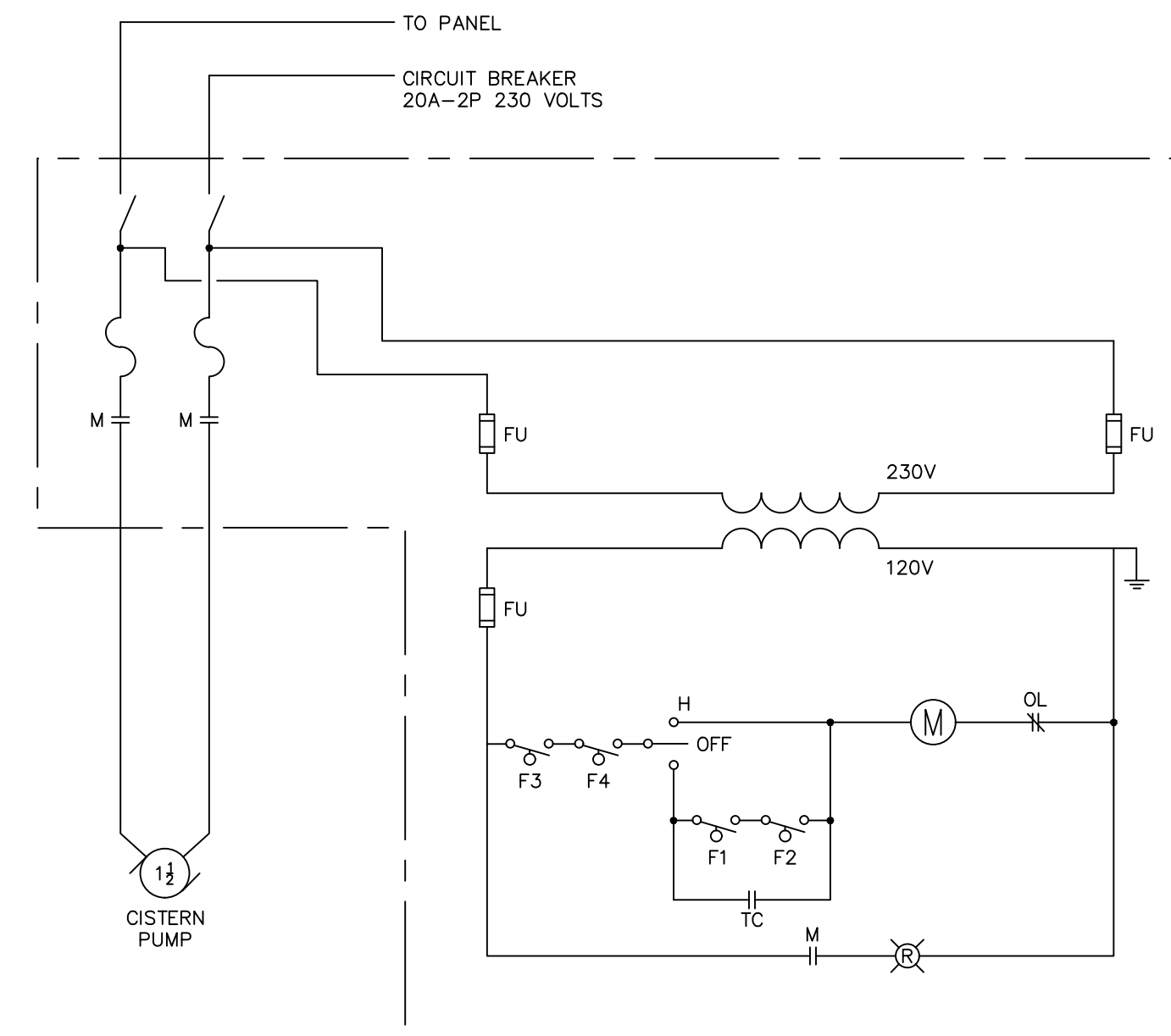


**ABBREVIATIONS:**

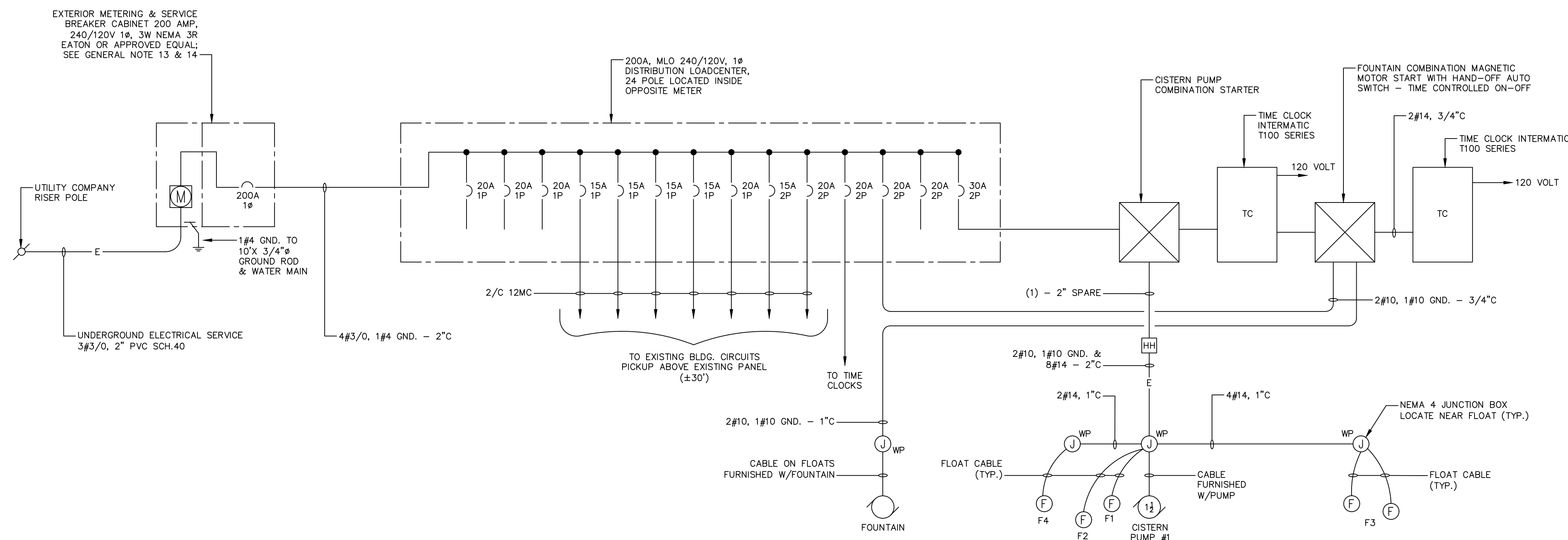
- Ø PHASE
- A AMPERE
- BLDG BUILDING
- C CONDUIT
- D,R&R DISCONNECT, REMOVE AND DISPOSE OF
- DWG DRAWING
- FCO FUSED CUTOFF
- GND GROUND
- KW KILOWATT
- KV KILO VOLT
- LBE LOADBREAK
- MCB MAIN CIRCUIT BREAKER
- PVC POLYVINYL CHLORIDE, SCHEDULE 40
- R&D REMOVE AND DISPOSE
- R&R REMOVE AND REPLACE
- REL RELOCATE
- RS RIGID STEEL
- V VOLTS
- WP WEATHERPROOF (NEMA 4X)
- XFMR TRANSFORMER

**GENERAL NOTES**

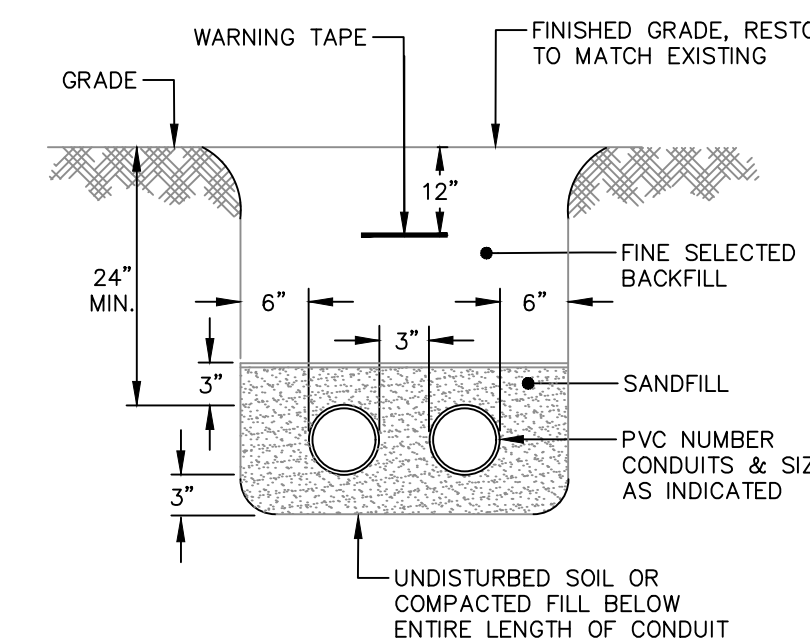
1. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL AND MASSACHUSETTS ELECTRICAL CODES AND OTHER STATE OF MASSACHUSETTS REQUIREMENTS AND THE NATIONAL ELECTRICAL SAFETY CODE C2. PRIMARY WORK SHALL BE PER EVERSOURCE REQUIREMENTS AND SUBJECT TO THEIR APPROVAL.
2. INSTALL A COMPLETE GROUND SYSTEM IN ACCORDANCE WITH ALL CODES, AND AS INDICATED
3. ITEMS INDICATED TO BE "REMOVED" SHALL BE REMOVED COMPLETELY AND PROPERLY DISPOSED OF.
4. DEMOLITION OF EXISTING ELECTRICAL SYSTEM SHALL BE PERFORMED IN A PHASED SYSTEM OF DECOMMISSIONING. THE ENTIRE NEW DISTRIBUTION SYSTEM SHALL BE CONSTRUCTIVELY TESTED AND OPERATIONAL BEFORE CUT OVER OF THE NEW SYSTEM TO EXISTING EQUIPMENT THAT REMAINS.
5. WHERE WIRING IS TO BE REMOVED, RELOCATED OR RECONNECTED, THE CONTRACTOR SHALL TAKE PRECAUTIONS AND ASSUME THAT THE CIRCUIT MAY BE ACTIVE. CONTRACTOR SHALL TEST, VERIFY AND SECURE ALL CIRCUITS BEFORE REMOVAL. UNKNOWN WIRING SHALL BE IDENTIFIED. ANY WIRING TO REMAIN SHALL BE VERIFIED BY THE CONTRACTOR, TAGGED AND IDENTIFIED AS REQUIRED.
6. EXISTING ELECTRICAL EQUIPMENT AND WIRING TO REMAIN SHOWN SHALL BE PROTECTED FROM DAMAGE AS REQUIRED DURING THE CONSTRUCTION PERIOD AND LEFT IN GOOD WORKING ORDER AT COMPLETION. ANY EQUIPMENT DAMAGED SHALL BE REPLACED BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
7. OWNER AND CODE REQUIRED SYSTEMS THAT ARE REQUIRED TO REMAIN ACTIVE DURING CONSTRUCTION SHALL BE TEMPORARILY WIRED AS REQUIRED TO REMAIN ACTIVE THROUGHOUT THE CONSTRUCTION PERIOD UNTIL NEW SYSTEMS ARE INSTALLED, TESTED AND ACCEPTED.
8. IN CONDITIONS WHERE IN THE OPINION OF THE CONTRACTOR IT IS NOT CLEAR WHETHER EXISTING ELECTRICAL EQUIPMENT IS TO BE REMOVED OR REMAIN, IT SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR REVIEW AND FINAL DECISION.
9. SITE UTILITY PLANS PLANS HAS BEEN DERIVED FROM THE BEST AVAILABLE EXISTING DRAWINGS AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ENGAGE AND CONTRACT WITH A SITE UTILITY LOCATION CONTRACTOR TO FIELD LOCATE AND MARK ALL UTILITIES ALONG DITEBANK ROUTING AND EQUIPMENT INSTALLATION LOCATIONS. ANY EQUIPMENT THAT IS NOT IDENTIFIED AND CONFLICTS WITH CONSTRUCTION SHALL NOT BE DISCONNECTED AND SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER / ENGINEER FOR DISPOSITION.
10. USE LONG RADIUS SWEEPS FOR ALL BENDS.
11. CONDUITS SHALL BE SWABBED BEFORE CABLES ARE PULLED IN.
12. CUT-OVERS AND ANY INTERRUPTION TO ELECTRICAL SERVICE ARE TO BE SCHEDULED AND PERFORMED AT A TIME THAT IS ACCEPTABLE TO CITY AND OWNER.
13. CONTRACTOR SHALL COORDINATE NEW SERVICE REQUIREMENTS WITH UTILITY COMPANY.
14. CONTRACTOR SHALL APPLY FOR SERVICE UPGRADE WITH UTILITY.
15. CONTRACTOR TO SET FLOAT SWITCH LEVELS ON START UP.
16. CONTRACTOR SHALL REMOVE EXISTING ELECTRICAL SERVICE METER AND LOAD CENTER AND PROPER DISPOSE OF..



**CISTERN PUMP STARTER WIRING DIAGRAM**  
NOT TO SCALE



**NEW ELECTRICAL SERVICE/POWER DISTRIBUTION ONE LINE DIAGRAM**  
NOT TO SCALE



NOTES:  
ALL DIMENSIONS ARE MINIMUM REQUIREMENTS.

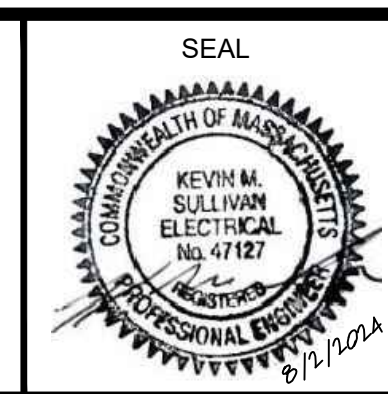
**TYPICAL ELECTRICAL CONDUIT IN TRENCH**  
NOT TO SCALE

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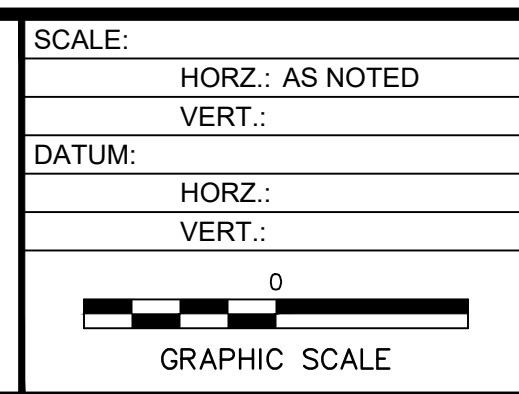
MS VIEW: LAYER STATE: PLOTTER: NONE CTB FILE: FO.STB

No.	DATE	ISSUED FOR BIDDING	DESCRIPTION	DRN/SDA	NSW	DESIGNER	REVIEWER
0.	8/2/2024	ISSUED FOR BIDDING					

SEAL



SEAL



**FUSS & O'NEILL**  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
401.861.5070  
www.fandco.com

TOWN OF MARSHFIELD  
DIVISION OF ECOLOGICAL RESTORATION  
**ELECTRICAL DETAILS**  
SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
MARSHFIELD MASSACHUSETTS

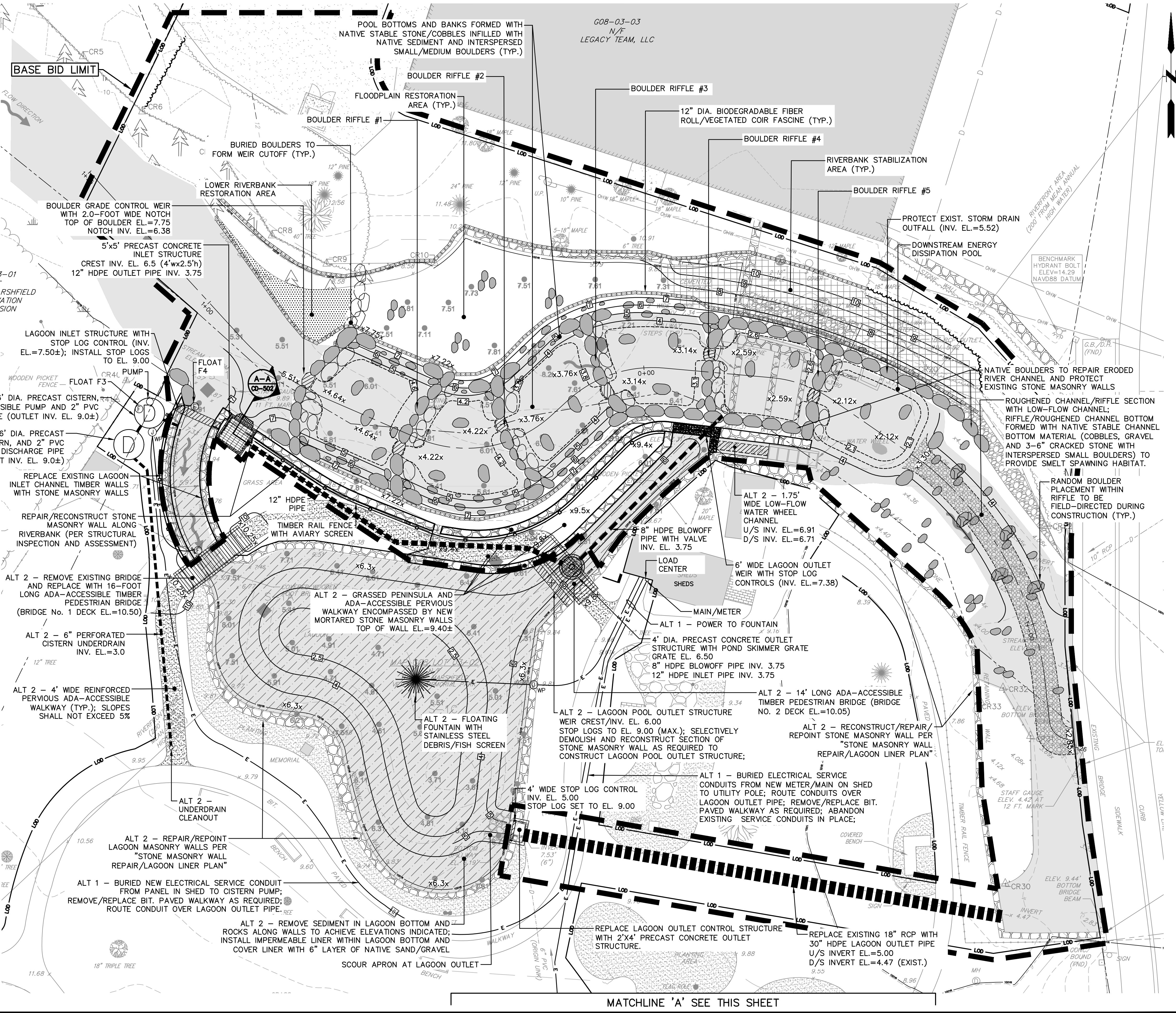
PROJ. No.: 20180319.A23  
DATE: AUGUST 2, 2024  
**CD-508**  
20 OF 21



**BASE BID NOTES:**

1. THE CONTRACT BASE BID INCLUDES ALL ITEMS WITHIN THE BASE BID LIMIT LINE.
2. WORK REQUIRED TO FURNISH AND INSTALL CONDUITS FOR ELECTRICAL WORK FROM PANEL IN SHED TO UTILITY POLE AND ELECTRICAL SERVICE FROM PANEL IN SHED TO CISTERN PUMP WILL BE INCLUDED UNDER THE BASE BID. ALL OTHER ELECTRIC WORK FOR SHALL BE COVERED UNDER ALTERNATE BID ITEMS.

**BASE BID LIMIT**



MATCHLINE 'A' SEE THIS SHEET

MATCHLINE 'A' SEE THIS SHEET

File Path: J:\DWG\20180319A23\Civil\Plan\20180319A23\_STP01.dwg Layout: GC-101 Plotted: Fri, August 02, 2024 - 12:02 PM User: derek.newhall  
 PLOTTER: AUTOCAD PDF (GENERAL DOCUMENTATION) PC3 CTB File: FO.STB  
 LAYER STATE:

No.	DATE	ISSUED FOR BIDDING	DESCRIPTION	DRN/SDA	NSW
0.	8/2/2024	ISSUED FOR BIDDING			

SEAL

SEAL

SCALE:

HORIZ.: 1"= 10'
VERT.: N/A

DATUM:

HORIZ.: MA NAD83
VERT.: NAVD88

GRAPHIC SCALE

**FUSS & O'NEILL**

317 IRON HORSE WAY, SUITE 204  
 PROVIDENCE, RI 02908  
 401.861.3070  
 www.fando.com

TOWN OF MARSHFIELD  
 DIVISION OF ECOLOGICAL RESTORATION

**PROJECT PAYMENT LIMIT**

SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL  
 PARK IMPROVEMENTS PROJECT - CONTRACT NO. 2025-02  
 MARSHFIELD MASSACHUSETTS

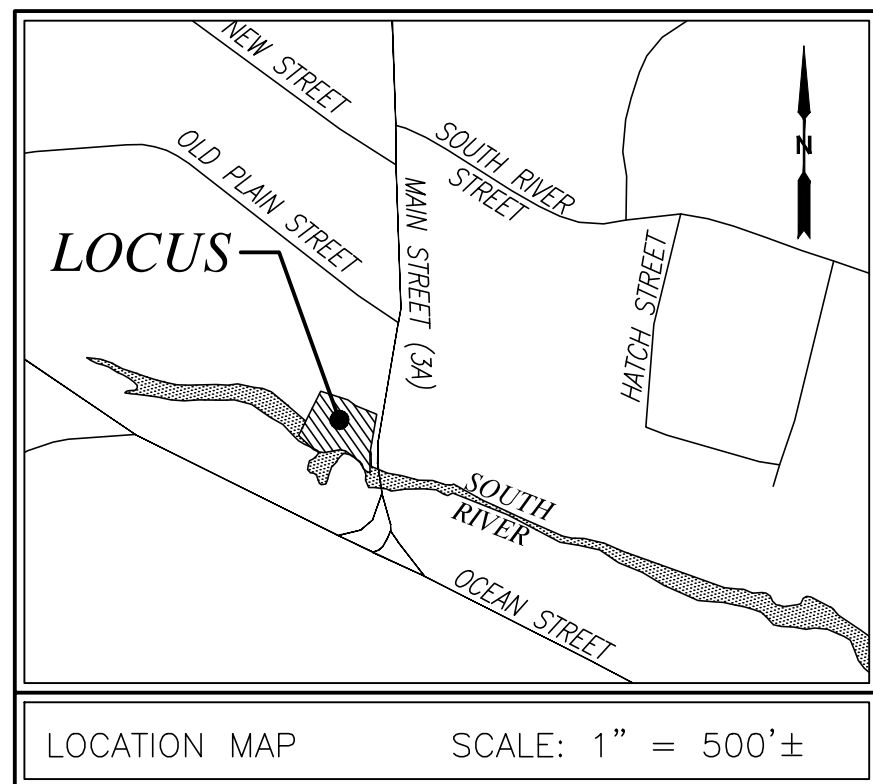
PROJ. No.: 20180319.A23  
 DATE: AUGUST 2, 2024

**GC-101**

21 OF 21



**EXHIBIT A**  
**TOWN OF MARSHFIELD/LEGACY TEAM LLC EASEMENT**



**RECORD OWNER:**  
 ASSESSORS MAP G08 BLOCK 03 LOT 3  
 25 MAIN STREET  
 LEGACY TEAM, LLC  
 25 MAIN STREET  
 MARSHFIELD, MA 02050  
 DEED BOOK 47697 PAGE 320  
 PLAN BOOK 5 PAGE 781

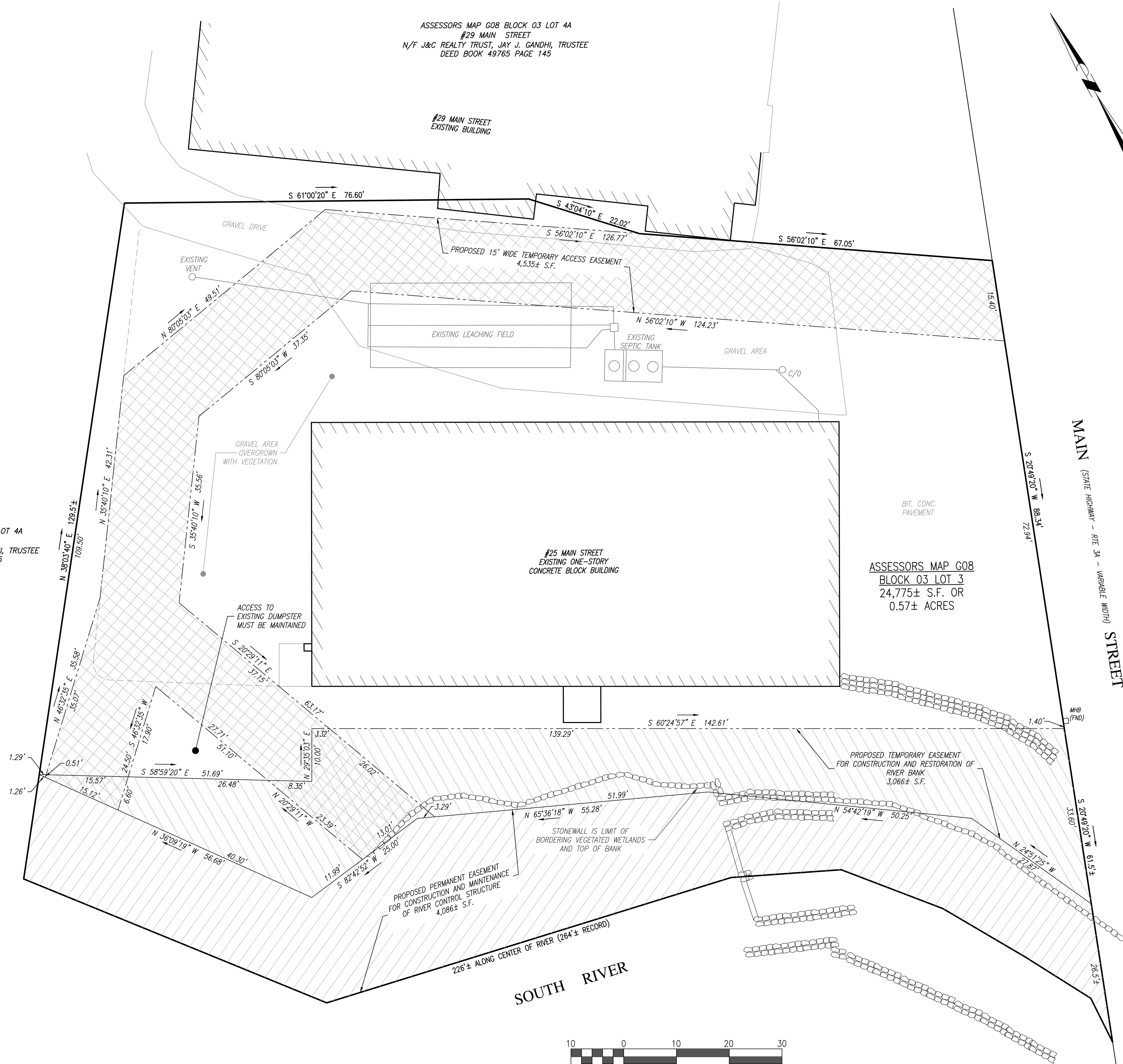
- NOTES:**
1. PLAN REFERENCES:  
 1.1. PLAN ENTITLED "PLAN OF LAND ON MAIN STREET, MARSHFIELD, MASS." DRAWN BY LEWIS W. PERKINS, ENGINEER, DATED APRIL 28, 1938, RECORDED IN PLAN BOOK 5, PAGE 781.
  2. SUBJECT SITE IS IN THE "B-2" DISTRICT AS DEPICTED ON THE TOWN OF MARSHFIELD ZONING MAP.
  3. EXISTING SEPTIC SYSTEM COMPONENTS SHOWN HEREON TAKEN FROM RECORD AS-BUILT PLAN ON FILE WITH MERRILL ENGINEERS AND LAND SURVEYORS.

ASSESSORS MAP G08 BLOCK 03 LOT 4A  
 #29 MAIN STREET  
 N/F J&C REALTY TRUST, JAY J. GANDHI, TRUSTEE  
 DEED BOOK 49765 PAGE 145

ZONING REQUIREMENTS BUSINESS HIGHWAY DISTRICT "B-2"	
AREA	20,000 SF
WIDTH & FRONTAGE	150 FEET
BUILDING HEIGHT	35 FEET
MINIMUM YARDS:	
FRONT	40 FEET
SIDE	15 FEET
REAR	40 FEET

**FLOOD NOTE:**  
 BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN ZONE X AND ZONE AE (EL. 9 FEET) OF THE FLOOD INSURANCE RATE MAP, AS SHOWN ON COMMUNITY MAPS No. 25023C0227L AND 25023C0226L, WHICH BEAR AN EFFECTIVE DATE OF JULY 6, 2021, AND IS PARTIALLY LOCATED IN A SPECIAL FLOOD HAZARD AREA.

ASSESSORS MAP G08 BLOCK 03 LOT 4A  
 #29 MAIN STREET  
 N/F J&C REALTY TRUST, JAY J. GANDHI, TRUSTEE  
 DEED BOOK 49765 PAGE 145



FOR REGISTRY USE ONLY

**merrillinc.com**

REVISIONS:


DRAWN BY: JDG  
 DESIGNED BY:  
 CHECKED BY: BKL



**Merrill**  
 Engineers and Land Surveyors

427 Columbia Road  
 Hanover, MA 02339  
 781-826-9200

40 Court Street, Ste 24  
 Plymouth, MA 02360  
 508-746-6060

Merrill Division:  
 26 Union Street  
 Plymouth, MA 02360  
 508-746-6060

687 Main Street  
 Norwell, MA 02061  
 781-659-8187

448 N. Falmouth Highway Unit A  
 North Falmouth, MA 02356  
 508-563-2183

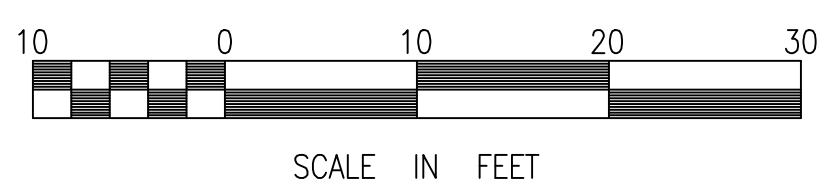
PROJECT #: 19-001

PROJECT:  
**25 MAIN STREET**  
 MARSHFIELD, MASSACHUSETTS

CLIENT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

*Bradley K. Lemont*  
 BRADLEY K. LEMONT, P.L.S.      DATE: 3/23/23



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**EXHIBIT B**  
**PERMIT AUTHORIZATIONS AND CONDITIONS**



**Permit**

U.S. Army Corps of Engineers Preconstruction Permit

Chapter 91 - Waterways License

Massachusetts Environmental Policy Act Expanded Environmental Notification

Notice of Intent - Restoration Order of Conditions

Water Quality Certification for Dredging & Fill/Excavation

Zoning Board of Appeals Zoning and Flood Plain Permit

Beneficial Use Determination

Coastal Zone Management Federal Consistency Review

Division of Marine Fisheries Review

Stormwater Pollution Prevention Plan



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

December 18, 2023

Regulatory Division  
File Number: NAE-2022-02887

Michael Maresco  
Town of Marshfield  
870 Moraine Street  
Marshfield, Massachusetts 02050  
Sent by email: [mmaresco@townofmarshfield.org](mailto:mmaresco@townofmarshfield.org)

Dear Mr. Maresco:

The U.S. Army Corps of Engineers (USACE) has reviewed your application for work below the mean high water mark and fill below the ordinary high water mark/high tide line/within wetlands in waters of the United States. The project includes three elements: river restoration, lagoon water conservation improvement, and park access/safety/maintenance improvements. The existing dam and fish ladder will be removed and the river channel will be restored into riffle and pool complexes. Stop log control structures will be constructed at the existing lagoon inlet and outlet channels to control lagoon water levels during high river flow. The lagoon will be dredged and clay liner installed. Masonry walls along the lagoon will be repaired, riverbank will be restored with native vegetation. The dam removal will result in 2,419 sq. ft. of permanent fill impacts, construction riffle and pool complexes will result in 9,130 sq. ft. of permanent fill impacts, wetland restoration will result in the creation of 772 sq. ft. of emergent wetlands, and 753 linear feet of bank stabilization. This project is located in the South River and Lagoon Pond at 2200 Ocean Street and 25 Main Street, Marshfield, Massachusetts. The work is shown on the enclosed plans titled "PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARL IMPROVEMENTS PROJECT," on thirty sheets, and dated "JANUARY 12, 2023."

Based on the information that you have provided, we verify that the activity is authorized under General Permit # 10 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 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. *The work authorized herein shall not be conducted during the time of year (TOY) restriction of 1 February to 15 November in order to minimize adverse impacts to alewife, blueback herring, sea lamprey, American shad, rainbow smelt, and American eel.*

2. *In accordance with General Condition 25 of the General Permits for the Commonwealth of Massachusetts (MA GP), appropriate soil erosion and sediment controls (hereinafter referred to as "controls") must installed prior to earth disturbance and maintained in effective operating condition during construction. Biodegradable wildlife friendly erosion controls should be used whenever practicable to minimize effects to water quality. Additional information on general condition 25 can be found on page 47 of the MA GP.*

3. *Operations and maintenance of the completed project shall be performed in accordance with the enclosed Massachusetts Department of Marine Fisheries Operations and Maintenance Plan, titled "FISHWAY OPERATIONS AND MAINTENANCE PLAN PRELIMINARY," on a total of three sheets, and undated.*

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 Christine Jacek of my staff at (978) 318-8026 or [Christine.M.Jacek@usace.army.mil](mailto:Christine.M.Jacek@usace.army.mil) if you have any questions.

Sincerely,

*Paul Maniccia*

Paul M. Maniccia  
Chief, Massachusetts Branch  
Regulatory Division

Enclosures

cc:

Leslie Fields, Woods Hole Group, Inc., [lfields@woodsholegroup.com](mailto:lfields@woodsholegroup.com)  
Ed Reiner, U.S. EPA, Region 1, Boston, MA, [reiner.ed@epa.gov](mailto:reiner.ed@epa.gov)  
Rachel Croy, U.S. EPA, Region 1, Boston, MA, [croy.rachel@epa.gov](mailto:croy.rachel@epa.gov)  
Kaitlyn Shaw, NMFS, Gloucester, MA; [kaitlyn.shaw@noaa.gov](mailto:kaitlyn.shaw@noaa.gov)  
Sean Duffey, Coastal Zone Management, Boston, MA, [sean.duffey@mass.gov](mailto:sean.duffey@mass.gov)  
Patrice Bordonaro, Coastal Zone Management, Boston, MA,  
[patrice.bordonaro@mass.gov](mailto:patrice.bordonaro@mass.gov)  
Daniel Gilmore, Chief, DEP SERO, Wetlands and Waterways, Lakeville, MA;  
[daniel.gilmore@mass.gov](mailto:daniel.gilmore@mass.gov)  
MassDEP-WRP, Boston, MA; [dep.waterways@mass.gov](mailto:dep.waterways@mass.gov)  
David Robinson, MA Board of Underwater Archaeological Resources (BUAR);  
[david.s.robinson@mass.gov](mailto:david.s.robinson@mass.gov)  
Town of Marshfield Conservation Commission, [lanoja@townofmarshfield.org](mailto:lanoja@townofmarshfield.org)



# The Commonwealth of Massachusetts

## Division of Marine Fisheries

251 Causeway Street, Suite 400, Boston, MA 02114  
p: (617) 626-1520 | f: (617) 626-1509  
[www.mass.gov/marinefisheries](http://www.mass.gov/marinefisheries)



CHARLES D. BAKER  
Governor

KARYN E. POLITO  
Lt. Governor

KATHLEEN A. THEOHARIDES  
Secretary

RONALD S. AMIDON  
Commissioner

DANIEL J. MCKIERNAN  
Director

### FISHWAY OPERATIONS AND MAINTENANCE PLAN

#### PRELIMINARY

*A preliminary draft has been prepared by DMF for project review to assist the design process for the Town of Marshfield's South River Fish Passage and Park Lagoon Improvement Plan*

**Location:** Veterans Memorial Park, South River, Marshfield, MA

**Latitude / Longitude:** 41.8683° N; -71.1297° W

**Dam and Fishway Owner:** Town of Marshfield

**Address:**

**Contact:**

**Fishway Access Property Owner:** Situate Chair Company *(Only include if access is needed)*

**Address:**

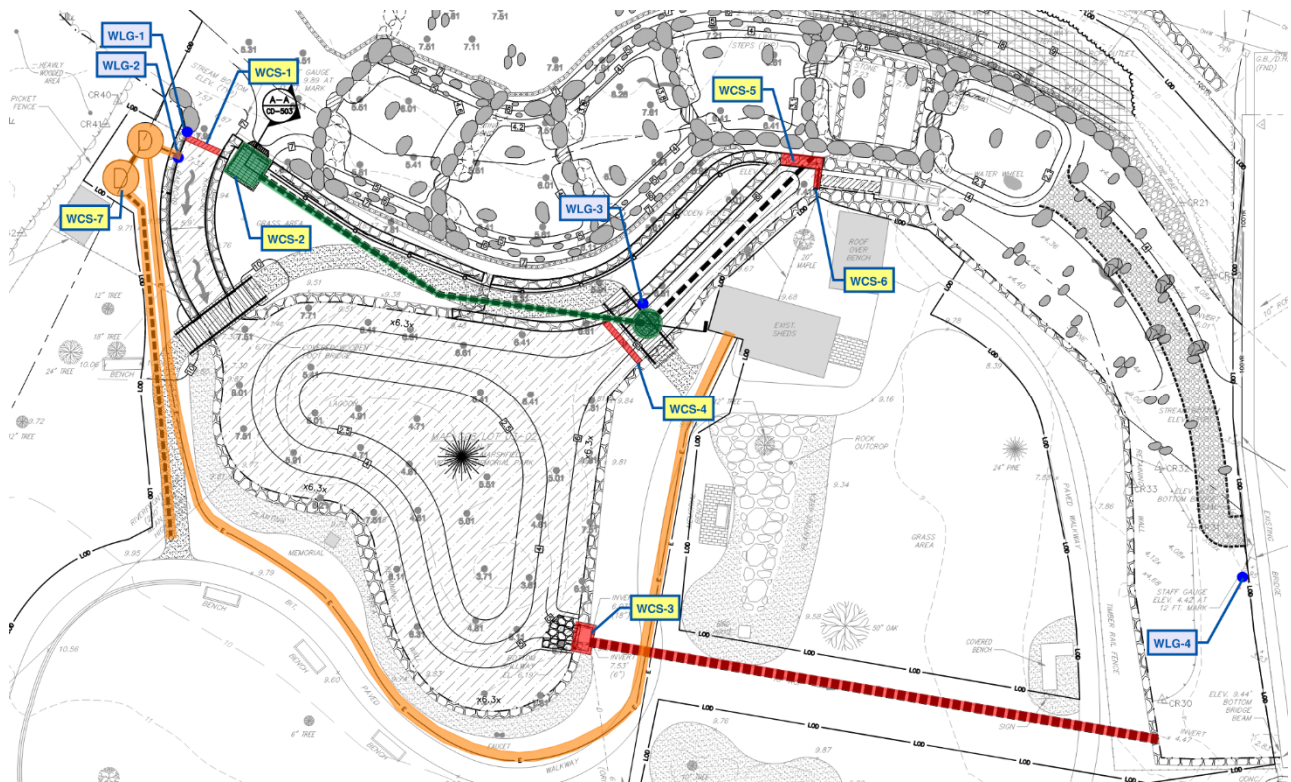
**Contact:**

**Watershed Information.** The South River is a major tributary to the North River in the South Shore Coastal Drainage Area that provides spawning and nursery habitat for several species of diadromous fish. The river length is 13.3 miles with the Veterans Memorial Park Dam located at river mile 8.2. The drainage area is approximately 22 mi<sup>2</sup>. A weir-pool fishway is integrated into the park dam at this historic site with waterworks dating back to 1654. The 10-acre Chandler Pond upstream of the park is the primary spawning and nursery habitat for alewife. Blueback herring, sea lamprey, American shad, and rainbow smelt also spawn in the main stem South River. A spring run of young-of-year American eel occurs in the river and eel are known to occupy most of the watershed. The South River is one of only a few rivers in Massachusetts that supports sportfishing for American shad.

**Fishway Specifications.** An ongoing restoration project led by the Town of Marshfield proposes to remove the existing Veterans Memorial Park Dam and weir-pool fishway and replace these structures with a nature-like riffle-pool fishway with associated water control features that will manage gravity flow to the park's lagoon and a replica water wheel. The new fishway will have seven in-channel stone riffles to allow fish passage over the site elevation change. The fishway was designed by the project engineer firm, Fuss & O'Neill, based on their Hydraulic Analysis Narrative (March 12, 2020). The U.S. Fish and Wildlife Service Fish Passage Engineering team reviewed this design in April 2021. **DMF approval is pending the DMF Fishway Construction Permit (add date/#).** The fishway itself will have no features that need operational adjustments. The primary water control for the site will be the stop log outlet to the lagoon; with a target elevation of 9.0 ft (NAVD88) that will support the fishway's fish passage design for spring migration of diadromous fish. The following Water Control Structures (WCS, see list and figure below) are related to water control at the park and will need seasonal consideration for fish passage.

- WCS-1 River Outlet to Lagoon – flow controlled with removable stop log boards, set to El. 9.0 (NAVD88)
- WCS-2 Water Wheel Flow Bypass Inlet – flow controlled with removable stop log boards, set to El. 3.75 (NAVD88)

- WCS-3 Lagoon Bypass Outlet – downstream from WCS-1, returns flow to river with stop log boards set to El. 9.0 (NAVD88)
- WCS-4 Water Wheel Headrace Inlet – downstream from WCS-1, conveys flow to water wheel headrace channel with stop log boards set El. 9.0 (NAVD88)
- WCS-5 Water Wheel Headrace Channel Outlet – downstream of WCS-4, discharges flow from water wheel headrace channel to river, set to El. 8.5 (NAVD88)
- WCS-6 Water Wheel Channel Inlet – downstream of WCS-4, discharges flow from water wheel headrace channel to water wheel through sluice gate, position set to provide sufficient flow
- WCS-7 Supplemental Lagoon Water Supply – Groundwater cistern and underdrain with pump to discharge supplemental water to the lagoon during low water conditions in the river (when river drops below El. 9.0)



**Regulatory Authority.** The owner of the fishway is responsible for repairing, operating, and maintaining fish passage facilities as prescribed in M.G.L. Chapter 130§19. The Town of Marshfield is the property owner of the fishway. There is no present Memorandum of Agreement between Marshfield and DMF to manage Herring Brook run under local control (M.G.L. Chapter 130 §94). A Fishway O&M plan was prepared for the Veterans Memorial Park Dam in March 2014 by DMF for the Town of Marshfield.

**Water Withdrawal Permissions.** No formal water withdrawals authorizations are related to this project.  
**Water Discharge Data.** No stream flow gauge, staff gauge or flow data are available.

### Fishway Operation

- 1.) The overall intent of lagoon operations in relation to fish passage will be to reduce access of migratory fish to the lagoon, water wheel flow bypass and associated channels/pipes. The primary water control in this regard will be setting the South River stop log boards (WCS-1) at the Lagoon Pond inlet to El. 9.0 ft during the spring migration period of March 1<sup>st</sup> – June 30<sup>th</sup>.
- 2.) The lagoon outlet control structure (WCS-3) should be operated to not encouraged fish to enter this pipe during the spring migratory period of March 1<sup>st</sup> – June 30<sup>th</sup>. The stop log boards should be set during



this period to reduce pond outflow to the pipe and to prevent fish attraction and access at the river entrance.

3.) Water Wheel Operations. Water diverted to the water wheel channel through WCS-2 could falsely attract fish to the water wheel. This false attraction should be minimized during the spring migratory period of March 1<sup>st</sup> – June 30<sup>th</sup> by limiting flow at the lagoon stop log control to the water wheel flow bypass structure (WCS-2) and water wheel headrace channel (WCS-6) to a suitable, minimal volume to operate the water wheel. During very low flows, a submersible well pump in a cistern (WCS-7) will operate to provide supplemental flow to the lagoon.

4.) The entrainment of juvenile river herring and American shad to the lagoon and water wheel flow bypass structure should be discouraged during the juvenile emigration period of July 1<sup>st</sup> to November 15<sup>th</sup> by either maintaining the lagoon and water wheel flow bypass structures (WCS-1 and WCS-2) at El. 9.0 ft or the placement of a seasonal screen at the river confluence.

5.) Staff gauges installed to measure the water surface elevation of the South River are noted on the figure above at upstream and downstream of WCS-2 (WLG-1 and WLG-2, respectively), in the water wheel headrace channel (WLG-3) and at the Main Street bridge (WLG-4). Weekly measurements should be recorded at the staff gauges during the spring migratory period of March 1<sup>st</sup> – June 30<sup>th</sup>.

### **Fishway Maintenance**

1.) Minimal maintenance is expected for the nature-like fishway in the South River channel. Placed boulders in the weirs, walls and channel could shift over time. Observations of boulder shifts that are unfavorable to fish passage should be recorded, followed by coordinated efforts between DMF and the Town of Marshfield to make necessary manual adjustments during low flow periods. Refer to the December 2021 operation and maintenance plan developed by Fuss & O’Neill for the park’s water control structures.

2.) Weekly inspections should be made of lagoon water control features to remove debris and ensure target elevations are met to reduce interactions of migratory fish to lagoon and water wheel features. Refer to the December 2021 operation and maintenance plan developed by Fuss & O’Neill for the park’s water control structures.

**Monitoring & Reporting.** The Town of Marshfield is encouraged to maintain annual records that document events related to fish migrations and fishway O&M that may assist future efforts to manage fish passage in the South River. If a significant problem occurs that could influence successful fish passage, the Town of Marshfield should contact DMF staff (Brad Chase, 508-742-9747, [brad.chase@mass.gov](mailto:brad.chase@mass.gov) ).

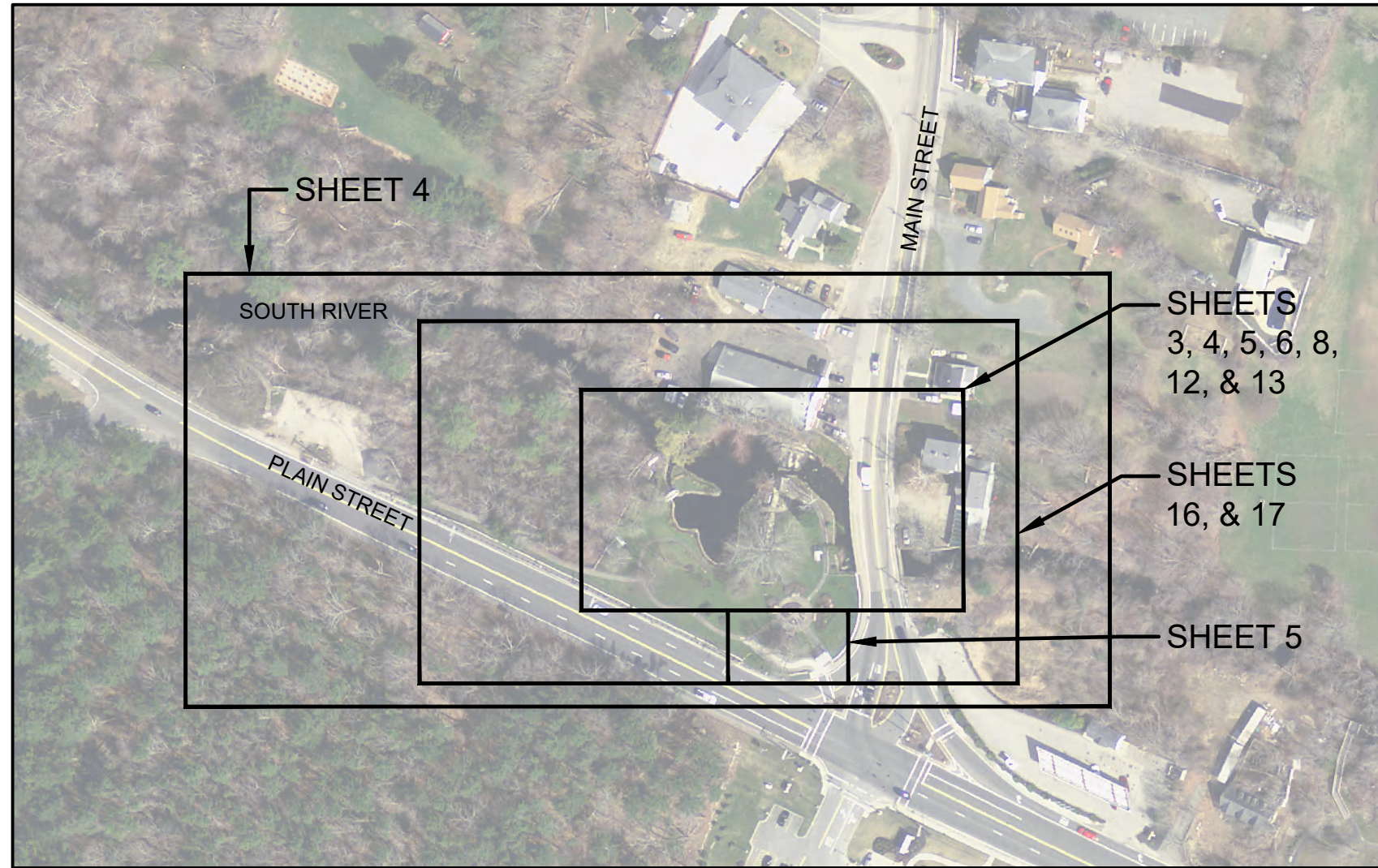
**Prepared:** \_\_\_\_\_

**By:** Bradford C. Chase, DMF

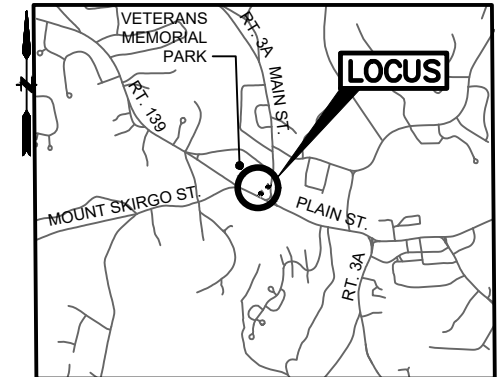
**Approved:** \_\_\_\_\_

Daniel J. McKiernan, Director





**INDEX PLAN**  
SCALE: 1" = 150'



**SITE VICINITY**  
SCALE: 1" = 4000'

SHEET INDEX	PAGE
LOCUS & INDEX PLAN	1
LEGEND	2
EXISTING CONDITIONS PLAN	3
SOUTH RIVER FISH PASSAGE AND PARK LAGOON IMPROVEMENTS PLAN NO. 1-3	4-6
DEMOLITION AND EROSION CONTROL PLAN	7
WATER CONTROL AND CONSTRUCTION PHASING PLAN NO. 1-4	8-11
RIPARIAN HABITAT AND PARK AREA RESTORATION PLAN NO. 1-4	12-15
WETLAND IMPACT PLAN NO. 1-3	16-18
DETAIL PLAN NO. 1-15	19-33

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
VERT: NAVD88 (FT)  
MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
MHW: 4.01 (DOWNSTREAM OF DAM)  
HTL: 6.45 (DOWNSTREAM OF DAM)  
FUSS AND O'NEILL, INC.  
317 IRON HORSE WAY  
PROVIDENCE, RI 02908

**LOCUS & INDEX PLAN**

APPLICATION PREPARED BY:  
WOODS HOLE GROUP, INC.  
107 WATERHOUSE ROAD  
BOURNE, MA 02532

APPLICANT:  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
DATE: JANUARY 12, 2023

SHEET: 1 OF 30

### LEGEND

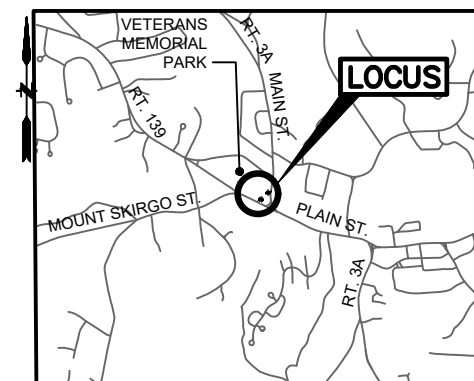
EXIST	PROP	
		PROPERTY LINE/RIGHT-OF-WAY
		LIMIT OF DISTURBANCE/ CONTRACT LIMIT LINE
		BASELINE
		EDGE OF WATER
		WETLAND SYMBOL
		APPROXIMATE WETLAND BOUNDARY (MASSGIS)
		FLAGGED WETLANDS BY CR ENVIRONMENTAL, INC.
		FLOODPLAIN BOUNDARY (PER FUSS & O'NEILL HEC-RAS ANALYSIS)
		GRAVEL PATH
		EDGE OF PAVEMENT
		BITUMINOUS CURB
		MATCH LINE SEE SHEET 2 OF 2
		TIMBER RAIL FENCE
		WOODEN PICKET FENCE
		WOODEN STOCKADE FENCE
		EXIST. TREE LINE / PROP. CLEARING LIMIT
		EXISTING TREE
		MULCHED PLANTING AREA
		STONE MASONRY RETAINING WALL
		MINOR CONTOUR
		MAJOR CONTOUR

### LEGEND CONTINUE

EXIST	PROP	
		SEDIMENT SAMPLE LOCATION
		BUILDING
		BOLLARD
		SIGN
		SPOT ELEVATION
		DRAINAGE LINE
		CATCH BASIN
		DRAIN MANHOLE
		SEWER MANHOLE
		FIRE HYDRANT
		LIGHT POST
		UTILITY POLE
		UTILITY GUY WIRE
		COMPOST FILTER TUBE
		50-FOOT WETLAND SETBACK
		100-FOOT WETLAND SETBACK
		200-FOOT RIVERFRONT AREA

### LEGEND CONTINUE

	MEAN HIGH WATER/ORDINARY HIGH WATER
	HIGH TIDE LINE
	LAND UNDER WATERBODIES AND WATERWAYS/FISH RUN
	BANK
	BORDERING VEGETATED WETLANDS - EMERGENT MARSH
	BORDERING VEGETATED WETLANDS - WOODED SWAMP
	COASTAL BANK



**SITE VICINITY**  
SCALE: 1" = 4000'

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
VERT: NAVD88 (FT)  
MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
MHW: 4.01 (DOWNSTREAM OF DAM)  
HTL: 6.45 (DOWNSTREAM OF DAM)  
FUSS AND O'NEILL, INC.  
317 IRON HORSE WAY  
PROVIDENCE, RI 02908



#### LEGEND

APPLICATION PREPARED BY:  
WOODS HOLE GROUP, INC.  
107 WATERHOUSE ROAD  
BOURNE, MA 02532

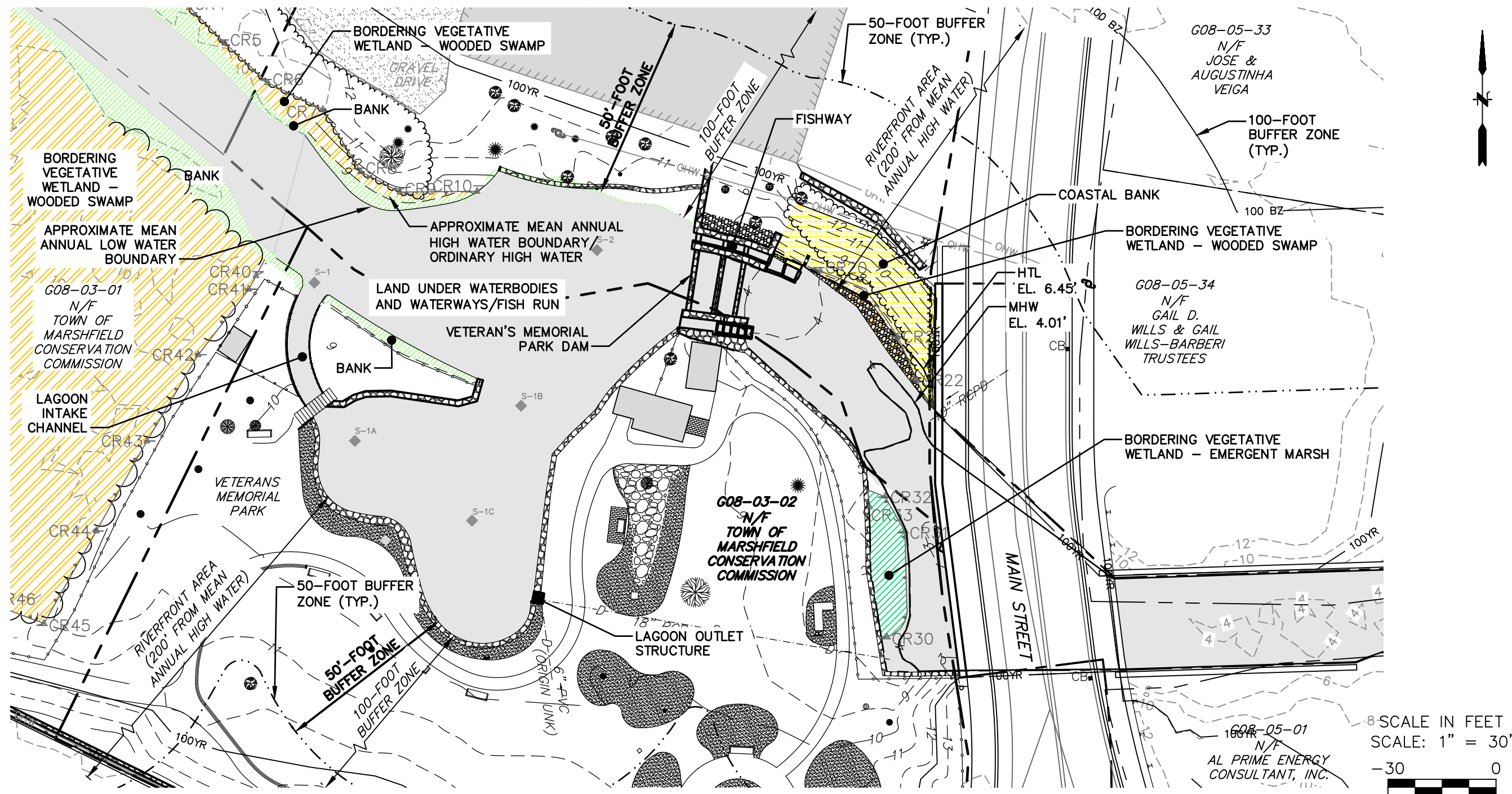
APPLICANT:  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK  
IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
DATE: JANUARY 12, 2023

SHEET: 2 OF 30





PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**EXISTING CONDITIONS PLAN**

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

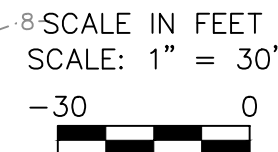
APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORAIN STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

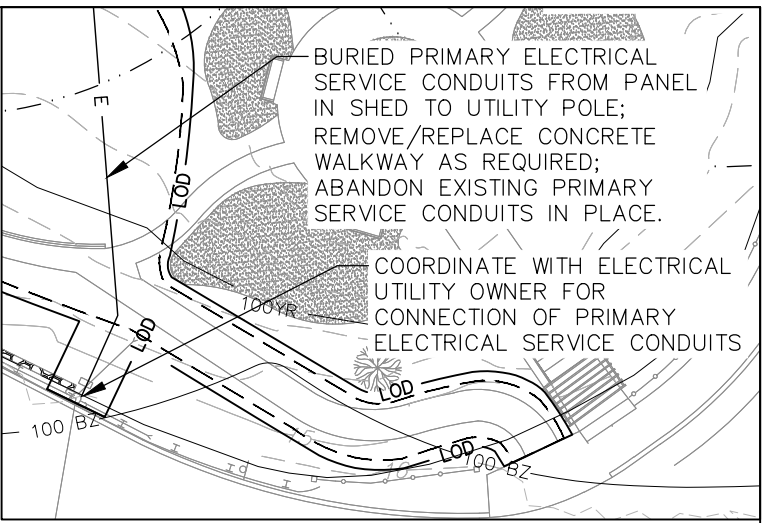
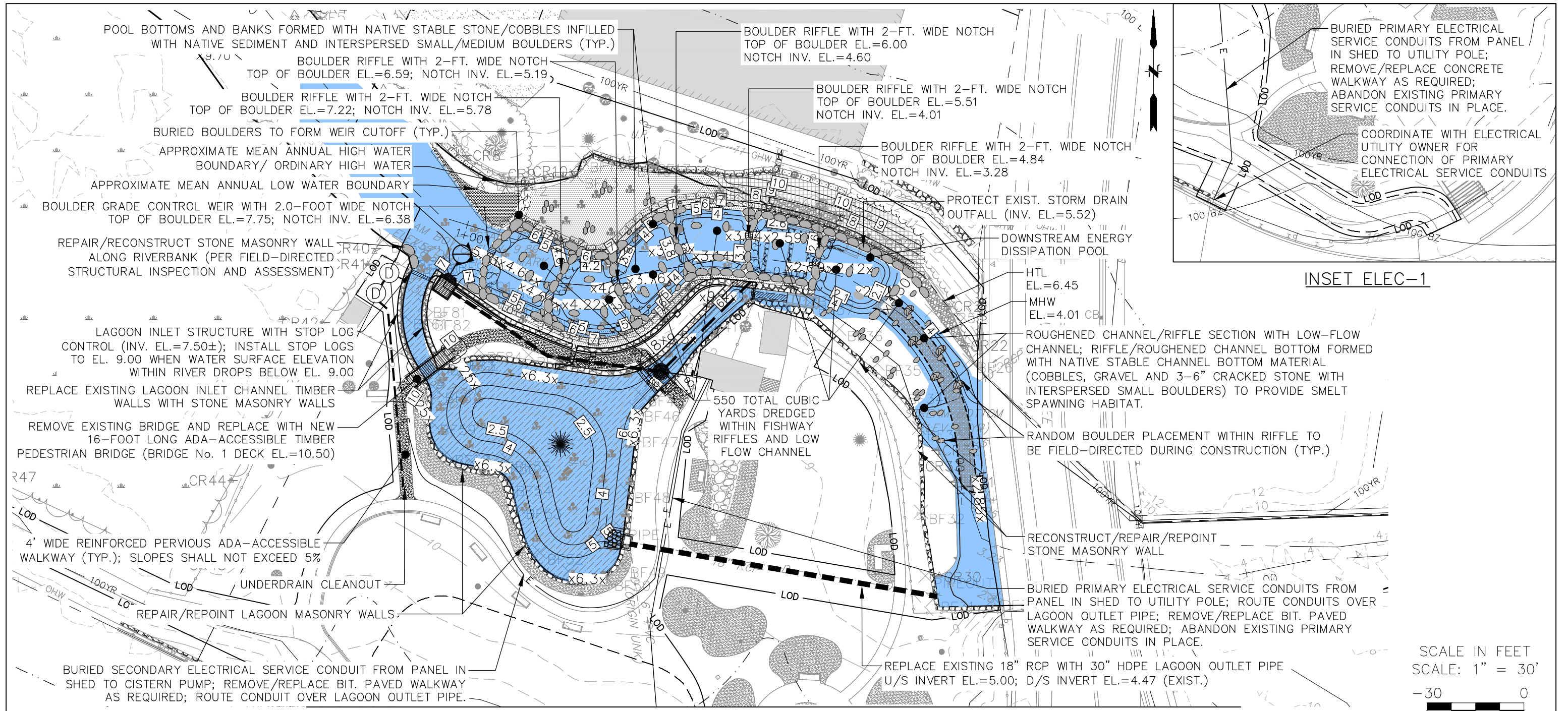
IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 3 OF 30

608-05-01  
 N/F  
 AL PRIME ENERGY  
 CONSULTANT, INC.







INSET ELEC-1

SCALE IN FEET  
SCALE: 1" = 30'  
-30 0

MATCH LINE - SEE INSET ELEC-1

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS  
 DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
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 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



SOUTH RIVER FISH PASSAGE AND PARK  
LAGOON IMPROVEMENTS PLAN NO. 1

APPLICATION PREPARED BY:  
WOODS HOLE GROUP, INC.  
107 WATERHOUSE ROAD  
BOURNE, MA 02532

APPLICANT:  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK  
IMPROVEMENTS PROJECT

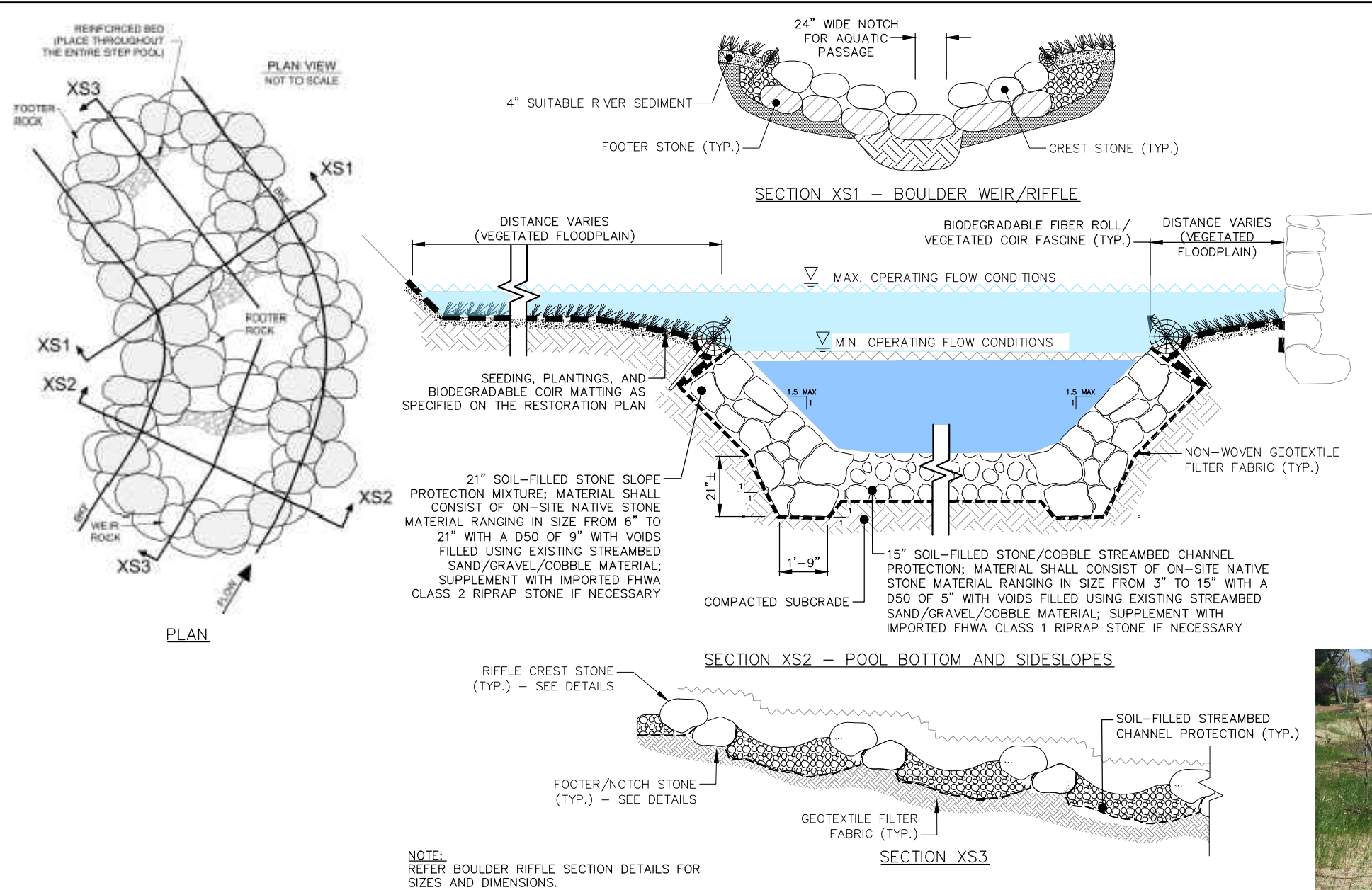
IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 4 OF 30







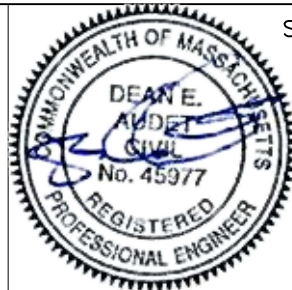


**RIFFLE-POOL AND RIPARIAN BUFFER TYPICAL SECTION AND PROFILE**  
NOT TO SCALE

**EXAMPLE RIFFLE-POOL CHANNEL**  
NOT TO SCALE

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
VERT: NAVD88 (FT)  
MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
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HTL: 6.45 (DOWNSTREAM OF DAM)  
FUSS AND O'NEILL, INC.  
317 IRON HORSE WAY  
PROVIDENCE, RI 02908



SOUTH RIVER FISH PASSAGE AND PARK LAGOON IMPROVEMENTS PLAN NO. 3

APPLICATION PREPARED BY:  
WOODS HOLE GROUP, INC.  
107 WATERHOUSE ROAD  
BOURNE, MA 02532

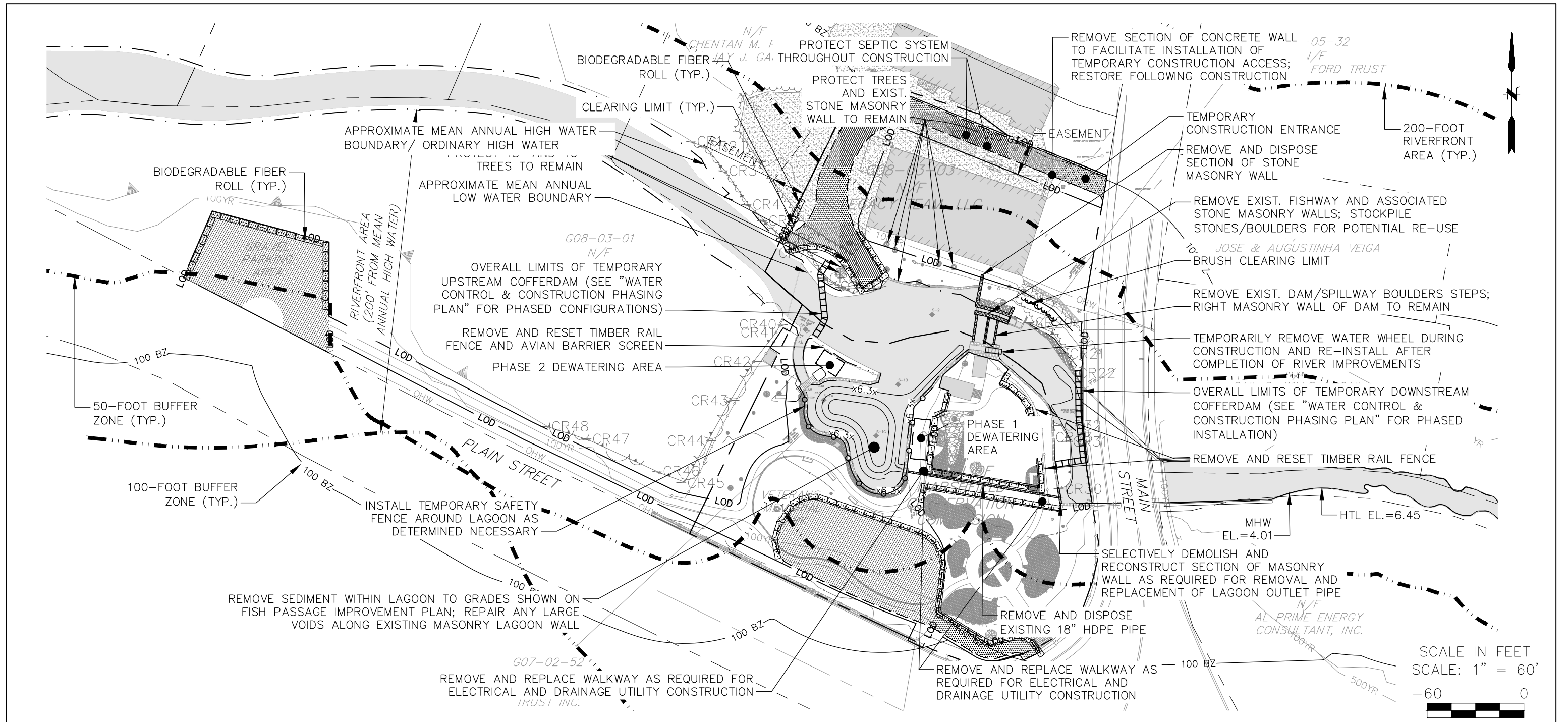
APPLICANT:  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
DATE: JANUARY 12, 2023

SHEET: 6 OF 30





PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



DEMOLITION AND EROSION CONTROL PLAN

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

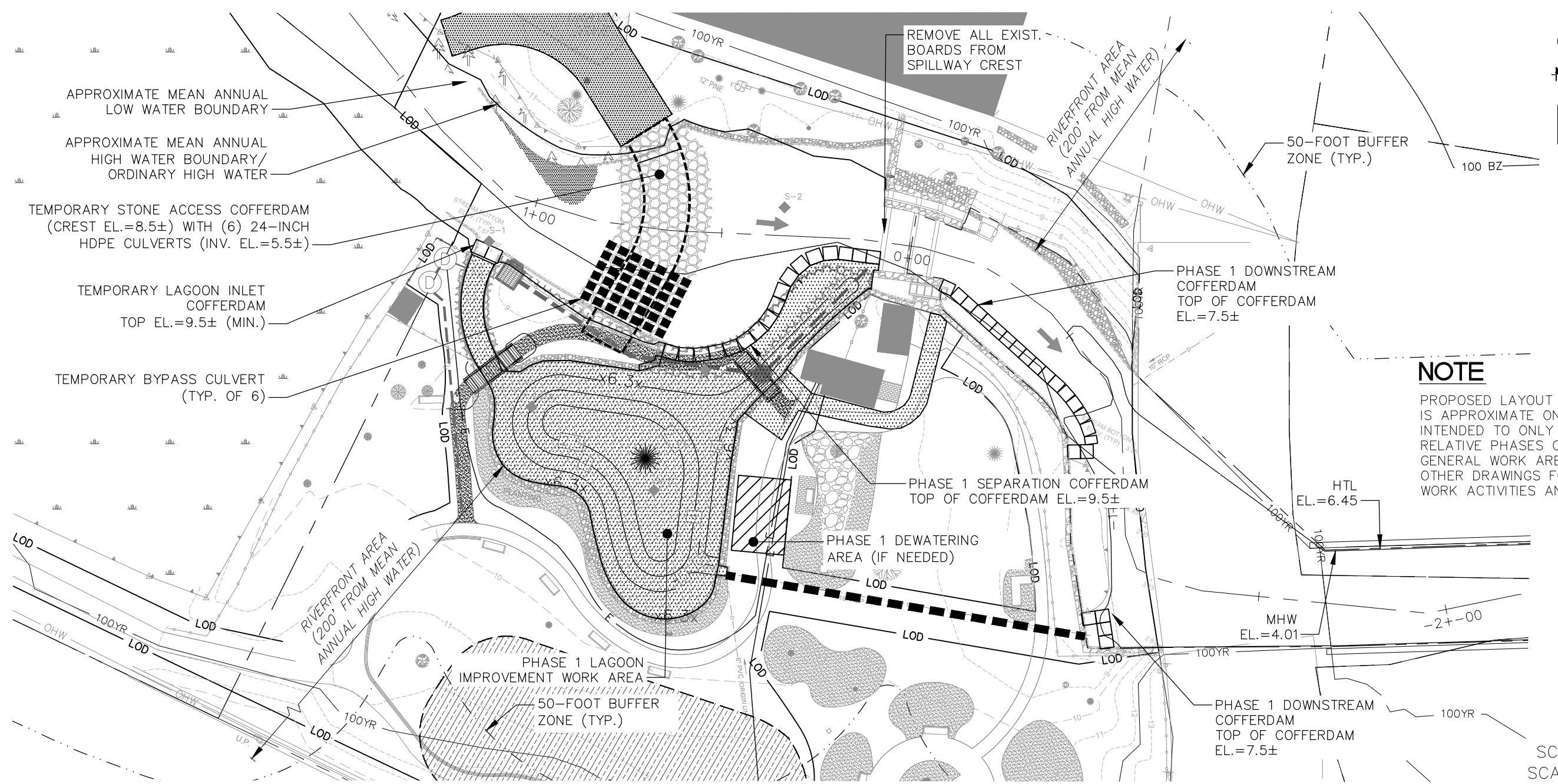
APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORAIN STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 7 OF 30





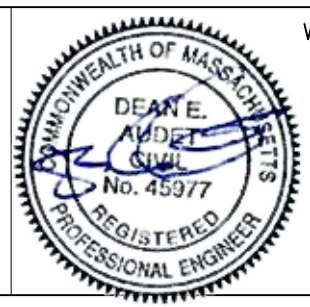
**NOTE**  
 PROPOSED LAYOUT SHOWN HEREON IS APPROXIMATE ONLY AND IS INTENDED TO ONLY DEPICT RELATIVE PHASES OF WORK AND GENERAL WORK AREAS. REFER TO OTHER DRAWINGS FOR SPECIFIC WORK ACTIVITIES AND LIMITS.

**PHASE 1 WATER CONTROL – LAGOON, ACCESS AND SITE SAFETY IMPROVEMENTS**

SCALE: 1" = 20'

SCALE IN FEET  
 SCALE: 1" = 30'  
 -30 0

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS  
 DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
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 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



WATER CONTROL AND CONSTRUCTION  
 PHASING PLAN NO. 1

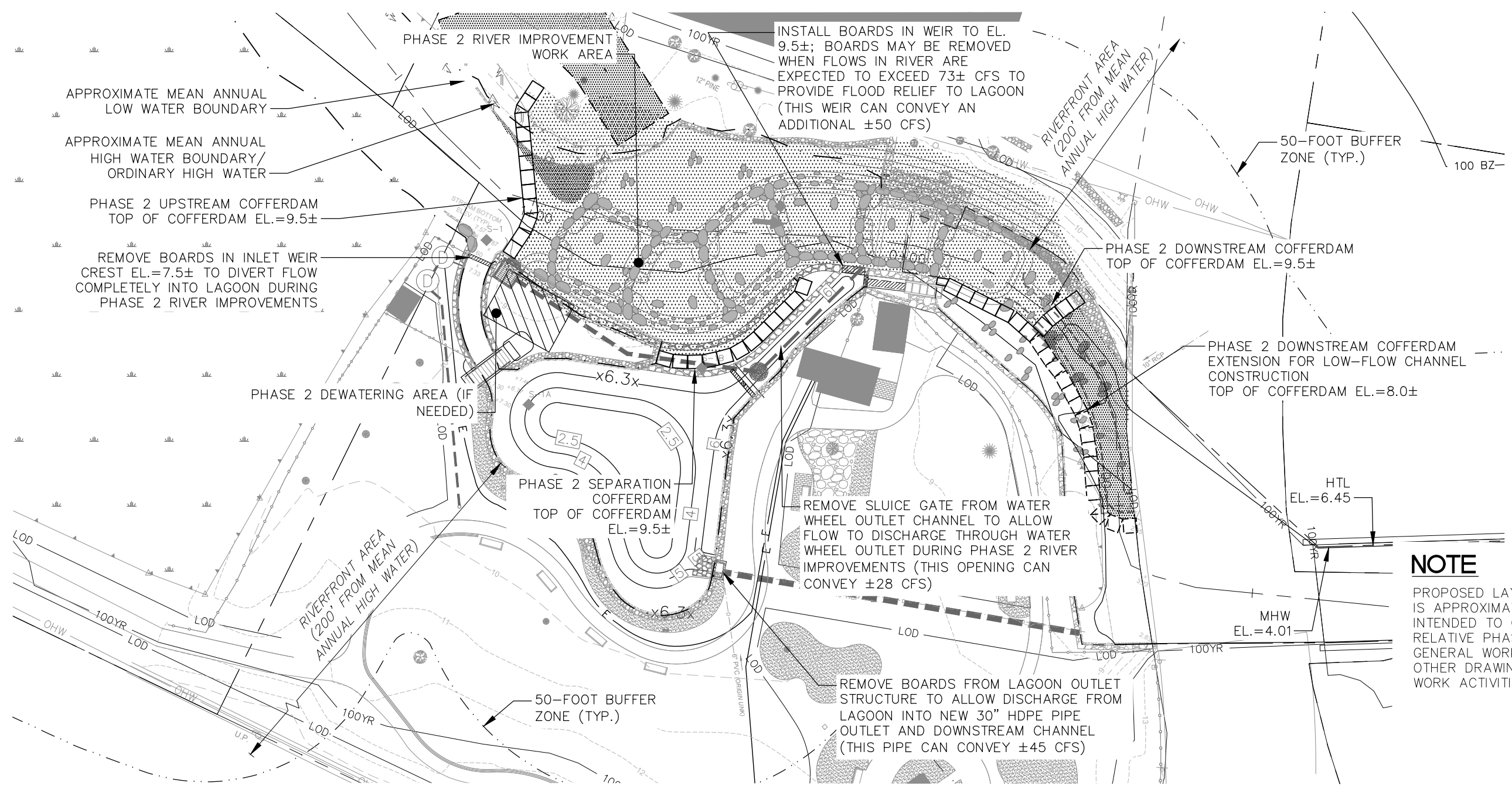
APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORAIN STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

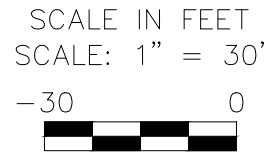
SHEET: 8 OF 30



**PHASE 2 WATER CONTROL - RIVER RESTORATION IMPROVEMENTS**

SCALE: 1" = 20'

**NOTE**  
 PROPOSED LAYOUT SHOWN HEREON IS APPROXIMATE ONLY AND IS INTENDED TO ONLY DEPICT RELATIVE PHASES OF WORK AND GENERAL WORK AREAS. REFER TO OTHER DRAWINGS FOR SPECIFIC WORK ACTIVITIES AND LIMITS.



PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS  
 DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**WATER CONTROL AND CONSTRUCTION  
 PHASING PLAN NO. 2**

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

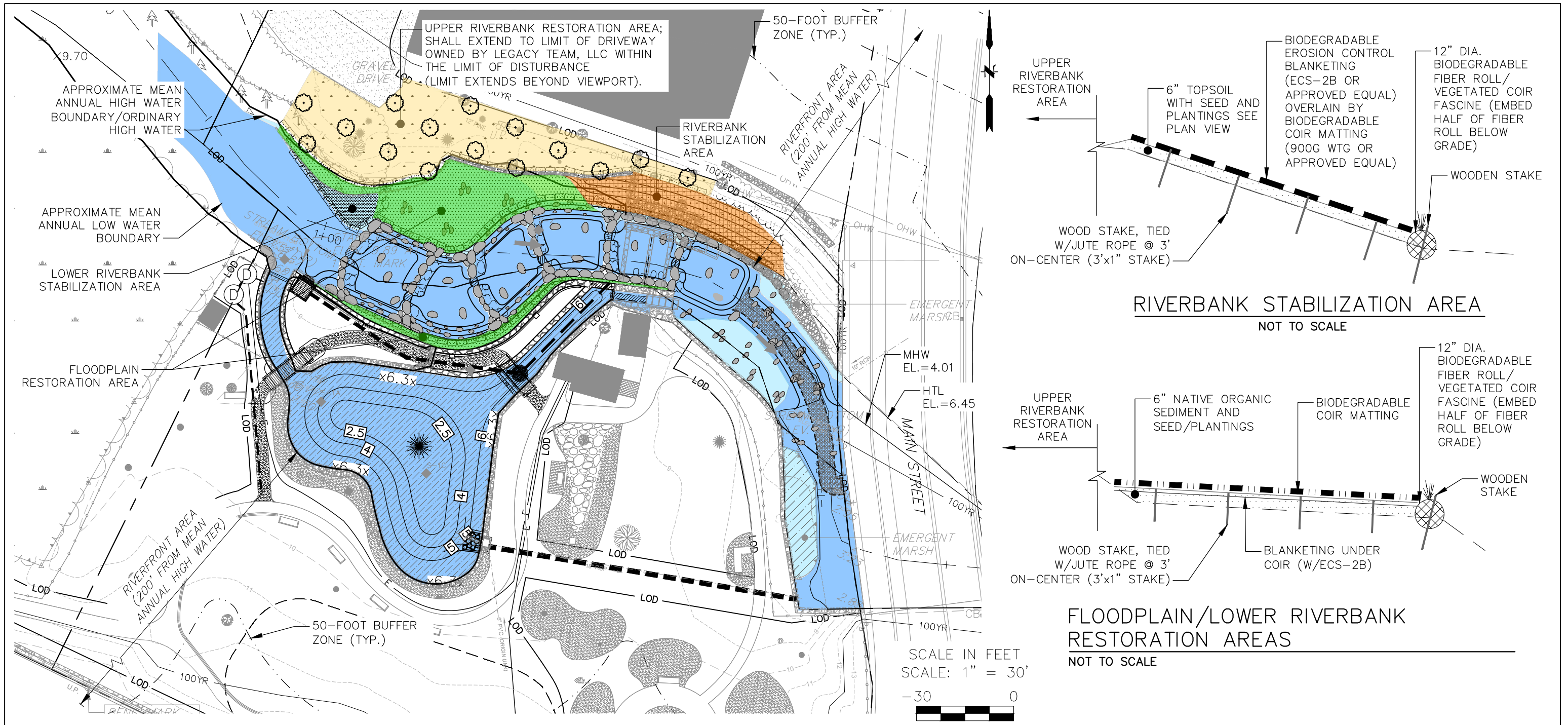
APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORAIN STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 9 OF 30





PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
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 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



RIPIARIAN HABITAT AND PARK AREA  
 RESTORATION PLAN NO. 1

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK  
 IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 10 OF 30

**RESTORATION PLANTING REQUIREMENTS:**

SPACINGS INDICATED BELOW ARE A GUIDE; GROUPING/CLUSTERING OF PLANTS SHALL BE FIELD DIRECTED BY THE ENGINEER IN CONSULTATION WITH THE TOWN AND PROPERTY OWNERS.

UPPER RIVERBANK RESTORATION AREA:

TREES: SPACED @ 15' O.C. (MIN.) (20 TOTAL TREES)  
 RED MAPLE (ACER RUBRUM)  
 AMERICAN ELM (ULMUS AMERICANA)  
 SUB TUPELO (NYSSA L.)  
 BLACK WILLOW (SALIX NIGRA)

SHRUBS: SPACED @ 5' O.C. (95 TOTAL SHRUBS)  
 RED OSIER DOGWOOD (CORNUS STOLONIFERA)  
 BUTTONBUSH (CEPHALANTHUS OCCIDENTALIS)  
 GREY DOGWOOD (CORNUS RACEMOSA)  
 SWEET PEPPERBUSH (CLETHRA ALNIFOLIA)  
 NANNYBERRY (VIBURNUM LENTAGO)

RESTORATION: RIPARIAN/WOODLAND MIX STABILIZED WITH BIODEGRADABLE EROSION CONTROL BLANKETING

RIVERBANK STABILIZATION AREA AREA:

LOWER SLOPE (EDGE OF RIVER UP TO EL. 7.5):

LIVE STAKES: SPACED @ 18" O.C.  
 BLACK WILLOW (SALIX NIGRA)

SHRUBS: SPACED @ 24" O.C.  
 SILKY DOGWOOD (SWIDA AMOMUM)

SEEDING: WETLAND SEED MIX

MID SLOPE (EL. 7.5 TO 9.0):

SHRUBS: SPACED @ 24" O.C.  
 SWAMP ROSE (ROSA PALUSTRIS)

SEEDING: CONSERVATION SEED MIX

UPPER SLOPE (EL. 9.0 TO TOP OF RESTORATION AREA):

SHRUBS: SPACED @ 24" O.C.  
 WINTER HOLLY (LLEX VERTICILATA)  
 SILKY DOGWOOD (CORNUS OBLIQUA)  
 Highbush Blueberry (VACCINIUM CORYMBOSUM)

SEEDING: CONSERVATION SEED MIX

STABILIZATION: AREA TO BE STABILIZED WITH BIODEGRADABLE EROSION CONTROL BLANKETING OVERLAIN BY BIODEGRADABLE COIR MATTING

FLOODPLAIN RESTORATION AREA:

WETLAND PLUGS: SPACED @ 12" O.C.  
 GOLDENROD (SOLIDAGO)  
 JOE PYEWEEED (EUTROCHION FISTULOSUM)  
 SWAMP ASTER (ASTER PUNICEUS)  
 SENSITIVE FERN (ONOCLEA SENSIBILIS)  
 TALL MEADOW-RUE (THALICTRUM PUBESCENS)

RESTORATION: WETLAND SEED MIX STABILIZED WITH BIODEGRADABLE COIR MATTING AND BIODEGRADABLE FIBER ROLLS/VEGETATED COIR FASCINE

LOWER RIVERBANK STABILIZATION AREA:

LIVE STAKES: SPACED 18" O.C.  
 BLACK WILLOW (SALIX NIGRA)

RESTORATION: WETLAND SEED MIX STABILIZED WITH BIODEGRADABLE COIR MATTING AND BIODEGRADABLE FIBER ROLLS/VEGETATED COIR FASCINE

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
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 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**RIPARIAN HABITAT AND PARK AREA RESTORATION PLAN NO. 2**

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 11 OF 30

**SEEDING RATES AND NOTES:**

ALL SEED MIXES SHALL BE FREE OF INVASIVE NON-NATIVE PLANT SPECIES AND SHALL BE INSTALLED AT THE FOLLOWING APPLICATION RATES:

CONSERVATION SEED MIX

MIXTURE: NEW ENGLAND WETLAND PLANTS, NEW ENGLAND CONSERVATION/WILDLIFE MIX  
ANNUAL RYEGRASS (TEMPORARY COVER)  
APPLICATION RATE: ANNUAL RYEGRASS = 25 LBS/ACRE  
NEW ENGLAND WETLAND PLANTS, NEW ENGLAND CONSERVATION/WILDLIFE MIX = 25 LBS/ACRE

WETLAND SEED MIX

MIXTURE: NEW ENGLAND WETLAND PLANTS, NEW ENGLAND WETMIX  
ANNUAL RYEGRASS (TEMPORARY COVER)  
APPLICATION RATE: ANNUAL RYEGRASS = 25 LBS/ACRE  
NEW ENGLAND WETLAND PLANTS, NEW ENGLAND WETMIX = 18 LBS/ACRE

RIPARIAN/WOODLAND SEED MIX

MIXTURE: NEW ENGLAND WETLAND PLANTS, NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES  
ANNUAL RYEGRASS (TEMPORARY COVER)  
APPLICATION RATE: ANNUAL RYEGRASS = 25 LBS/ACRE  
NEW ENGLAND WETLAND PLANTS, NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES = 35 LBS/ACRE

PARK SEED MIX

MIXTURE: LAVOIE HORTICULTURE PLAYER'S BEST SEED MIX  
APPLICATION RATE: SEED MIX = 220 LBS/ACRE

**RESTORATION SEED MIXES:**

I. WETLAND SEED MIX

NEW ENGLAND WETLAND PLANTS, NEW ENGLAND WETMIX.  
WETLAND SEED MIX FOR RESTORATION OF WET MEADOW/EMERGENT MARSH RESTORATION AREAS.

BOTANICAL NAME	COMMON NAME	IND.
CAREX VULPINOIDEA	FOX SEDGE	OBL
CAREX SCOPARIA	BLUNT BROOM SEDGE	FACW
CAREX LURIDA	LURID SEDGE	OBL
CAREX LUPULINA	HOP SEDGE	OBL
POA PALUSTRIS	FOWL BLUEGRASS	FACW
BIDENS FRONDOSA	BEGGAR TICKS	FACW
SCIRPUS ATROVIRENS	GREEN BULRUSH	OBL
ASCLEPIAS INCARNATA	SWAMP MILKWEED	OBL
CAREX CRINITA	FRINGED SEDGE	OBL
VERNONIA NOVEBORACENSIS	NEW YORK IRONWEED	FACW+
JUNCUS EFFUSUS	SOFT RUSH	FACW+
ASTER LATERIFLORUS		
(SYMPHYOTRICHUM LATERIFLORUM)	STARVED/CALICO ASTER	FACW
IRIS VERSICOLOR	BLUE FLAG	OBL
GLYCERIA GRANDIS	AMERICAN MANNAGRASS	OBL
MIMULUS RINGENS	SQUARE STEMMED MONKEY FLOWER	OBL
EUPATORIUM MACULATUM		
(EUTROCHIUM MACULATUM)	SPOTTED JOE PYE WEED	OBL

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
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FUSS AND O'NEILL, INC.  
317 IRON HORSE WAY  
PROVIDENCE, RI 02908



**RIPARIAN HABITAT AND PARK AREA  
RESTORATION PLAN NO. 3**

APPLICATION PREPARED BY:  
WOODS HOLE GROUP, INC.  
107 WATERHOUSE ROAD  
BOURNE, MA 02532

APPLICANT:  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
DATE: JANUARY 12, 2023

SHEET: 12 OF 30



**II. RIPARIAN/WOODLAND MIX**

NEW ENGLAND WETLAND PLANTS, NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES. SEED MIX FOR RESTORATION OF PARTIAL SUN TO SHADY BANK AND SHORELINE AREAS ADJACENT TO WET MEADOW/EMERGENT MARSH RESTORATION AREAS.

BOTANICAL NAME	COMMON NAME
ELYMUS RIPARIUS	RIVERBANK WILD RYE
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM
FESTUCA RUBRA	RED FESCUE
ANDROPOGON GERARDII	BIG BLUESTEM
PANICUM VIRGATUM	SWITCH GRASS
VERNONIA NOVEBORACENSIS	NEW YORK IRONWEED
AGROSTIS PERENNANS	UPLAND BENTGRASS
BIDENS FRONDOSA	BEGGAR TICKS
EUPATORIUM MACULATUM (EUTROCHIMUM MACULATUM)	SPOTTED JOE PYE WEED
EUPATORIUM PERFOLIATUM	BONESET
ASTER NOVAE-ANGLIAE (SYMPHYOTRICHUM NOVAE-ANGLIA)	NEW ENGLAND ASTER
SCIRPUS CYPERINUS	WOOL GRASS
JUNCUS EFFUSUS	SOFT RUSH

**III. CONSERVATION SEED MIX**

NEW ENGLAND WETLAND PLANTS, NEW ENGLAND CONSERVATION/WILDLIFE MIX. CONSERVATION SEED MIX FOR RESTORATION OF UNPAVED AREAS AND REMAINING NON-HATCHED AREAS WITHIN LIMIT OF DISTURBANCE ON THE NORTHERN SIDE OF THE RIVER.

BOTANICAL NAME	COMMON NAME	IND.
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	FACW
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	FACU
ANDROPOGON GERARDII	BIG BLUESTEM	FAC
FESTUCA RUBRA	RED FESCUE	FACU
SORGHASTRUM NUTANS	INDIAN GRASS	UPL
PANICUM VIRGATUM	SWITCH GRASS	FAC
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	FACU
DESMODIUM CANADENSE	SHOWY TICK TREFOIL	FAC
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED	NI
BIDENS FRONDOSA	BEGGAR TICKS	FACW
EUPATORIUM PURPUREUM	PURPLE JOE PYE WEED	FAC
RUDBECKIA HIRTA	BLACK EYED SUSAN	FACU
ASTER PILOSUS	HEATH (OR HAIRY) ASTER	UPL
SOLIDAGO JUNCEA	EARLY GOLDENROD	NI

**IV. LAVOIE HORTICULTURE PLAYERS BEST SEED MIX (PARK SEED MIX)**

PARK SEED MIX FOR RESTORATION OF UNPAVED AREAS AND REMAINING UNHATCHED LAWN AREAS WITHIN LIMIT OF DISTURBANCE WITHIN THE PARK ON THE SOUTHERN SIDE OF THE RIVER (INCLUDING TEMPORARY STAGING/STORAGE AND ACCESS AREAS AND AREA DISTURBED BY PRIMARY ELECTRICAL SERVICE CONDUIT INSTALLATION) SHALL RECEIVE NATIVE OR IMPORTED TOPSOIL AND SEED CONFORMING TO LAVOIE HORTICULTURE'S "PLAYERS BEST SEED MIX" OR APPROVED EQUAL.

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

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 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
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 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**RIPARIAN HABITAT AND PARK AREA RESTORATION PLAN NO. 4**

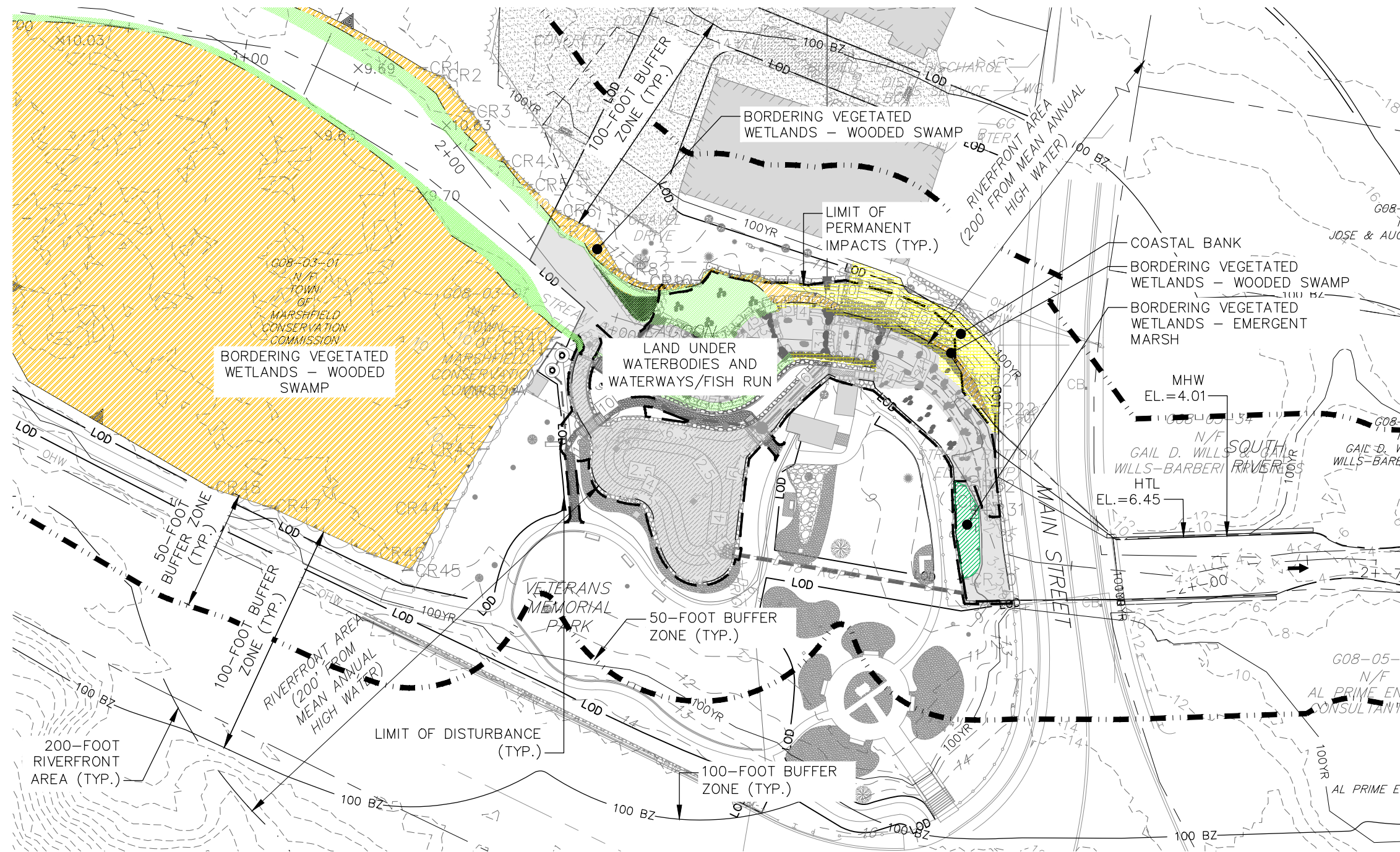
APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

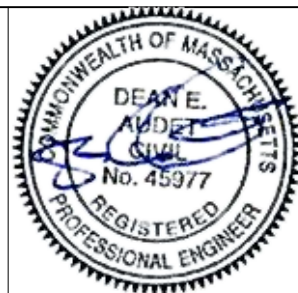
SHEET: 13 OF 30



SCALE IN FEET  
 SCALE: 1" = 50'  
 -50 0

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



WETLAND IMPACT PLAN NO. 1

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050


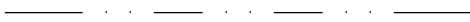
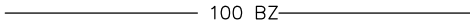





PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT



IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023


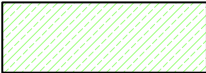
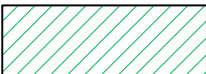
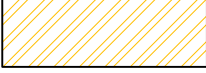
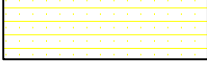
SHEET: 14 OF 30



### LEGEND

-  100YR FLOODPLAIN BOUNDARY (PER FUSS & O'NEILL HEC-RAS ANALYSIS)
-  50-FOOT WETLAND SETBACK
-  100 BZ 100-FOOT WETLAND SETBACK
-  200-FOOT RIVERFRONT AREA
-  APPROXIMATE EXISTING WETLAND BOUNDARY (MASSGIS)
-  FLAGGED WETLANDS BY CR ENVIRONMENTAL, INC.
-  TREE LINE
-  LOD LIMIT OF DISTURBANCE

-  MEAN HIGH WATER/ORDINARY HIGH WATER
-  HIGH TIDE LINE

-  LAND UNDER WATERBODIES AND WATERWAYS/FISH RUN
-  BANK
-  BORDERING VEGETATED WETLANDS - EMERGENT MARSH
-  BORDERING VEGETATED WETLANDS - WOODED SWAMP
-  COASTAL BANK

### NOTES:

1. TEMPORARY IMPACT AREA INCLUDES AREAS WITHIN THE LIMIT OF DISTURBANCE THAT WILL REMAIN AT ORIGINAL (PRE-CONSTRUCTION) ELEVATIONS FOLLOWING CONSTRUCTION.
2. PERMANENT IMPACT AREA INCLUDES ALL AREAS WITHIN THE LIMIT OF DISTURBANCE WHERE SURFACE ELEVATIONS AND STRUCTURES WILL BE ALTERED BY CONSTRUCTION.
3. CURRENT TOTAL RESOURCE AREA INCLUDES ALL EXISTING RESOURCE AREAS WITHIN THE LIMIT OF DISTURBANCE.
4. PERMANENT AND TEMPORARY IMPACTS TO LAND SUBJECT TO COASTAL STORM FLOWAGE ARE ANY AREAS WITHIN THE LIMIT OF DISTURBANCE AND LIMIT OF PERMANENT IMPACTS LINES.

#### DIRECT PROJECT IMPACT AREAS WITHIN LIMIT OF DISTURBANCE (LOD)

WETLAND RESOURCE AREA	TEMPORARY IMPACT AREA (SQ. FT.)	PERMANENT IMPACT AREA (SQ. FT.)	EXISTING TOTAL RESOURCE AREA (SQ. FT.)	POST-CONSTRUCTION TOTAL RESOURCE AREA (SQ. FT.)	CHANGE IN TOTAL RESOURCE AREA (SQ. FT.)
LAND UNDER WATER BODIES AND WATERWAYS/FISH RUN	1,733	9,384	11,117	9,085	-2,032
BORDERING VEGETATED WETLANDS - WOODY SWAMP	366	79	445	627	182
BORDERING VEGETATED WETLANDS - EMERGENT MARSH	327	0	327	327	0
BANK (LINEAR FEET OF IMPACT)	59	495	554	606	52
COASTAL BANK (LINEAR FEET OF IMPACT)	23	176	199	301	102
RIVERFRONT AREAS (200 FT FROM MHW)	31,243	1,701	32,944	33,140	196
LAND SUBJECT TO COASTAL STORM FLOWAGE	15,738	2,146	17,884	18,471	587
100-FOOT BUFFER ZONE	29,848	2,146	31,994	32,555	561

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM:   HORZ: NAD83 MA MAINLAND SP(FT)  
           VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



#### WETLAND IMPACT PLAN NO. 2

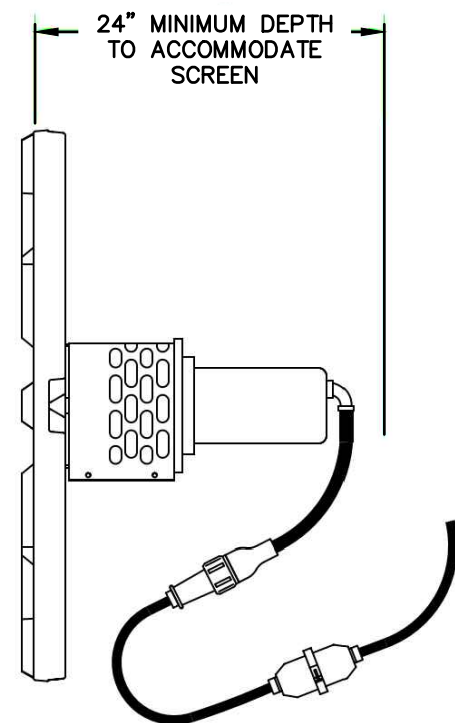
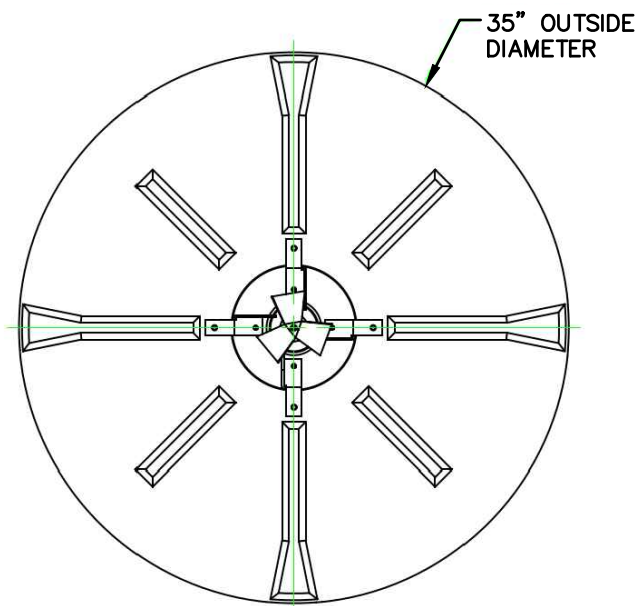
APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 15 OF 30



**FOUNTAIN AND AERATOR NOTES**

1. THE TOWN'S EXISTING FOUNTAIN/AERATOR (PHOTOGRAPH) IS PLANNED FOR CONTINUED USE AFTER COMPLETION OF LAGOON IMPROVEMENTS. IN THE EVENT A REPLACEMENT UNIT IS REQUIRED AT THAT TIME, THE UNIT DEPICTED IN THE ABOVE SCHEMATIC IS PLANNED AS A REPLACEMENT. ANY REPLACEMENT UNIT SHALL COMPLY WITH THE FOLLOWING:

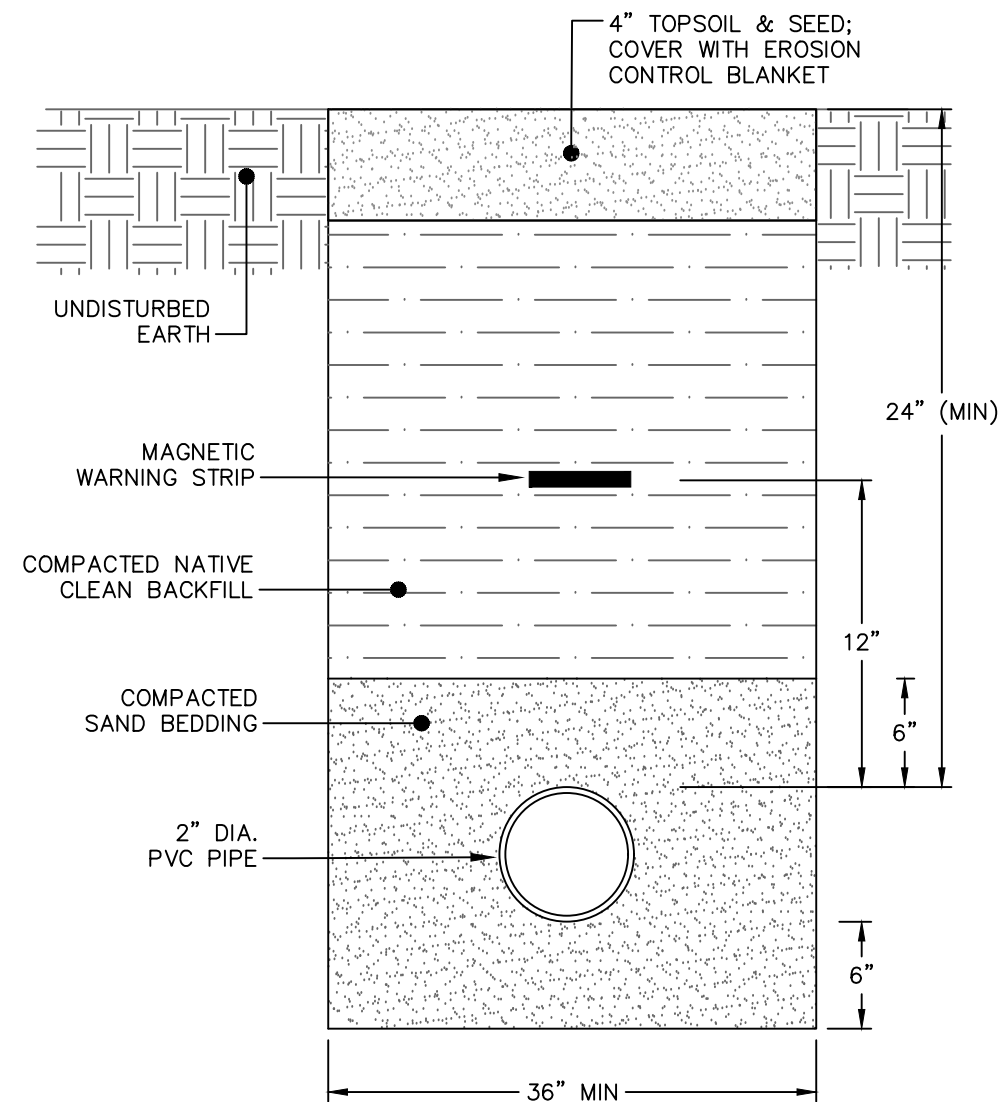
- 1.A. UNIT SHALL RUN ON 120 VOLT SINGLE PHASE ELECTRIC SERVICE.
- 1.B. UNIT SHALL BE CONSTRUCTED OF STAINLESS STEEL COMPONENTS DUE TO POTENTIAL CONTACT WITH BRACKISH WATER.
- 1.C. FOUNTAIN INTAKE SHALL BE FITTED WITH 10 GAUGE, SERIES 316 STAINLESS STEEL INTAKE SCREEN.
- 1.D. UNIT SHALL BE MANUFACTURED BY AQUAMASTER FOUNTAINS, OR APPROVED EQUAL:

16204 COUNTY ROAD X  
 Keil, WI 53042  
 (800) 693-3144  
 www.aquamasterfountains.com

STYLE : HYDROMAX SERIES (OR APPROVED EQUAL)  
 AERATOR : VOLCANO II FLOATING SURFACE AERATOR  
 PATTERN : ETNA SPRAY PATTERN ADAPTER  
 SIZE : 1/2 HP  
 MINIMUM DEPTH: REQUIRES MIN. 2' WATER DEPTH TO OPERATE.



**FLOATING FOUNTAIN/AERATOR WITH INTAKE SCREEN**  
 NOT TO SCALE



**TYPICAL SUPPLEMENTAL WATER SYSTEM PUMP DISCHARGE PIPE TRENCH**  
 NOT TO SCALE

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
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 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.1**

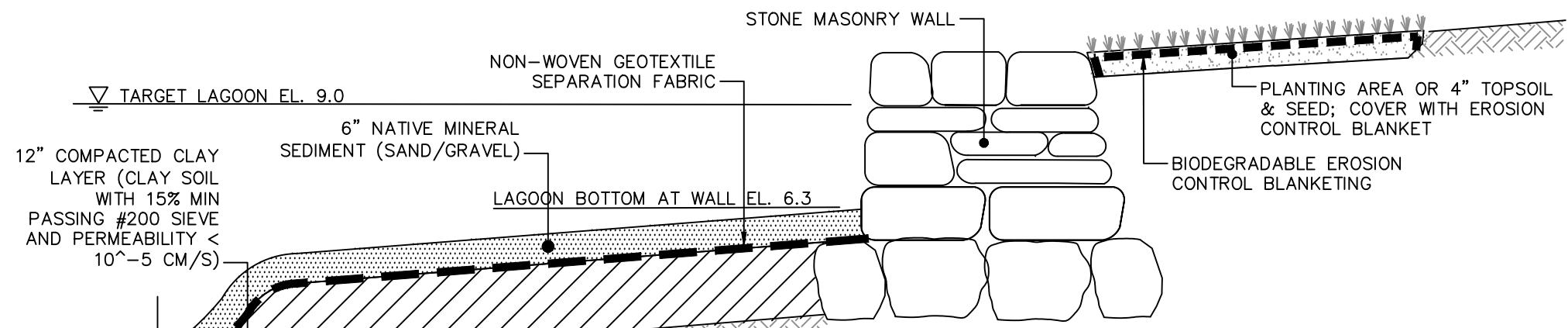
APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

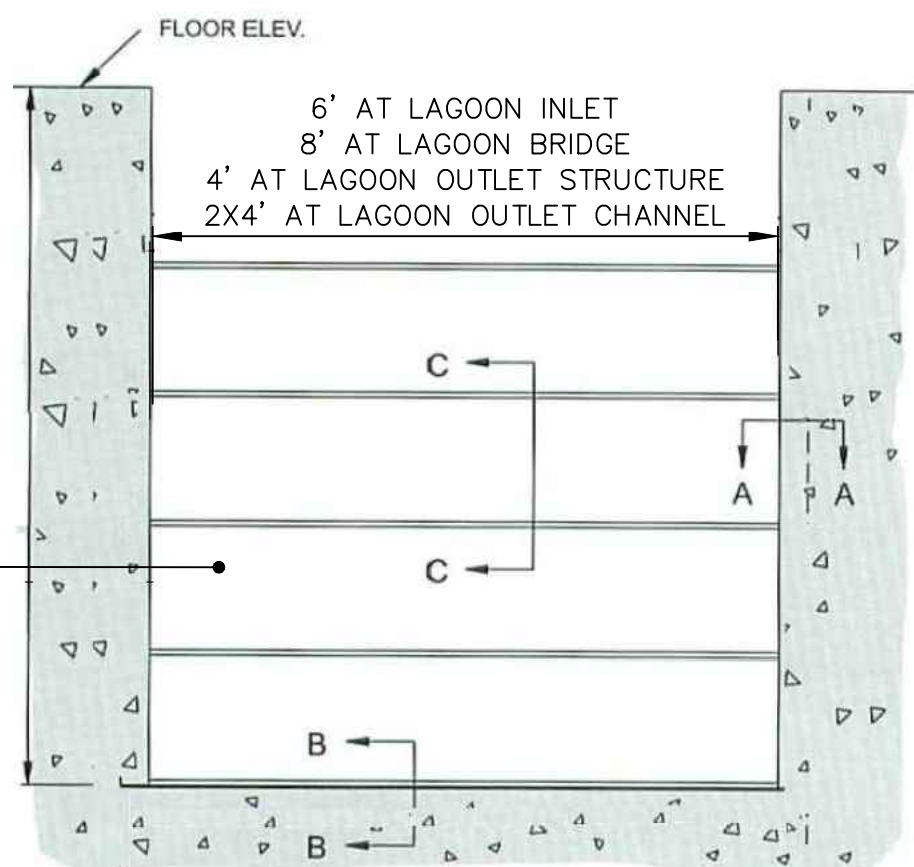
PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 16 OF 30

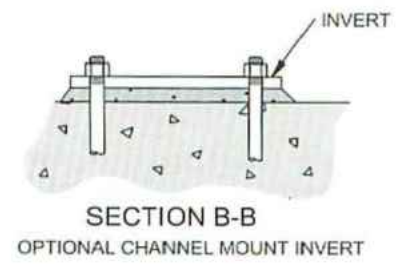
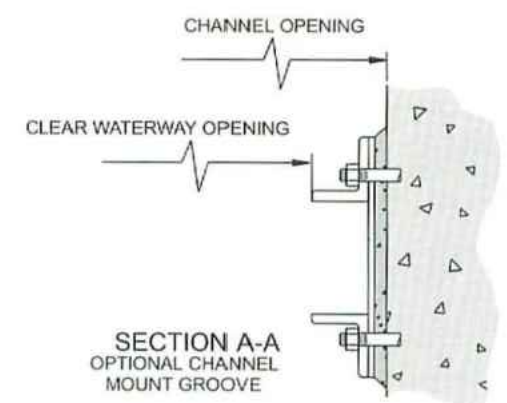
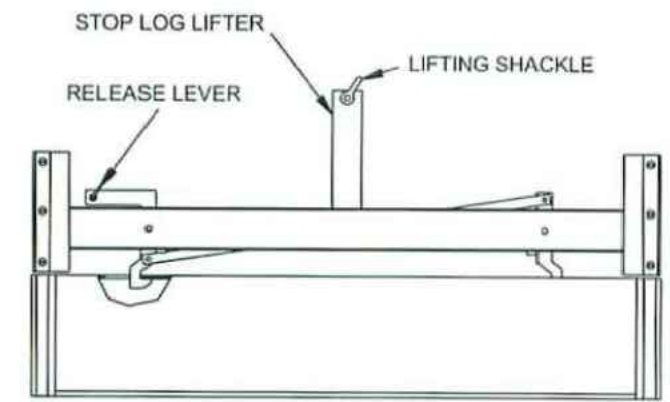


**IMPERMEABLE LAGOON CLAY LINER**  
NOT TO SCALE



6" HIGH ALUMINUM STOP LOGS (MODEL 509 FOR LAGOON OUTLET STRUCTURE AND MODEL 510 FOR OTHER LOCATIONS AS MANUFACTURED BY WHIPPS, INC. OR APPROVED EQUAL)

**TYPICAL STOP LOG CONTROL STRUCTURE DETAILS**  
NOT TO SCALE



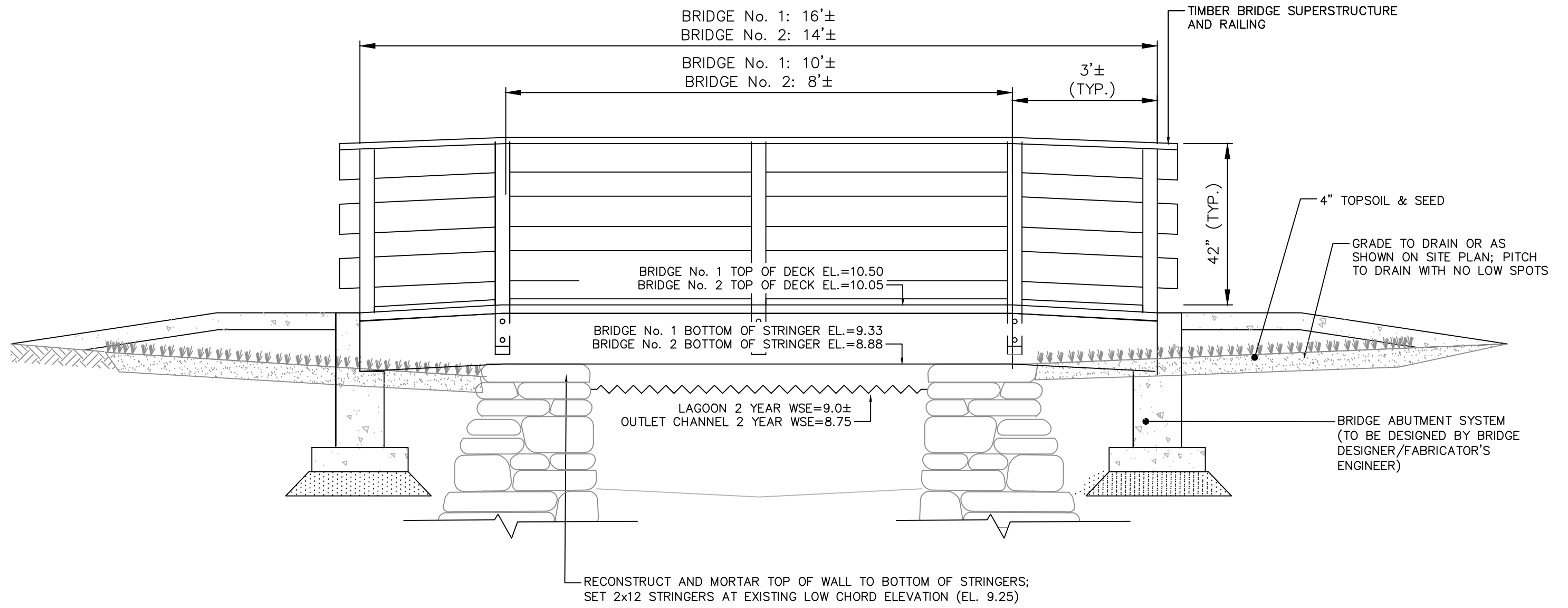
PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS  
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 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.2**  
 APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532  
 APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORAIN STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT  
 IN: VETERANS MEMORIAL PARK  
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 SHEET: 17 OF 30





**TIMBER PEDESTRIAN BRIDGE DETAIL**  
**NOT TO SCALE**

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

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FUSS AND O'NEILL, INC.  
317 IRON HORSE WAY  
PROVIDENCE, RI 02908



**DETAIL PLAN NO.3**

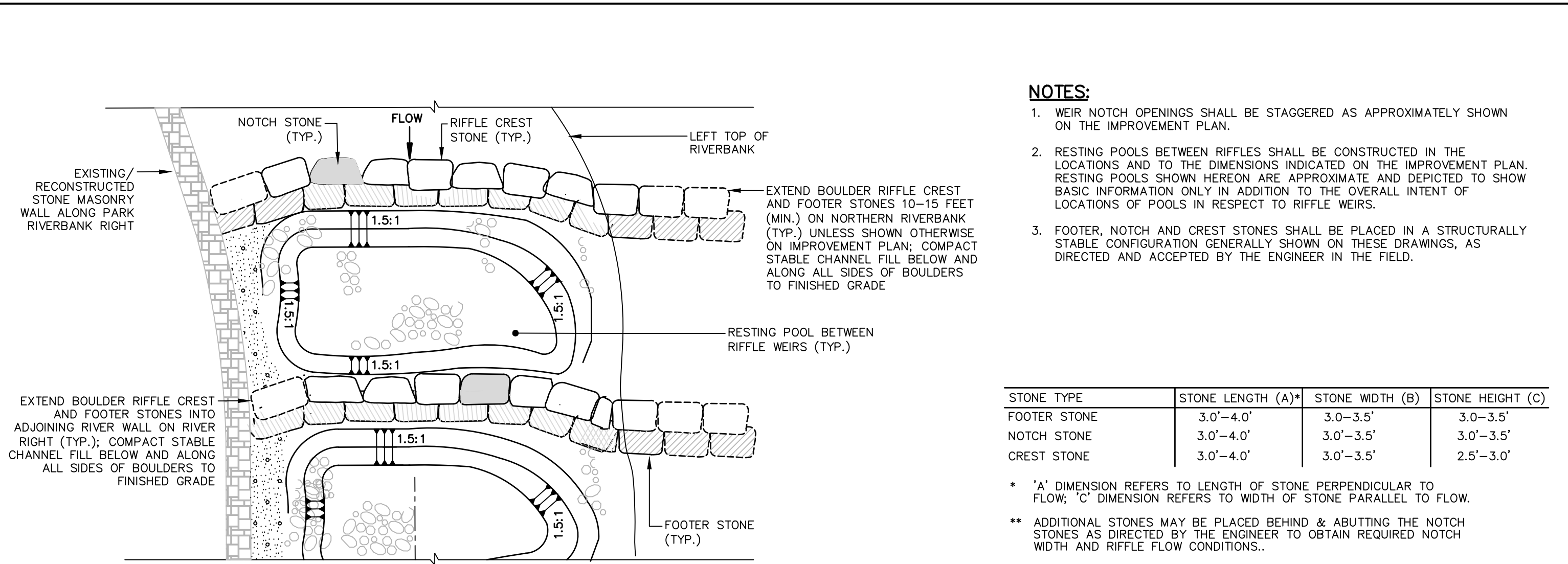
APPLICATION PREPARED BY:  
WOODS HOLE GROUP, INC.  
107 WATERHOUSE ROAD  
BOURNE, MA 02532

APPLICANT:  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
DATE: JANUARY 12, 2023

SHEET: 18 OF 30



**PLAN VIEW**

**BOULDER RIFFLE AND POOL DETAIL**  
**NOT TO SCALE**

**NOTES:**

1. WEIR NOTCH OPENINGS SHALL BE STAGGERED AS APPROXIMATELY SHOWN ON THE IMPROVEMENT PLAN.
2. RESTING POOLS BETWEEN RIFFLES SHALL BE CONSTRUCTED IN THE LOCATIONS AND TO THE DIMENSIONS INDICATED ON THE IMPROVEMENT PLAN. RESTING POOLS SHOWN HEREON ARE APPROXIMATE AND DEPICTED TO SHOW BASIC INFORMATION ONLY IN ADDITION TO THE OVERALL INTENT OF LOCATIONS OF POOLS IN RESPECT TO RIFFLE WEIRS.
3. FOOTER, NOTCH AND CREST STONES SHALL BE PLACED IN A STRUCTURALLY STABLE CONFIGURATION GENERALLY SHOWN ON THESE DRAWINGS, AS DIRECTED AND ACCEPTED BY THE ENGINEER IN THE FIELD.

STONE TYPE	STONE LENGTH (A)*	STONE WIDTH (B)	STONE HEIGHT (C)
FOOTER STONE	3.0'-4.0'	3.0'-3.5'	3.0'-3.5'
NOTCH STONE	3.0'-4.0'	3.0'-3.5'	3.0'-3.5'
CREST STONE	3.0'-4.0'	3.0'-3.5'	2.5'-3.0'

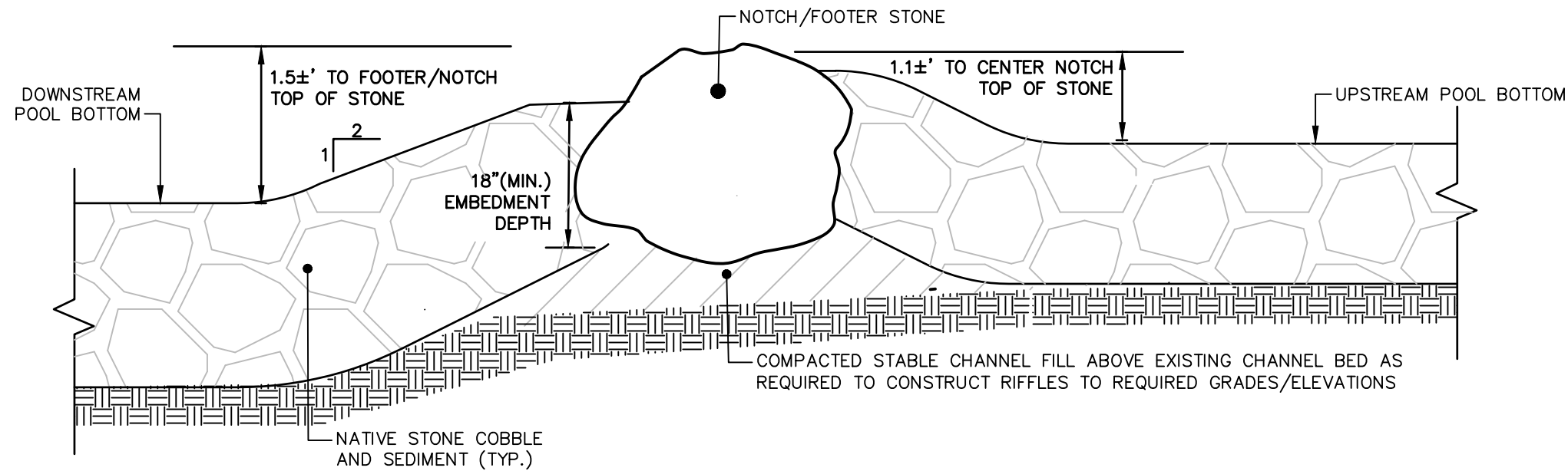
\* 'A' DIMENSION REFERS TO LENGTH OF STONE PERPENDICULAR TO FLOW; 'C' DIMENSION REFERS TO WIDTH OF STONE PARALLEL TO FLOW.  
 \*\* ADDITIONAL STONES MAY BE PLACED BEHIND & ABUTTING THE NOTCH STONES AS DIRECTED BY THE ENGINEER TO OBTAIN REQUIRED NOTCH WIDTH AND RIFFLE FLOW CONDITIONS..  
 \*\*\* DIMENSIONS SELECTED FOR ANY FOUNDATION, NOTCH, AND WEIR STONES SHALL RESULT IN A MINIMUM WEIGHT OF 3,900 LBS ASSUMING THE STONE HAS AN APPROXIMATE UNIT WEIGHT OF 160 LBS/CF.

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS  
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 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908

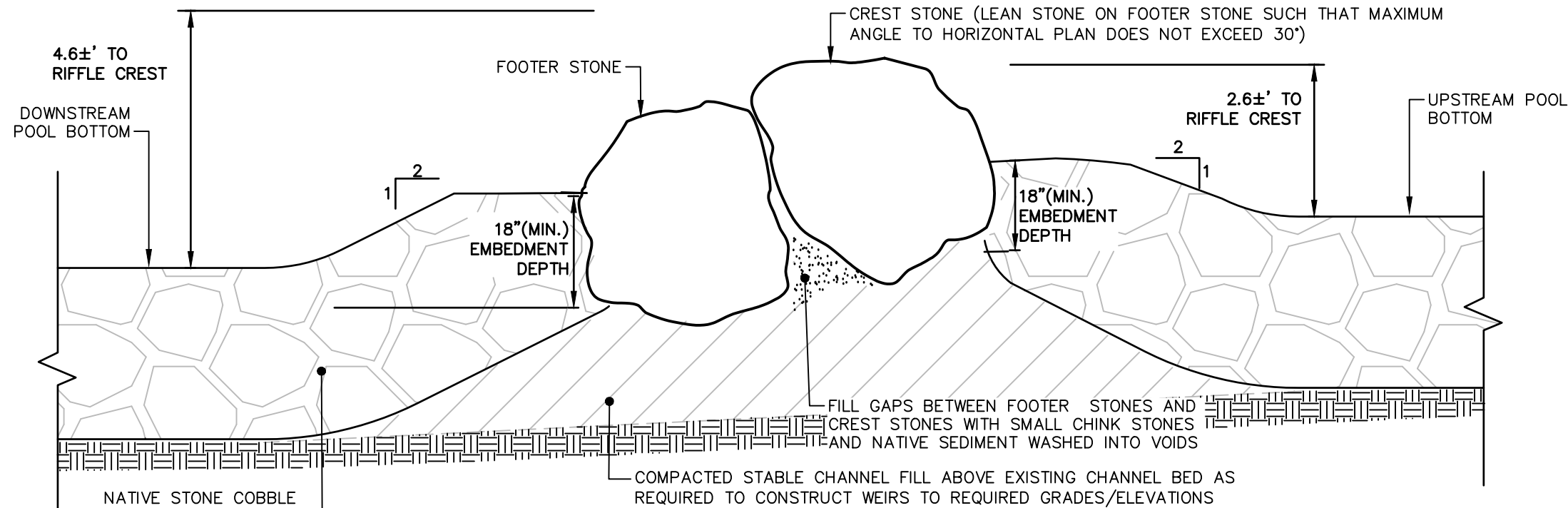


**DETAIL PLAN NO.4**  
 APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532  
 APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORAIN STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT  
 IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023  
 SHEET: 19 OF 30



**RIFFLE NOTCH SECTION**



**RIFFLE CREST SECTION**

**BOULDER RIFFLE SECTION DETAILS**

NOT TO SCALE

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

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 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.5**

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
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 DATE: JANUARY 12, 2023

SHEET: 20 OF 30

**NOTES:**

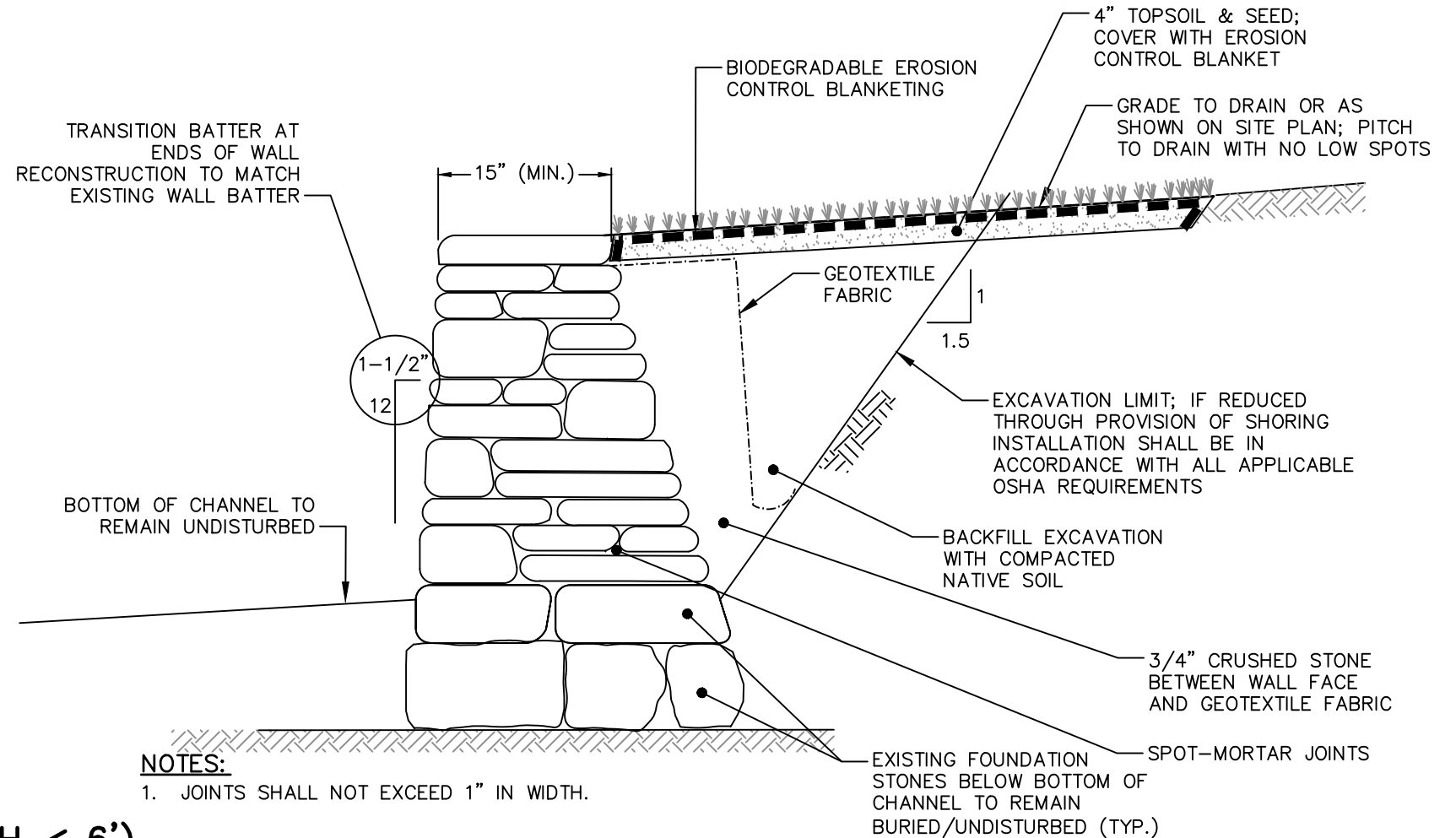
1. STAGGER VERTICAL JOINTS FROM COURSE TO COURSE SIX INCH MINIMUM HORIZONTALLY.
2. THE SIZE, COURSE, ORIENTATION, AND PLACEMENT OF STONES SHALL MATCH THE EXISTING STONES AND BLEND WITH ADJACENT WALL SECTIONS. THE CONTRACTOR SHALL TAKE PRECONSTRUCTION PHOTOGRAPHS OF THE COMPLETE SURFACE OF EACH WALL TO BE REPAIRED FOR ARCHIVAL AND COMPARISON PURPOSES.
3. GEOTEXTILE FABRIC SHALL BE AT LEAST 85 PERCENT BY WEIGHT OF PROPYLENE, ETHYLENE, ESTER, OR AMIDE. THE EDGES SHALL BE FINISHED TO PREVENT THE OUTER FIBER FROM PULLING AWAY FROM THE FABRIC. GEOTEXTILE FABRIC SHALL MEET THE FOLLOWING PHYSICAL REQUIREMENTS:

WIDE WIDTH TENSILE STRENGTH	ASTM D4595	2200 LBS/FT
GRAB TENSILE STRENGTH	ASTM D4632	325 LBS/FT
BREAK ELONGATION	ASTM D4632	15% MAX.
MULLEN BURST STRENGTH	ASTM D3786	750 PSI
PUNCTURE STRENGTH	ASTM D4833	140 LBS
UV RESISTANCE AFTER 500 HOURS	ASTM D4355	70%
APPARENT OPENING SIZE	ASTM D4751	50 US STD SIEVE
% OPEN AREA	CWO-22125-86	4%
PERMITTIVITY	ASTM D4491	35 GAL/MIN/SF

4. WALL RECONSTRUCTION CONSTRUCTION SEQUENCE:
  - A. INSTALL SECONDARY WATER CONTROL WITHIN WORK AREA.
  - B. REMOVE WOODY VEGETATION, INCLUDING STUMPS AND ROOTS, AS INDICATED ON THE SITE PLANS.
  - C. EXCAVATE BEHIND WALL AND DISASSEMBLE STONES, CLEAN AND STOCKPILE FOR REUSE. CONDUCT EXCAVATION AND STONE DISASSEMBLY SIMULTANEOUSLY IN ONE-FOOT INCREMENTS. HORIZONTAL LIMIT OF STONE DISASSEMBLY SHALL EXTEND PAST THE OUTERMOST LIMIT OF WALL RECONSTRUCTION AS REQUIRED TO RECONSTRUCT THE WALL IN STRUCTURALLY SOUND MANNER.
  - D. MONITOR GROUNDWATER, DEWATER, AND REMOVE ADDITIONAL ROOTS DURING EXCAVATION AS NECESSARY.
  - E. RESET STOCKPILED STONES; PLACE AND COMPACT BACKFILL IN ONE-FOOT INCREMENTS.
  - F. INSTALL FOUR-INCHES OF TOPSOIL AT TOP OF EXCAVATION AND SEED. DRESS TOPSOIL AND SEED OVER DISTURBED AREAS.
  - G. REMOVE DEBRIS AND SEDIMENT FROM CHANNEL.
  - H. DISASSEMBLE AND REMOVE WATER CONTROL, SANDBAGS, AND PIPES AND RESTORE AREA TO ORIGINAL GRADES AND CONDITIONS.
  - I. EXCAVATED MATERIALS SHALL BE PLACED IN A DESIGNATED LOCATION AND COVERED, OR OTHERWISE PROTECTED, AND ENCOMPASSED BY A STAKED STRAW WATTLE PERIMETER.
  - J. NOTIFY THE ENGINEER IMMEDIATELY IF ARCHEOLOGICAL ARTIFACTS ARE OBSERVED. COORDINATE WITH PROJECT ARCHEOLOGIST AND MASSACHUSETTS HISTORICAL COMMISSION TO PROTECT SUCH ARTIFACTS AND PROCEED WITH WORK ONLY AS DIRECTED.

**SPOT-MORTAR NOTES:**

1. SPOT-MORTAR JOINTS BETWEEN PLACED FOUNDATION STONES AND INTERIOR PORTIONS OF REPAIRED WALL.
2. MORTAR SHALL NOT BE PLACED IN FIRST COURSE ABOVE FOUNDATION STONES TO ENSURE FREE DRAINAGE.
3. MORTAR SHALL BE PLACED IN JOINTS ABOVE FIRST COURSE TO SECURE STONES IN PLACE WHILE ALLOWING FREE DRAINAGE. MORTAR SHALL NOT BE VISIBLE ON THE WALL FACE.
4. ALL MORTAR SHALL BE CAREFULLY REMOVED FROM EXPOSED JOINTS ON WALL FACE; NO MORTAR SHALL BE VISIBLE UPON COMPLETION OF WORK.



**NOTES:**

1. JOINTS SHALL NOT EXCEED 1" IN WIDTH.

**RECONSTRUCT MEDIUM STONE WALL (H < 6')**

**NOT TO SCALE**

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

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 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.6**

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORAIN STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

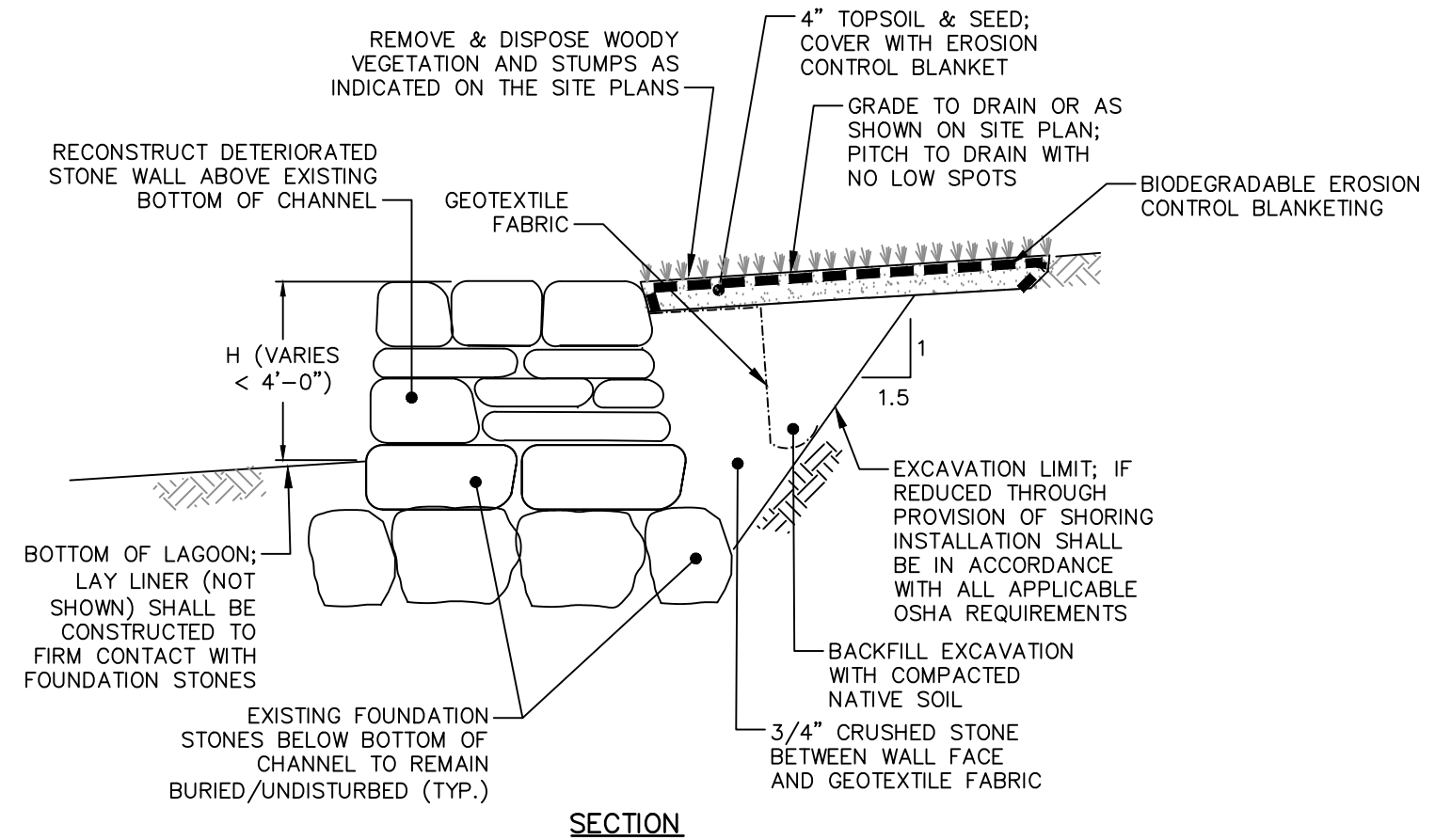
IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 21 OF 30



**LOW STONE WALL REPAIR NOTES:**

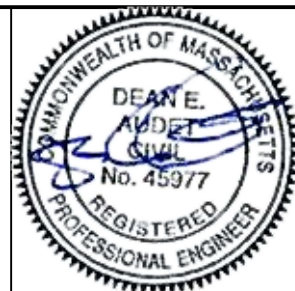
1. THE SIZE, COURSE, ORIENTATION, AND PLACEMENT OF STONES SHALL MATCH THE EXISTING STONES AND BLEND WITH ADJACENT WALL SECTIONS. THE CONTRACTOR SHALL TAKE PRECONSTRUCTION PHOTOGRAPHS OF THE COMPLETE SURFACE OF EACH WALL TO BE REPAIRED FOR ARCHIVAL AND COMPARISON PURPOSES.
2. GENERAL CHINK WALL/RESET MISSING STONE CONSTRUCTION SEQUENCE:
  - A. INSTALL SECONDARY WATER CONTROL WITHIN WORK AREA AS REQUIRED.
  - B. REMOVE WOODY VEGETATION INCLUDING STUMPS AND ROOTS.
  - C. EXCAVATE BEHIND WALL AND DISASSEMBLE STONES, CLEAN AND STOCKPILE FOR REUSE. CONDUCT EXCAVATION AND STONE DISASSEMBLY SIMULTANEOUSLY IN ONE-FOOT INCREMENTS. HORIZONTAL LIMIT OF STONE DISASSEMBLY SHALL EXTEND FIVE FEET PAST OUTERMOST LIMIT OF WALL RECONSTRUCTION OR UNTIL STRUCTURALLY SOUND SEGMENT OF WALL IS REACHED, WHICHEVER IS GREATER. VERTICAL LIMIT OF EXCAVATION SHALL EXTEND STRUCTURALLY SOUND FOUNDATION STONES.
  - D. LOCATE AND PROTECT EXISTING LINER AND UNDERDRAIN PIPE BEHIND EXISTING WALL FORMING THE PERIMETER OF THE LAGOON.
  - E. MONITOR GROUNDWATER AND DEWATER AS NECESSARY.
  - F. RESET STOCKPILED STONES, BACKFILL, AND COMPACT BACKFILL IN ONE-FOOT INCREMENTS. CHINK ANY VOIDS GREATER THAN 4" IN ANY TWO DIMENSIONS.
  - G. INSTALL TOPSOIL AND SEED.
  - H. REMOVE DEBRIS AND SEDIMENT FROM CHANNEL RESULTING FROM REPAIR.
  - I. DISASSEMBLE SECONDARY WATER CONTROL.



**RECONSTRUCT/CONSTRUCT LOW STONE WALL**  
**NOT TO SCALE**

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

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FUSS AND O'NEILL, INC.  
317 IRON HORSE WAY  
PROVIDENCE, RI 02908



**DETAIL PLAN NO.7**

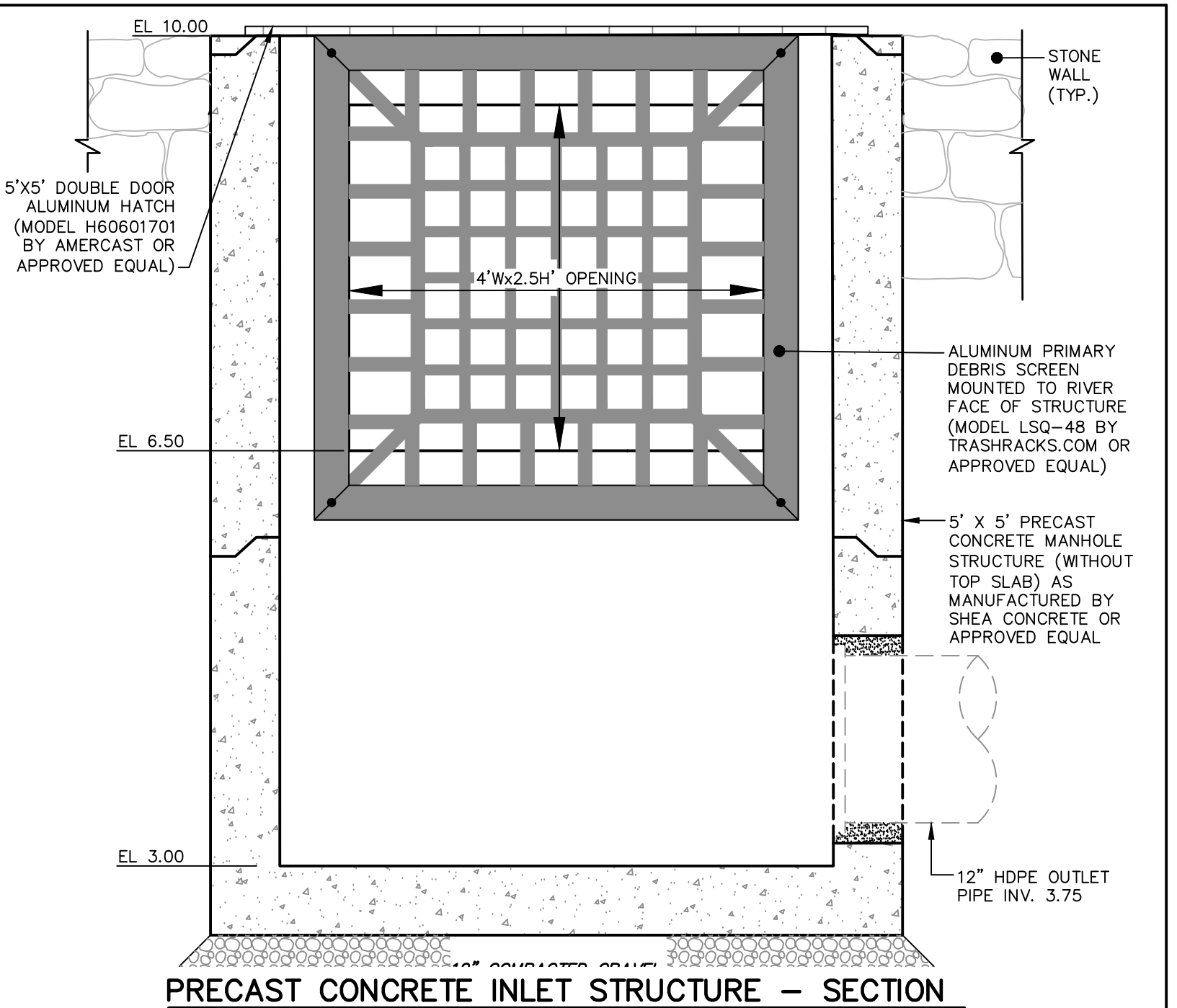
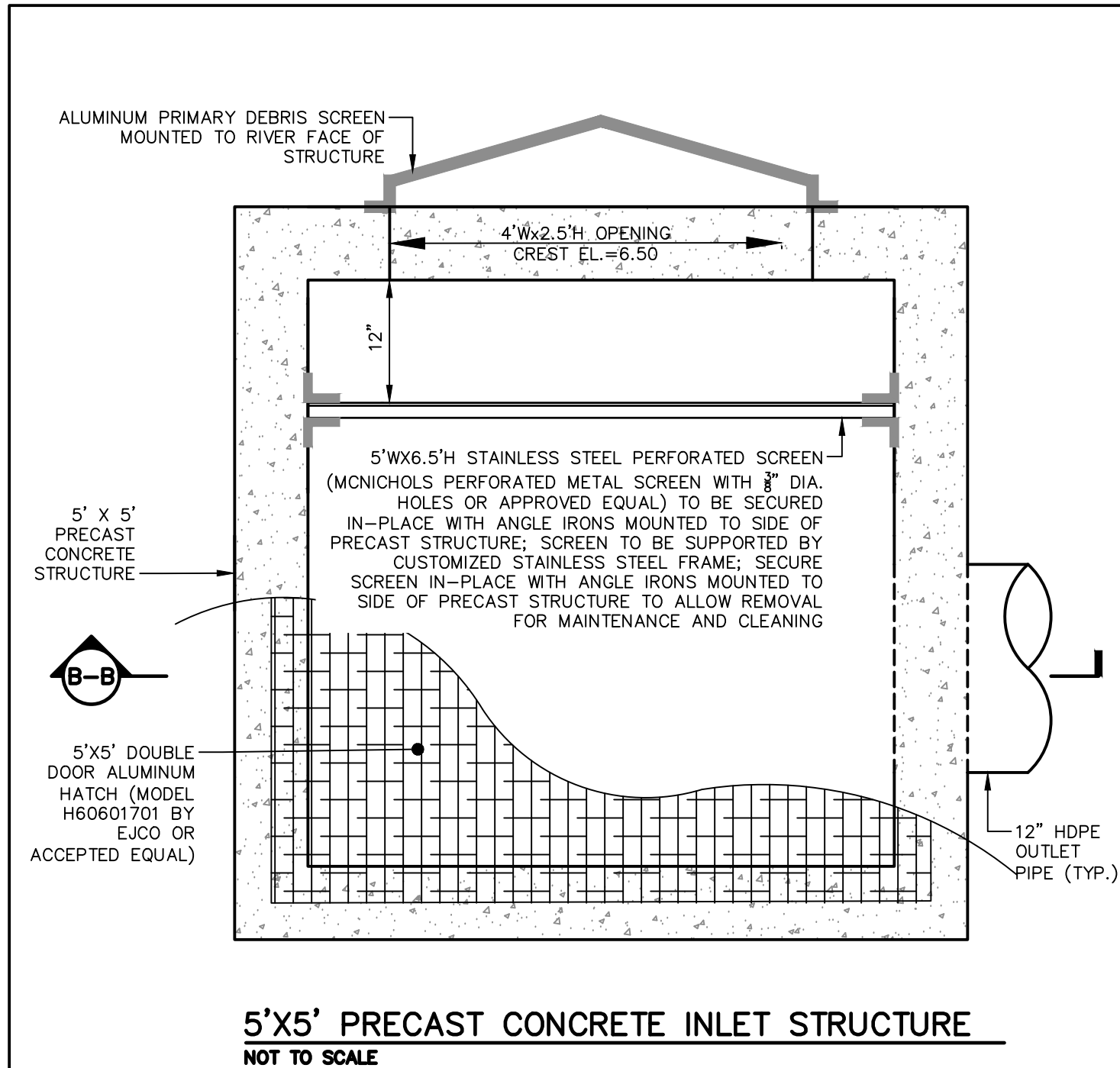
APPLICATION PREPARED BY:  
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107 WATERHOUSE ROAD  
BOURNE, MA 02532

APPLICANT:  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
DATE: JANUARY 12, 2023

SHEET: 22 OF 30



PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
VERT: NAVD88 (FT)  
MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
MHW: 4.01 (DOWNSTREAM OF DAM)  
HTL: 6.45 (DOWNSTREAM OF DAM)  
FUSS AND O'NEILL, INC.  
317 IRON HORSE WAY  
PROVIDENCE, RI 02908



DETAIL PLAN NO.8

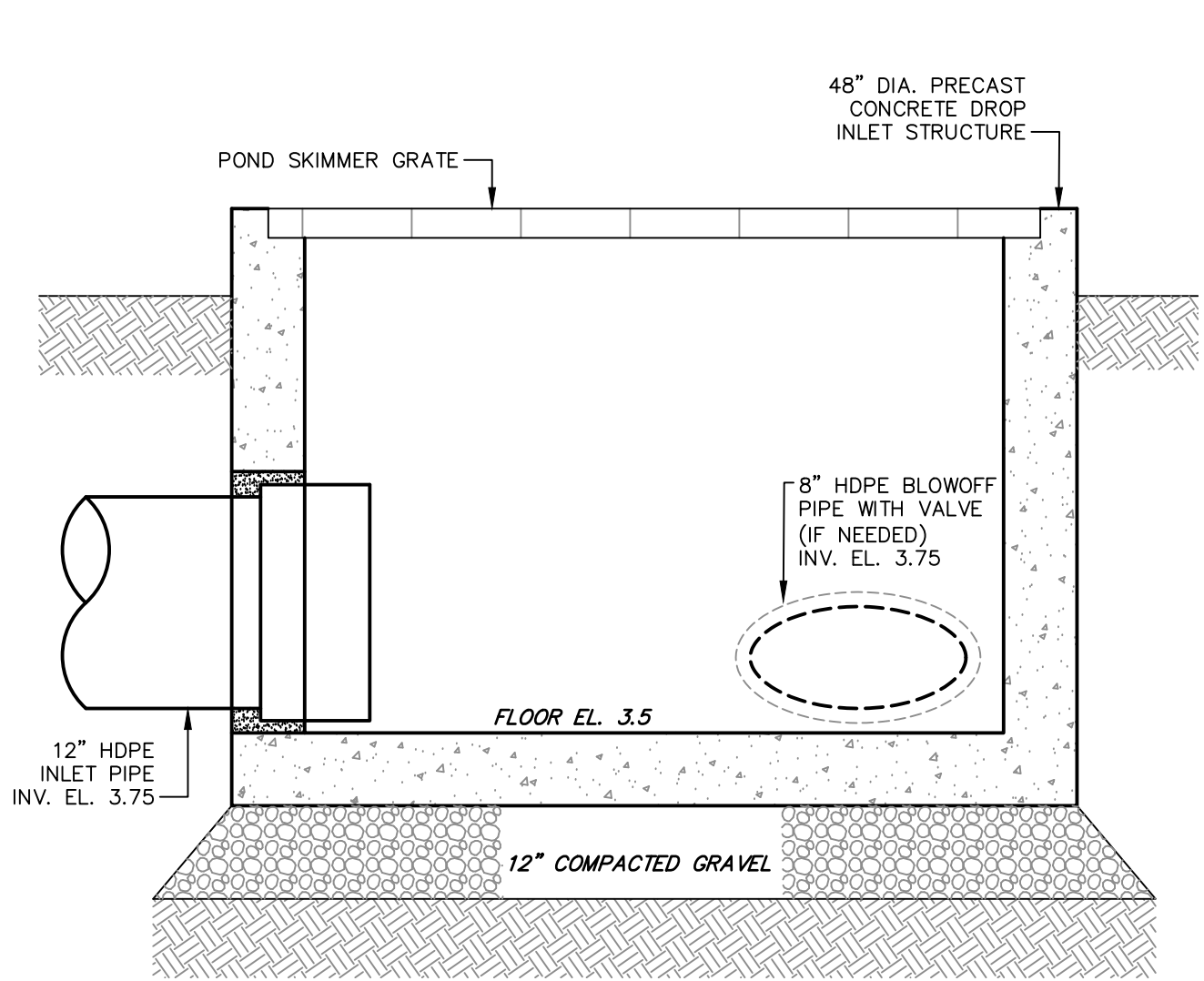
APPLICATION PREPARED BY:  
WOODS HOLE GROUP, INC.  
107 WATERHOUSE ROAD  
BOURNE, MA 02532

APPLICANT:  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

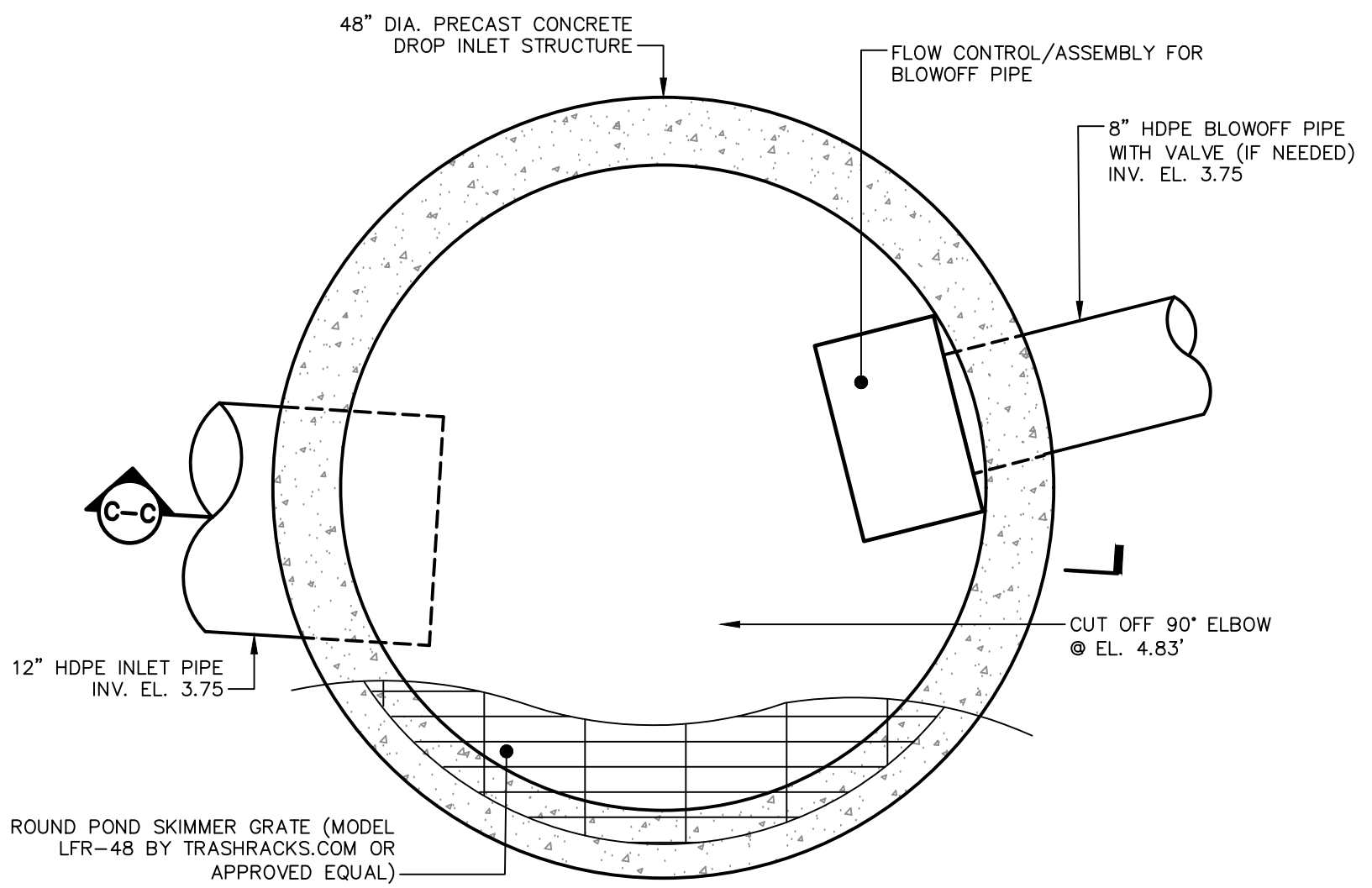
PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
DATE: JANUARY 12, 2023

SHEET: 23 OF 30



**SECTION C-C**



**PLAN**

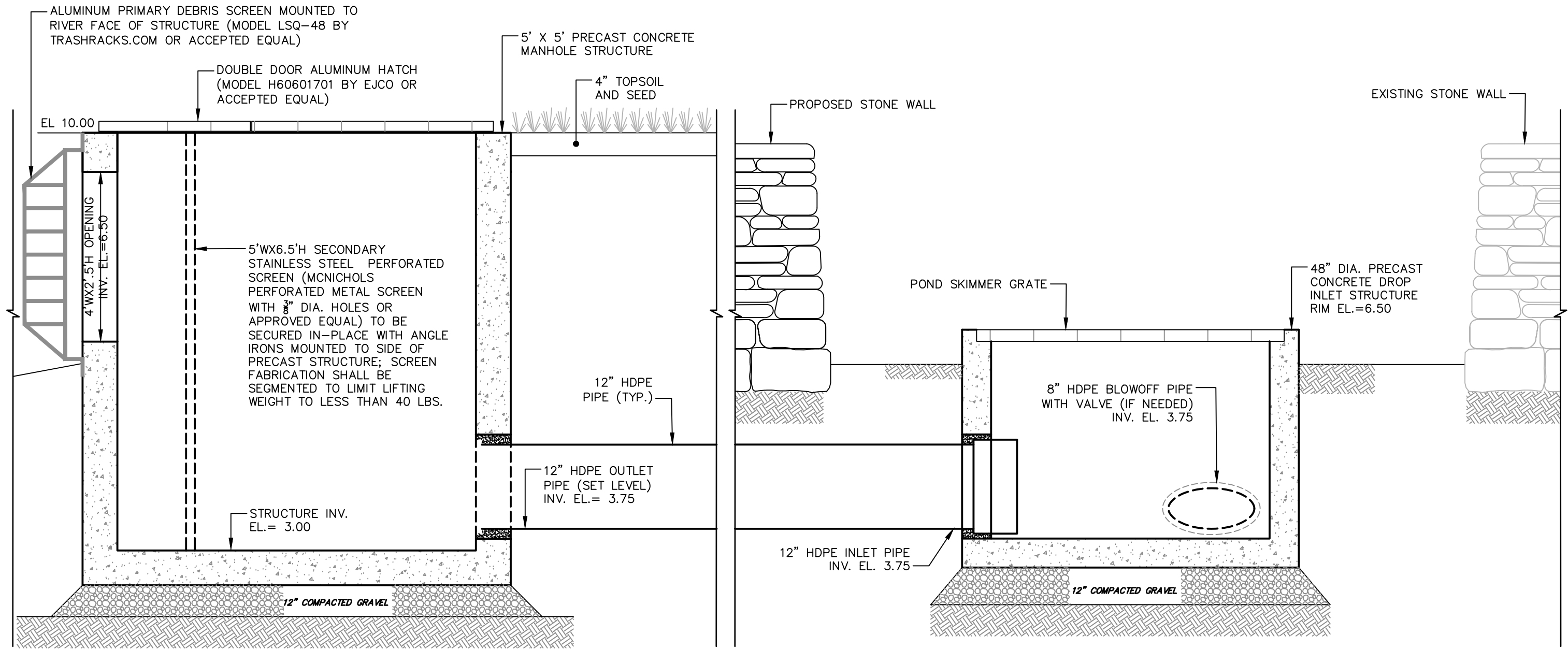
**48" DIA. PRECAST CONCRETE OUTLET STRUCTURE**  
**NOT TO SCALE**

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS  
 DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.9**  
 APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532  
 APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT  
 IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023  
 SHEET: 24 OF 30



**SECTION A-A**  
**NOT TO SCALE**

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.10**

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

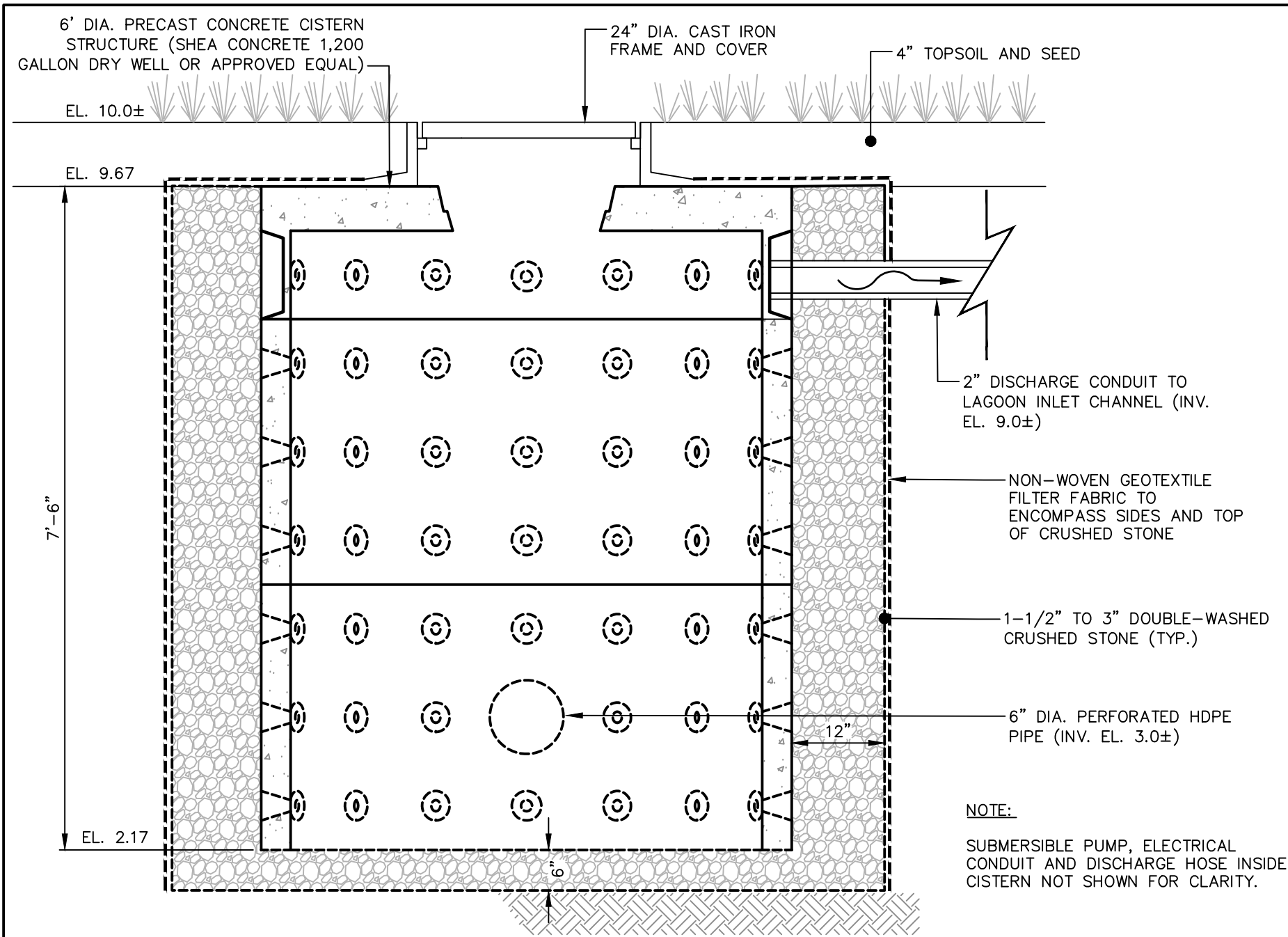
APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

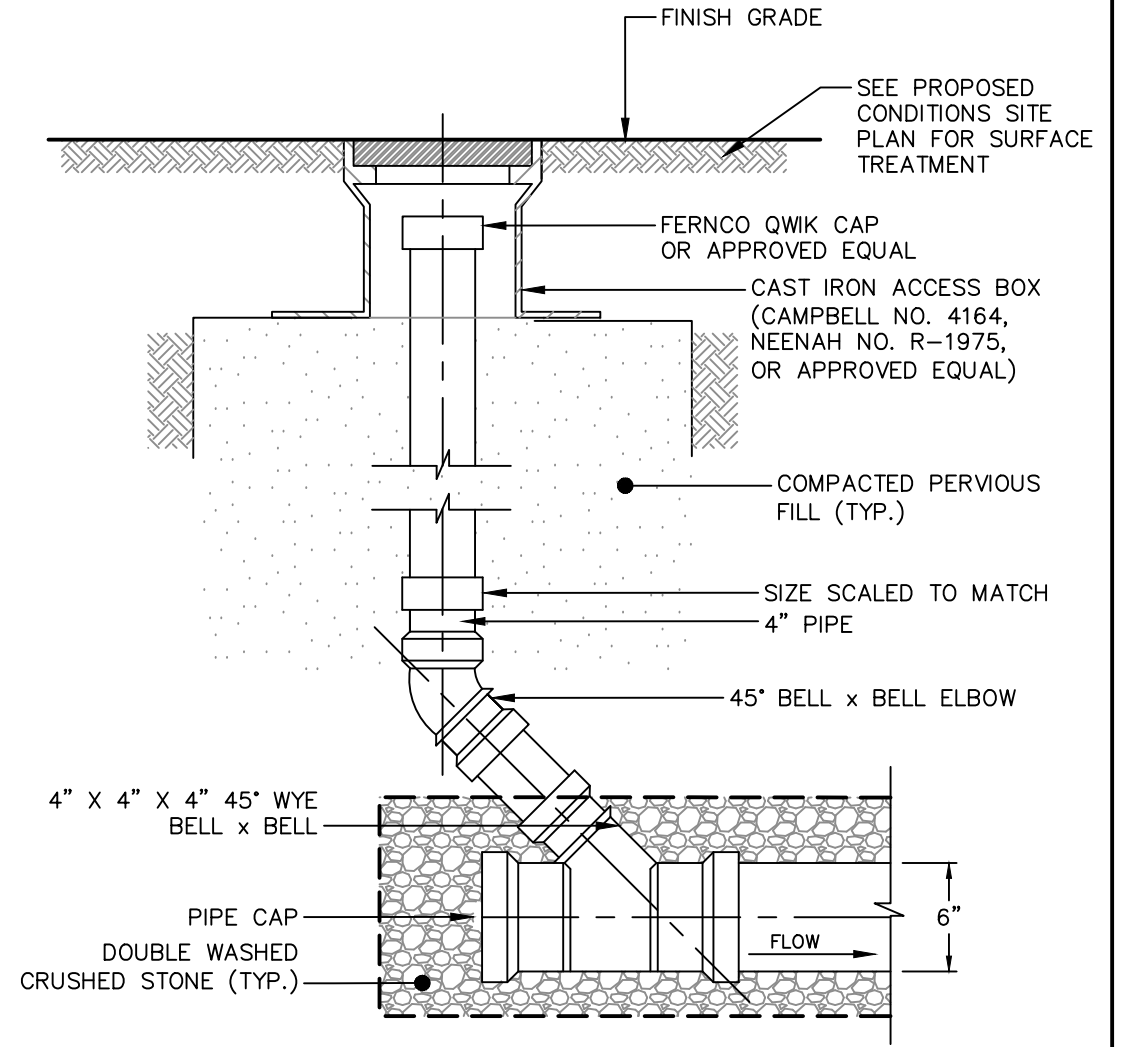
IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 25 OF 30





**PRECAST CONCRETE CISTERN**  
NOT TO SCALE



**UNDERDRAIN CLEANOUT**  
NOT TO SCALE

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
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MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
MHW: 4.01 (DOWNSTREAM OF DAM)  
HTL: 6.45 (DOWNSTREAM OF DAM)  
FUSS AND O'NEILL, INC.  
317 IRON HORSE WAY  
PROVIDENCE, RI 02908



**DETAIL PLAN NO.11**

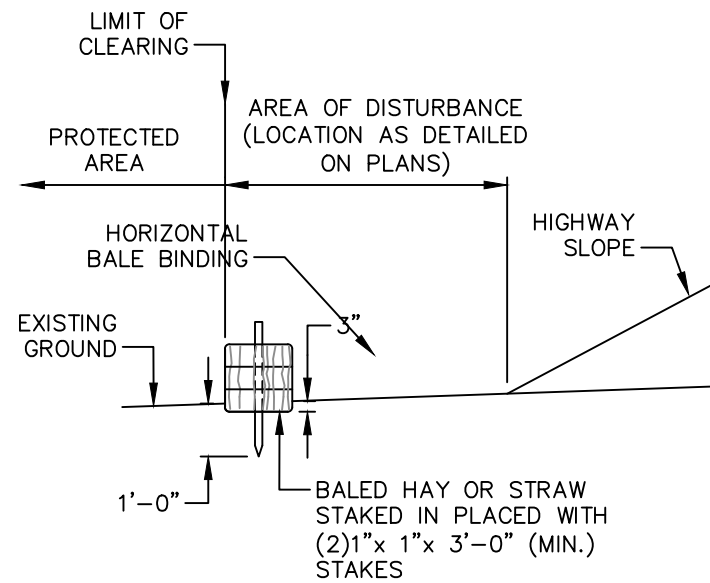
APPLICATION PREPARED BY:  
WOODS HOLE GROUP, INC.  
107 WATERHOUSE ROAD  
BOURNE, MA 02532

APPLICANT:  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

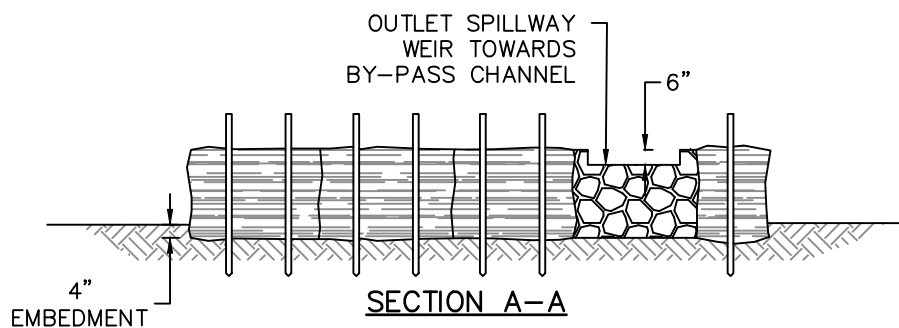
PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
DATE: JANUARY 12, 2023

SHEET: 26 OF 30



**ELEVATION**



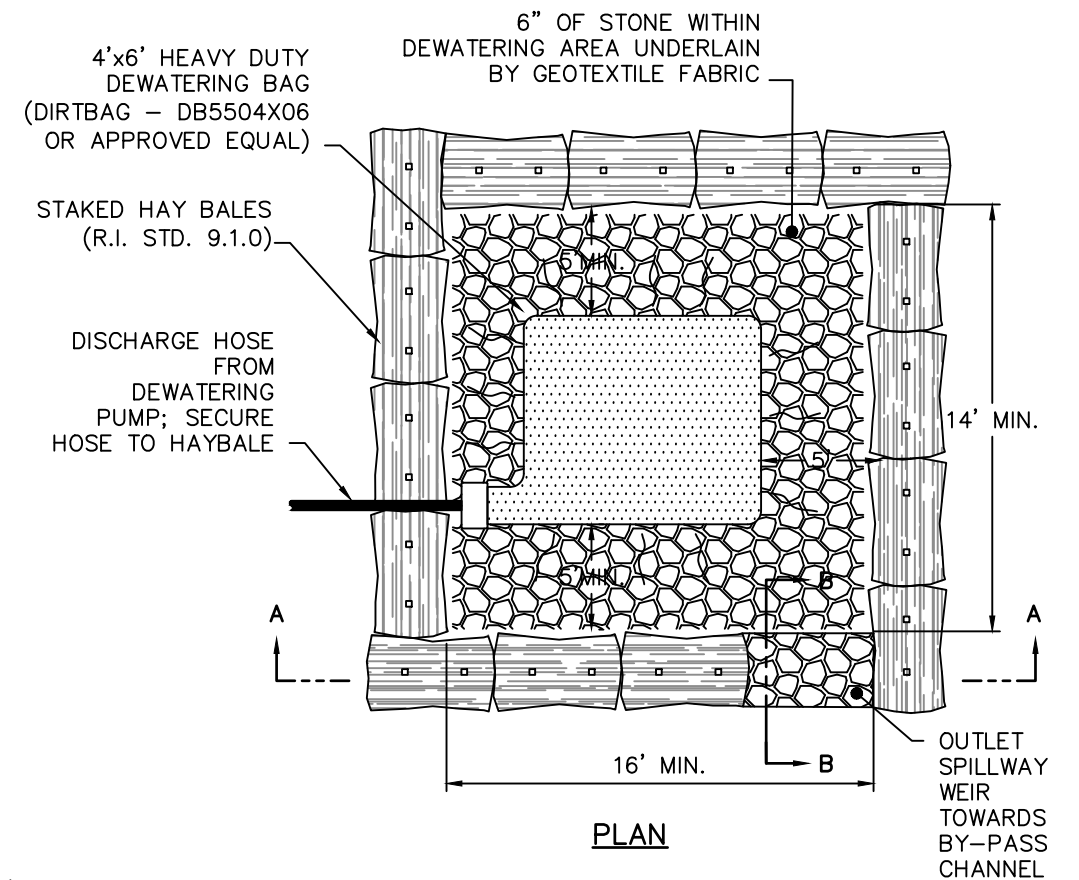
**SECTION A-A**

**NOTES:**

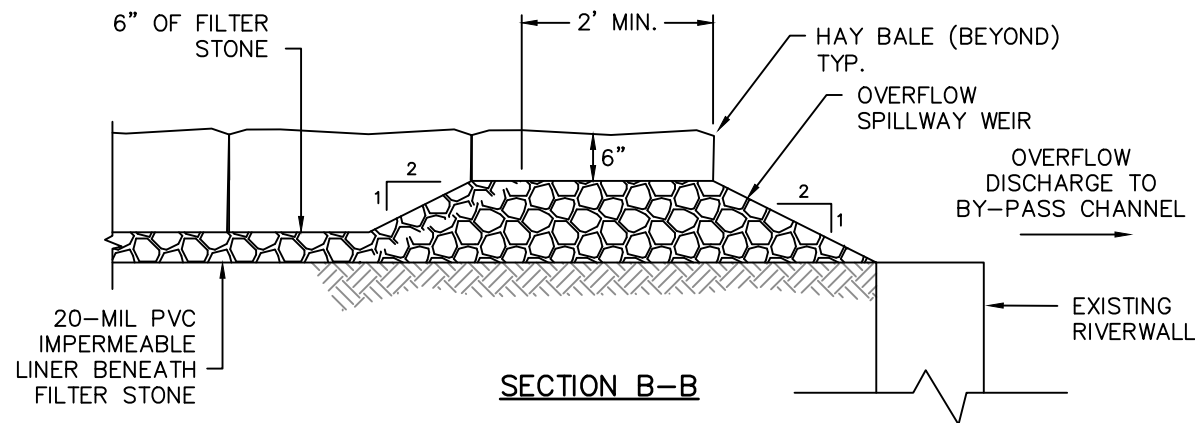
1. THE DEWATERING BAG, DIRTBAG® DB55 OR APPROVED EQUAL, SHALL BE HEAVY DUTY AND CONSIST OF A NONWOVEN BAG SEWN WITH A DOUBLE NEEDLE MATCHING USING A HIGH STRENGTH THREAD.
2. EACH DEWATERING BAG SHALL HAVE A FILL SPOUT LARGE ENOUGH TO ACCOMMODATE A 4-INCH DISCHARGE HOSE. THE BAG SHALL BE PROVIDED WITH STRAPS TO SECURE THE HOSE AND PREVENT PUMPED WATER FROM ESCAPING WITHOUT BEING FILTERED.
3. MAINTAIN DEWATERING BAG(S) AS NECESSARY TO EFFICIENTLY FILTER SEDIMENT OR PASS WATER AT A REASONABLE RATE. USE OF EXCESSIVE FLOW RATES OR OVERFILLING DIRTBAG® WITH SEDIMENT WILL CAUSE RUPTURES OF THE BAGS OR FAILURE OF THE HOSE ATTACHMENT STRAPS.
4. DISPOSE OF DEWATERING BAG AND CONTENTS AT OFF-SITE DISPOSAL FACILITY IN ACCORDANCE WITH THE APPROVED SOIL MANAGEMENT PLAN OR AS DIRECTED BY ENGINEER.
5. INSTALL DEWATERING BAG AND CRUSHED STONE BEDDING WITH A SLOPE SO INCOMING WATER FLOWS DOWNHILL THROUGH THE BAG WITHOUT CREATING MORE EROSION. STRAP THE NECK OF DEWATERING BAG TIGHTLY TO THE DISCHARGE HOSE.

**NOTES:**

1. HAY BALES FOR EROSION CONTROL SHALL CONFORM TO SECTION 767 OF THE MASSDOT STANDARD SPECIFICATIONS INCLUDING MATERIALS AND CONSTRUCTION METHODS.
2. BALES OF HAY SHALL BE FASTENED WITH WIRE AND HAVE A MINIMUM SIZE OF 1'x1.5'x3'.
3. FILTER STONE SHALL CONSIST OF 1-INCH MINUS STONE CONFORMING TO SUBSECTION M2.01.4 OF THE STANDARD SPECIFICATIONS.
4. FILTER FABRIC SHALL BE A NON-WOVEN GEOTEXTILE FILTER FABRIC AND SHALL CONFORM TO TYPE IV FABRIC PER SECTION M9.50.0 OF THE MASSDOT STANDARD SPECIFICATIONS.



**PLAN**



**SECTION B-B**

**DEWATERING AREA WITH FILTER BAG**

**NOT TO SCALE**

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.12**

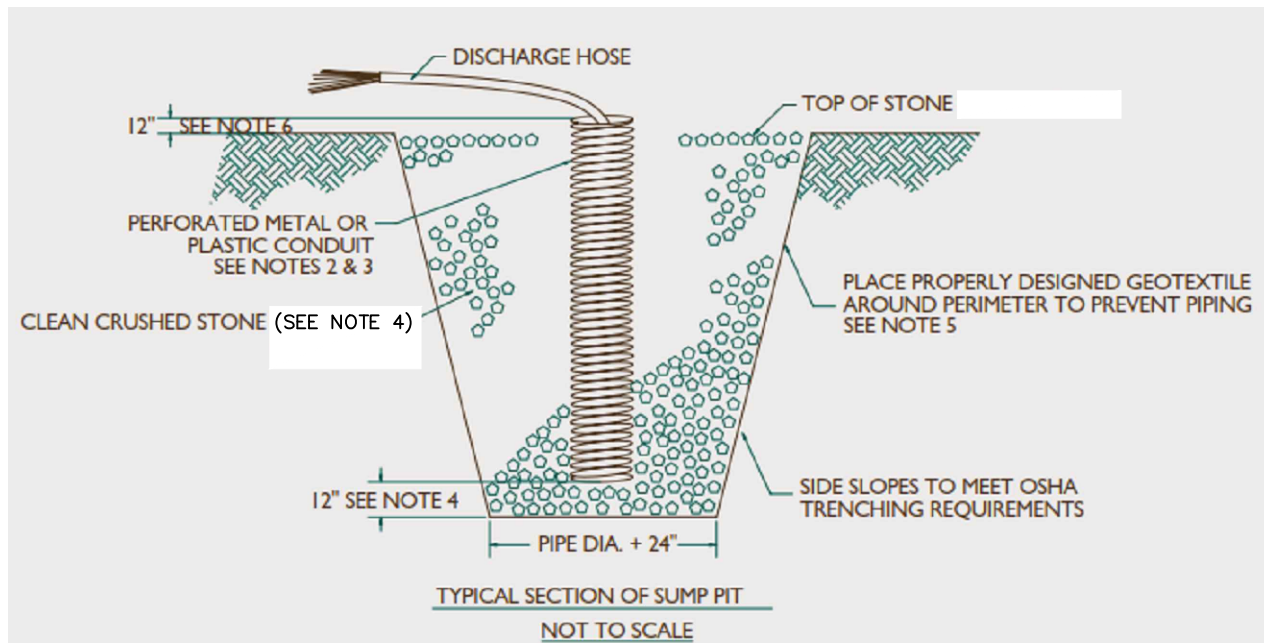
APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORAIN STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

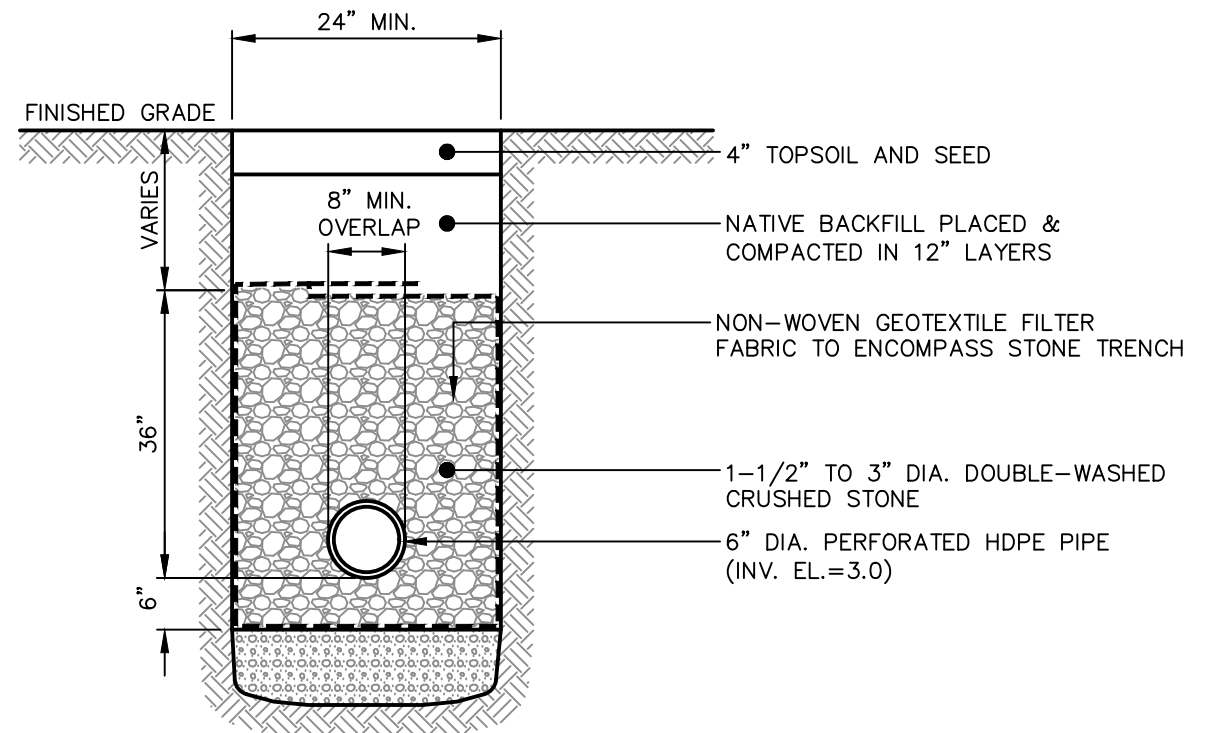
IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 27 OF 30



1. OVERALL SUMP PIT DIMENSIONS SHALL BE COMPATIBLE WITH ANTICIPATED SEEPAGE RATES AND PUMP SIZE TO BE USED.
2. THE STANDPIPE DIAMETER AND NUMBER OF PERFORATIONS SHALL BE COMPATIBLE WITH THE PUMP SIZE BEING USED.
3. PERFORATIONS IN THE STANDPIPE SHALL BE EITHER CIRCULAR OR SLOTS. PERFORATION SIZE SHALL NOT EXCEED 1/2" IN DIAMETER.
4. CRUSHED STONE SHALL CONFORM TO THE GRADATION LISTED FOR M2.01.0 OF THE MASSDOT STANDARD SPECIFICATIONS. CRUSHED STONE SHALL EXTEND A MINIMUM OF 12" BELOW THE BOTTOM OF THE STANDPIPE.
5. IF EXCESSIVE MOVEMENT OF FINE SOIL PARTICLES FROM THE SURROUNDING EXISTING SOILS IS ANTICIPATED, A PROPERLY DESIGNED GEOTEXTILE SHALL BE PLACED BETWEEN THE EXISTING SOILS AND THE CRUSHED STONE OR GRAVEL BACKFILL.
6. THE STANDPIPE SHALL EXTEND A MINIMUM OF 12" ABOVE THE SURROUNDING GROUND.

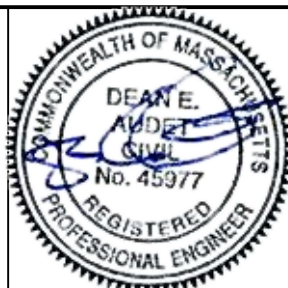
**TEMPORARY CRUSHED STONE DEWATERING SUMP DETAIL**  
**NOT TO SCALE**



**PERFORATED UNDERDRAIN**  
**NOT TO SCALE**

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.13**

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

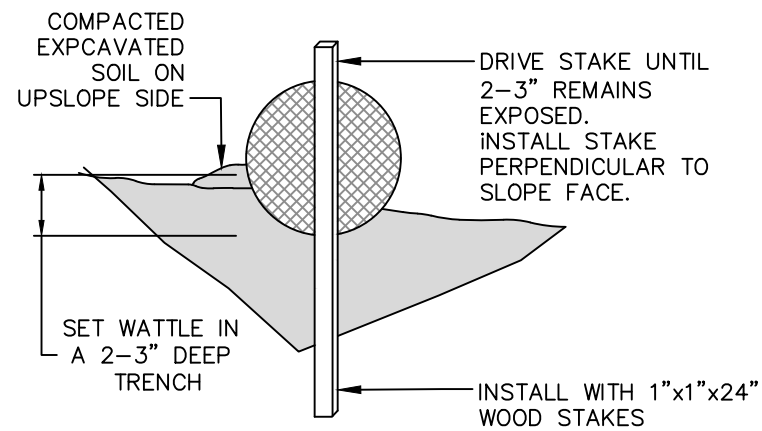
APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 28 OF 30

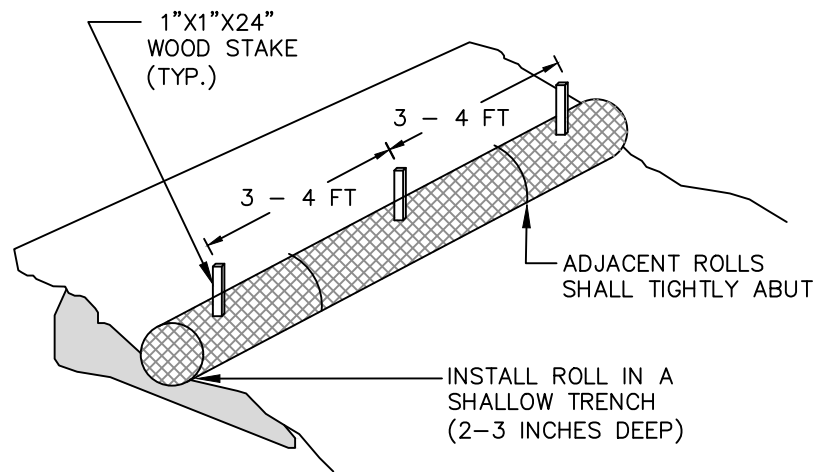




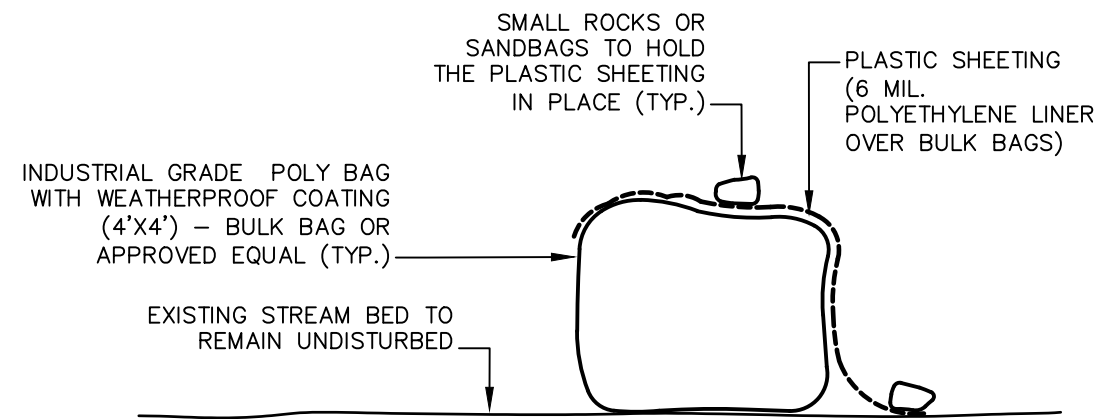
**ENTRENCHMENT**

**NOTES:**

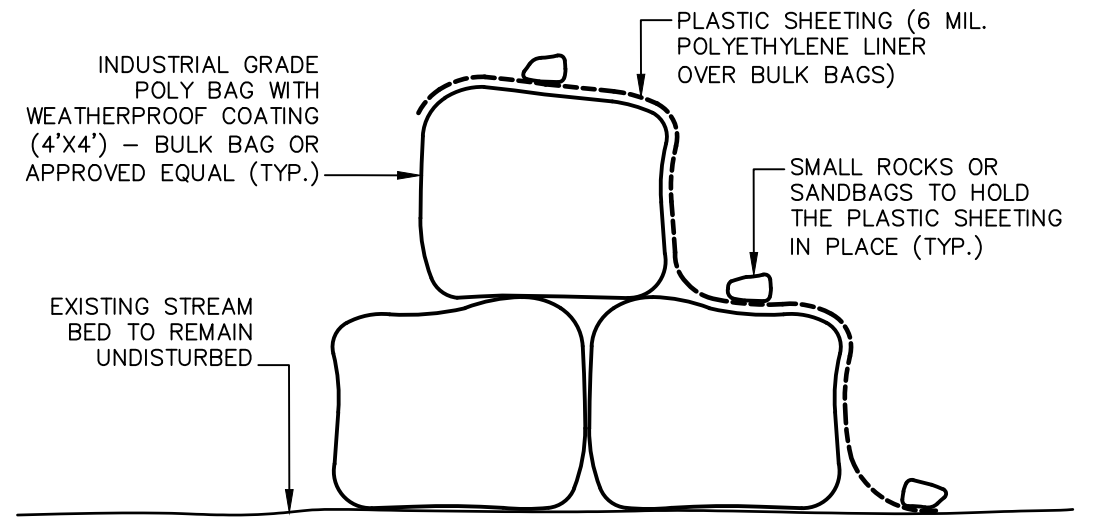
1. BIODEGRADABLE COIR ROLL SHALL BE INSTALLED AT LOCATIONS AS INDICATED ON THE DRAWINGS.
2. BIODEGRADABLE COIR ROLL SHALL BE TRENCHED APPROXIMATE 2-3 INCHES AND STAKED SUCH THAT WATTLES DIRECTLY CONTACT SOIL AND PRECLUDE UNDERMINING OR BLOWOUTS. THE TRENCH SHALL BE APPROXIMATELY 9 INCHES WIDE. STAKES SHALL BE DRIVEN THROUGH THE CENTER OF THE BIODEGRADABLE COIR ROLL AT A SPACING OF 3-4 FEET ON CENTER AND NO GREATER THAN 6" FROM THE EACH END OF THE BIODEGRADABLE COIR ROLL. COMPACT SOIL EXCAVATED TO CREATE TRENCH ON UPHILL SIDE SIDE.
3. ENDS OF ADJACENT BIODEGRADABLE COIR ROLL SHALL BE TIGHTLY BUTTED OR OVERLAPPED SO THAT NO OPENING EXISTS FOR WATER TO PASS THROUGH. BIODEGRADABLE COIR ROLL SHALL BE FREE OF DAMAGE OR DEFECTS WHEN DELIVERED TO THE SHIPPER. NO VEHICLES SHALL BE DRIVEN OVER BIODEGRADABLE COIR ROLL.
4. BIODEGRADABLE COIR ROLL SHALL BE 12-INCH PREMIUM FIBER ROLL MANUFACTURED BY US CONSTRUCTION FABRICS LLC, OR APPROVED EQUAL.



**TYPICAL WATTLE INSTALLATION GUIDE**



**SINGLE STACK CONFIGURATION  
(WATER DEPTH < 3')**



**DOUBLE STACK CONFIGURATION  
(3' < WATER DEPTH > 6')**

**BIODEGRADABLE FIBER ROLL**

NOT TO SCALE

**TEMPORARY COFFERDAM STRUCTURE  
(BULK BAGS OR APPROVED EQUAL)**

NOT TO SCALE

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS

DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
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 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
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 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.14**

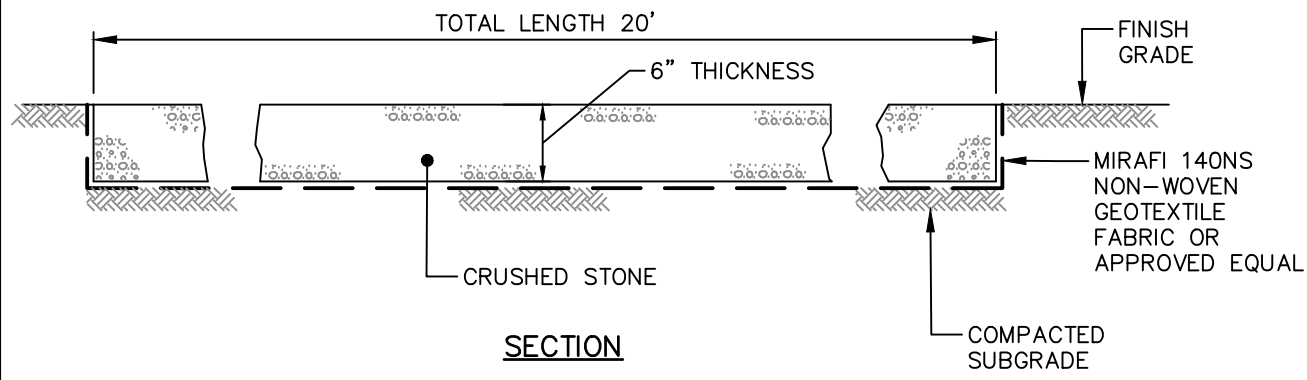
APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORAIN STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

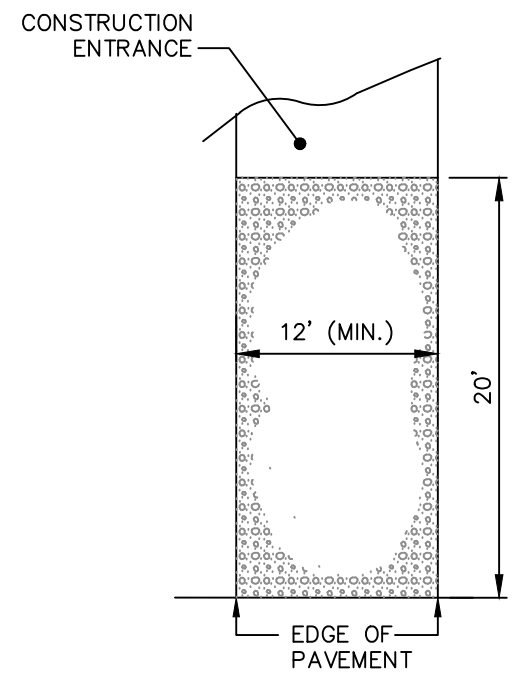
IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 29 OF 30



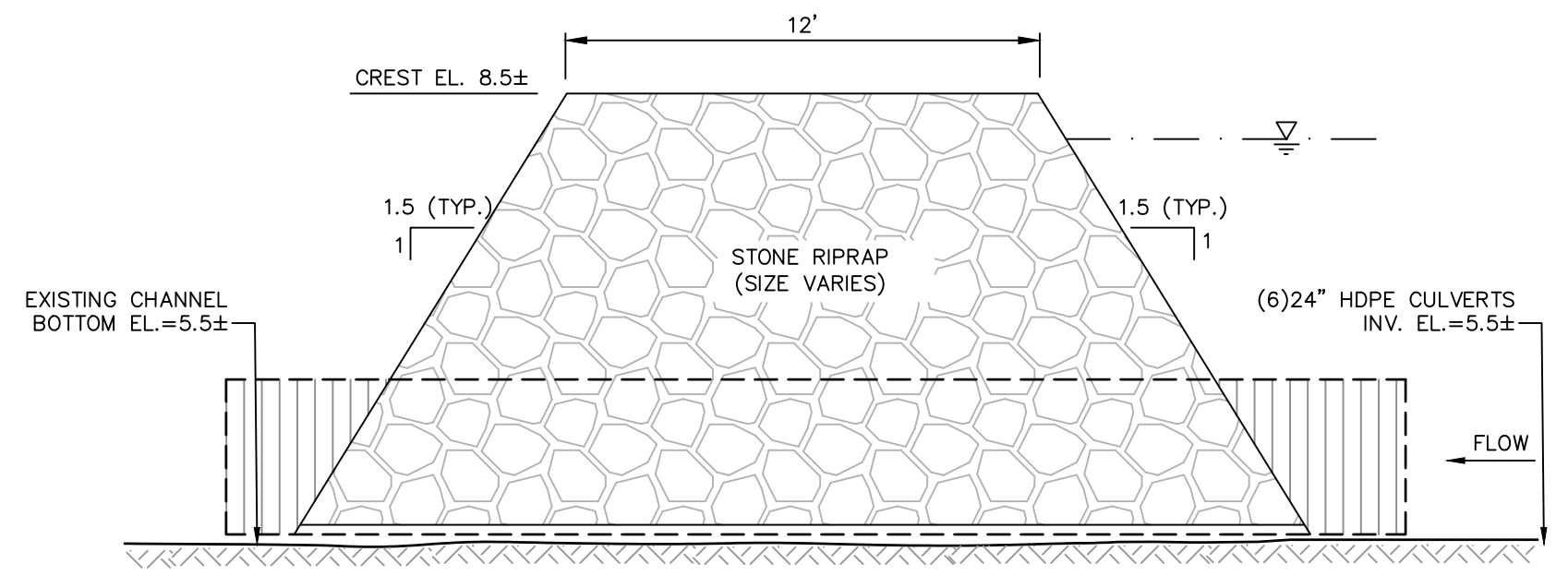
**SECTION**

- NOTES:**
1. MAINTAIN CONSTRUCTION ENTRANCE IN GOOD CONDITION THROUGHOUT CONSTRUCTION PERIOD.
  2. ANY PAVED AREAS, ADJACENT TO THE CONSTRUCTION ENTRANCE SHALL BE SWEEP DAILY TO REMOVE ANY MATERIAL THAT MAY BE TRACKED ONTO PAVEMENT.
  3. REMOVE STONE, FABRIC, AND TRACKED MATERIALS FOLLOWING CONSTRUCTION ACTIVITIES AND RESTORE AREA TO ORIGINAL CONDITION.
  4. CRUSHED STONE SHALL CONFORM TO THE GRADATION LISTED FOR M2.01.0 OF THE MASSDOT STANDARD SPECIFICATIONS. CRUSHED STONE SHALL EXTEND A MINIMUM OF 12" BELOW THE BOTTOM OF THE STANDPIPE.



**LOCATION PLAN**

**TEMPORARY CONSTRUCTION ENTRANCE**  
NOT TO SCALE



- NOTES:**
1. REMOVE ALL COFFERDAM MATERIALS AFTER PHASE 2 CONSTRUCTION IS COMPLETE.
  2. STONE RIPRAP SHALL CONSIST OF IMPORTED OR IN-SITU STONE WITH A D-50 OF APPROXIMATELY 18-INCHES AND A RANGE OF 12-INCH MINIMUM AND 24-INCH MAXIMUM SIZE. THE UNIFORM GRADATION FROM 12 TO 24-INCH ROCK SHALL HAVE LESS THAN 5% PASSING 12-INCH AND LESS THAN 5% GREATER THAN 24-INCHES.

**TEMPORARY CONSTRUCTION ACCESS COFFERDAM**  
NOT TO SCALE

PURPOSE: FISH PASSAGE IMPROVEMENT AND PARK SAFETY IMPROVEMENTS  
 DATUM: HORZ: NAD83 MA MAINLAND SP(FT)  
 VERT: NAVD88 (FT)  
 MLW: -5.00 (DOWNSTREAM OF PROJECT SITE)  
 MHW: 4.01 (DOWNSTREAM OF DAM)  
 HTL: 6.45 (DOWNSTREAM OF DAM)  
 FUSS AND O'NEILL, INC.  
 317 IRON HORSE WAY  
 PROVIDENCE, RI 02908



**DETAIL PLAN NO.15**

APPLICATION PREPARED BY:  
 WOODS HOLE GROUP, INC.  
 107 WATERHOUSE ROAD  
 BOURNE, MA 02532

APPLICANT:  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA 02050

PROPOSED SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT

IN: VETERANS MEMORIAL PARK  
 AT: MARSHFIELD, PLYMOUTH COUNTY, MASSACHUSETTS  
 DATE: JANUARY 12, 2023

SHEET: 30 OF 30



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Maura T. Healey  
Governor

Rebecca L. Tepper  
Secretary

Kimberley Driscoll  
Lieutenant Governor

Bonnie Heiple  
Commissioner

**NOV 20 2023**

Town of Marshfield  
c/o Woods Hole Group  
Attn: Beth Gurney  
107 Waterhouse Road  
Bourne, MA 02532

**RE: ISSUANCE OF CHAPTER 91 WATERWAYS LICENSE**  
**Waterways License Application No. 23-WW01-0069-APP, License No. WW01-0000259**  
**Town of Marshfield, Veterans Memorial Park, South River, 2200 Ocean Street, Marshfield**

Dear Sir or Madam,

The Department of Environmental Protection hereby issues the above-referenced Waterways License, enclosed, authorizing you to perform certain activities pursuant to M.G.L. c. 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 may render this license void.

This License is not final until all administrative appeal periods from this License have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed. The appeal period is for twenty-one (21) days. No work shall be undertaken until the License has become final and 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

### **RECORDING OF THE LICENSE**

This License must be recorded at the 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 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 sixty (60) days of the date of issuance will render this license void pursuant to 310 CMR 9.18.**

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.

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](http://www.mass.gov/dep)

Printed on Recycled Paper

**REQUEST CERTIFICATE OF COMPLIANCE**

Pursuant to 310 CMR 9.19, once the proposed project is completed you 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.

**NOTICE OF APPEAL RIGHTS**

**Who has the right to appeal?**

The following persons shall have the right to an adjudicatory hearing concerning this decision by the Department to grant or deny a license or permit, in accordance with 310 CMR 9.17(1): (a) an applicant who has demonstrated property rights in the lands in question, or which is a public agency; (b) any person aggrieved by the decision of the Department to grant a license or permit who has submitted written comments within the public comment period; (c) ten (10) residents of the Commonwealth who, pursuant to M.G.L. c. 30A, § 10A, have submitted comments within the public comment period with at least 5 of the 10 residents residing in the municipality(s) in which the license or permitted activity is located. The appeal shall clearly and specifically state the facts and grounds for the appeal and the relief sought, and each appealing resident shall file an affidavit stating the intent to be part of the group and to be represented by its authorized representative; (d) the municipal official in the affected municipality who has submitted written comments within the public comment period; and (e) CZM, for any project identified in 310 CMR 9.13(2) (a) for CZM participation or, in an Ocean Sanctuary, if it has filed a notice of participation within the public comment period.

**How can I request an adjudicatory hearing?**

A person requesting an adjudicatory hearing must submit a "Notice of Claim" to the Department, with a copy of the MassDEP Transmittal Form and including the detail specified below, within twenty-one (21) days of the date of issuance of this decision. The MassDEP Fee Transmittal Form is available at the following website: <https://www.mass.gov/doc/adjudicatory-hearing-fee-transmittal-form/download>. The Notice of Claim must be made in writing and sent by certified mail or hand delivery to:

MassDEP Office of Appeals and Dispute Resolution  
Case Administrator  
100 Cambridge Street, Suite 900  
Boston, MA 02114

A copy of the complete Notice of Claim must be sent at the same time by certified mail or hand delivery to: (1) the applicant, (2) the municipal official of the city or town where the project is located, and (3) the issuing office of the MassDEP, which in this case is located at:

MassDEP Waterways Regulation Program  
20 Riverside Drive  
Lakeville, MA 02347

The MassDEP Fee Transmittal Form and a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Waterways License Application No. 23-WW01-0069-APP, License No. WW01-0000259  
Town of Marshfield, Veterans Memorial Park, South River, 2200 Ocean Street, Marshfield

Mass. Department of Environmental Protection  
Commonwealth Master Lockbox  
P.O. Box 4062  
Boston, Massachusetts 02211

What information must be included in the hearing request?

Pursuant to 310 CMR 9.17(3), any Notice of Claim requesting an adjudicatory hearing must include the following information:

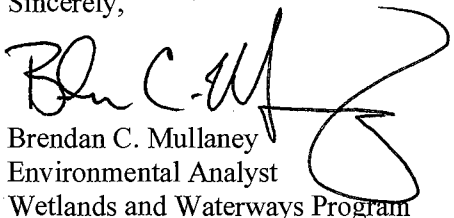
- (a) the MassDEP Waterways Application File Number;
- (b) the complete name, address, fax number and telephone number of the applicant;
- (c) the address of the project;
- (d) the complete name, address, fax number, and telephone number of the party filing the request and, if represented by counsel, the name, address, fax number, and phone number of the attorney;
- (e) if claiming to be a person aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found in 310 CMR 9.02;
- (f) a clear statement that a formal adjudicatory hearing is being requested;
- (g) a clear statement of the facts which are the grounds for the proceedings, the specific objections to the MassDEP's written decision, and the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written decision; and
- (h) a statement that a copy of the request has been sent to: the applicant and the municipal official of the city or town where the project is located.

Dismissal of request

The request for appeal will be dismissed if the filing fee is not paid, unless the appellant is exempt or is granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Please feel free to contact me at (508) 946-2730 or [david.hill@mass.gov](mailto:david.hill@mass.gov), if you have any questions pertaining to the Chapter 91 License.

Sincerely,



Brendan C. Mullaney  
Environmental Analyst  
Wetlands and Waterways Program

ecc: Daniel Padien, Waterways Program Chief, DEP Boston  
Office of Coastal Zone Management  
Marshfield Harbormaster  
Marshfield Conservation Commission  
Michael Maresco, Town Administrator

# The Commonwealth of Massachusetts



No. WW01-0000259

## Whereas, Town of Marshfield

of -- Marshfield -- in the County of -- Plymouth -- and Commonwealth aforesaid, has applied to the Department of Environmental Protection for license to -- remove an existing dam, construct and maintain a riffle-pool fishway, water level control structures, pedestrian bridges, associated park improvements and to dredge --

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 -- Select Board -- of the -- Town of Marshfield. --

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

-- Town of Marshfield --, 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 -- remove an existing dam, construct and maintain a riffle-pool fishway, water level control structures, pedestrian bridges, associated park improvements and to dredge --

in and over the waters of the -- South River -- at -- 2200 Ocean Street -- in the Town of Marshfield -- and in accordance with the locations shown and details indicated on the accompanying DEP License Plan No. WW01-0000259 (23 sheets).

The structures hereby authorized shall be limited to the following use(s): river restoration to enhance fish passage and aquatic habitat, and public access to waterfront open space for passive recreational purposes.

This license is issued for an unlimited term in accordance with 310 CMR 9.15(1)(c).

Special Waterways Conditions:

1. The Licensee shall comply with the terms and conditions for the dam removal and associated dredging as referenced in the 401 Water Quality Certification (Transmittal #23-WW26-0003-APP) issued by the Department on June 20, 2023, to the Town of Marshfield, Attention Michael Maresco.
2. In accordance with any license condition, easement, or other public right of lateral passage that exists in the area of the subject property lying below the high water mark, the Licensee shall allow the public in the exercise of such rights to pass freely over or around all structures within such area.
3. All work authorized herein shall be completed within five (5) years of the date of license issuance. Said construction period may be extended by the Department for one or more one year periods without public notice, provided that the Applicant submits to the Department, thirty (30) days prior to the expiration of said construction period, a written request to extend the period and provides an adequate justification for said extension.
4. 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 in the Commonwealth that the project was completed in accordance with the License.

Special Dredge Conditions:

1. Dredging of approximately 800 cubic yards of material associated with the dam removal, river channel and lagoon restoration, shall be performed by mechanical methods.
2. Dredging shall be limited to the areas delineated on License Plan No. WW01-0000259.
3. No dredging shall occur from February 1<sup>st</sup> to July 15<sup>th</sup> and September 1<sup>st</sup> to November 15<sup>th</sup> of any year.
4. Approximately 275 cubic yards of suitable dredge material will be beneficially reused onsite to restore the river channel, fishway and lagoon. Remaining dredge sediment will be dewatered and transported offsite to the Marshfield compost facility for beneficial reuse in upland areas.
5. Maintenance dredging may be performed for a period of ten (10) years subsequent to the date of issuance of this permit.

Please see pages 3 and 4 for additional conditions to this License.

Duplicate of said plan, number WW01-0000259 is on file in the office of said Department, and original of said plan accompanies this License, and is to be referred to as a part hereof.



STANDARD WATERWAYS LICENSE CONDITIONS

1. Acceptance of this Waterways 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 Waterways 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 Waterways License void.
4. This Waterways 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 Waterways 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 Waterways 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.
7. This Waterways 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, G.L. Chapter 131, s.40.
8. This Waterways 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:

     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. Said lands are held in trust by the Commonwealth for the benefit of the public.

     a 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.

  X   Navigable River and Streams. 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 WATERWAYS DREDGING CONDITIONS

1. This Waterways License is issued subject to all applicable federal, state, county, and municipal laws, ordinances, by-laws, and regulations, including but not limited to, a valid Order of Conditions issued pursuant to the Wetlands Protection Act, M.G.L. Chapter 131, s.40. In particular, this issuance is subject to the provisions of Sections 52 to 56, inclusive of Chapter 91 of the General Law and its Regulations 310 CMR 9.40(5), which provides, in part, that the transportation and dumping of dredge material shall be done under the supervision of the Department, and, when required, the Licensee shall provide at his/her expense a dredge inspector approved by the Department.
2. This Waterways Permit is issued upon the express condition that dredging and transportation and disposal of dredge material shall be in strict conformance with the Water Quality Certification issued by the Department of Environmental Protection.
3. All subsequent maintenance dredging, and transport and disposal/reuse of dredged material during the term of this License shall conform to the standards and conditions applied to the original dredging operation performed under this License.
4. After completion of the work hereby authorized, the Licensee shall furnish to the Department a suitable plan showing the depths at mean low water over the area dredged. Dredging under this License shall be conducted so as to cause no unnecessary obstruction of the free passage of vessels, and care shall be taken to cause no shoaling. If, however, any shoaling is caused, the Licensee shall, at his/her expense, remove the shoal areas. The Licensee shall pay all costs associated with such work. Nothing in this License shall be construed to impair the legal rights of any person, or to authorize dredging on land not owned by the Licensee without consent of the owner(s) of such property.
5. The Licensee 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, suits, damages, costs and expenses incurred by reason thereof.
6. The Licensee shall, at least three days prior to the commencement of any dredging in tide water, give written notice to the Department of the location and amount of the proposed work, and of the time at which work is expected to begin.
7. Whosoever violates any provision of this License shall be subject to a fine of \$25,000 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 \$25,000 per day for each day such violation occurs or continues.

The amount of tide-water displaced by the work hereby authorized has been ascertained by said Department, and compensation thereof has been made by the said -- Town of Marshfield -- by paying into the Treasury of the Commonwealth -- zero dollars and zero cents (\$0.00) -- for each cubic yard so displaced, 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 plan are recorded within 60 days from the date hereof, in the Registry of Deeds for the County of Plymouth.

IN WITNESS WHEREAS, said Department of Environmental Protection have hereunto set their hands this *20th* day of *November* in the year two thousand twenty-three.

for Program Chief *[Signature]*

Department of Environmental Protection

Commissioner *[Signature]*

THE COMMONWEALTH OF MASSACHUSETTS

This license is approved in consideration of the payment into the treasury of the Commonwealth by the said -- Town of Marshfield --

of the further sum of -- zero dollars and zero cents (\$ 0.00) --

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.

*[Signature]*  
Governor

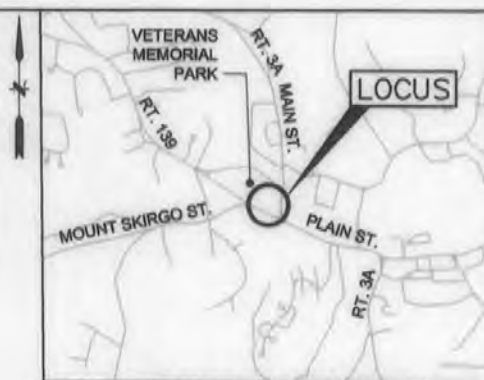
I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

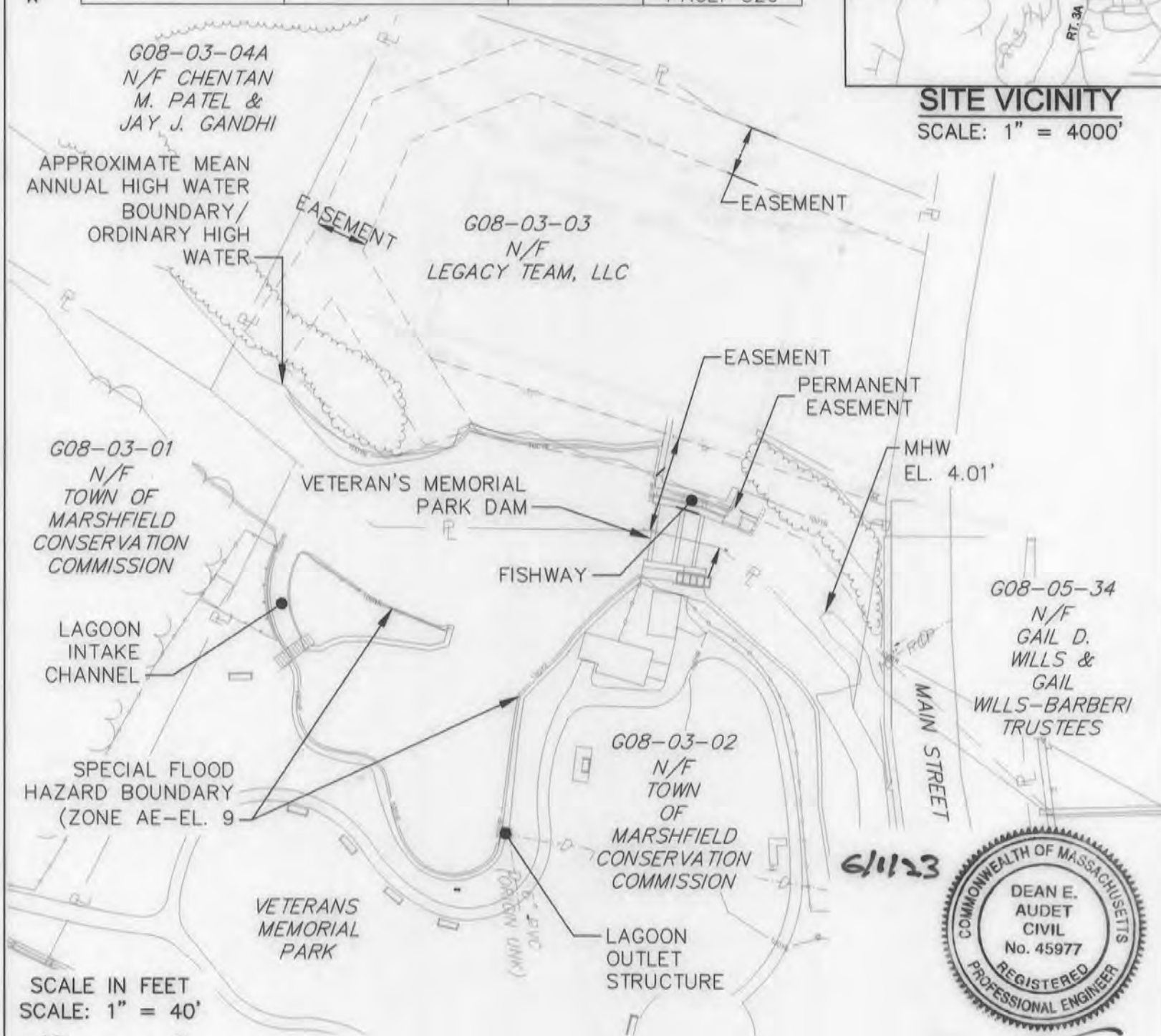
*[Signature]*  
REGISTERED PROFESSIONAL ENGINEER

PARCEL WHERE WORK IS BEING AUTHORIZED

OWNER	ADDRESS	PARCEL ID	DEED REFERENCE
TOWN OF MARSHFIELD	2200 OCEAN STREET	G08-03-02	BOOK: 2205 PAGE: 492
LEGACY TEAM LLC	25 MAIN STREET	G08-03-03	BOOK: 47697 PAGE: 320



**SITE VICINITY**  
SCALE: 1" = 4000'



SCALE IN FEET  
SCALE: 1" = 40'  
-40 0



EXISTING CONDITIONS PLAN

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 1 OF 23

LICENSE PLAN NO. WW01-0000259

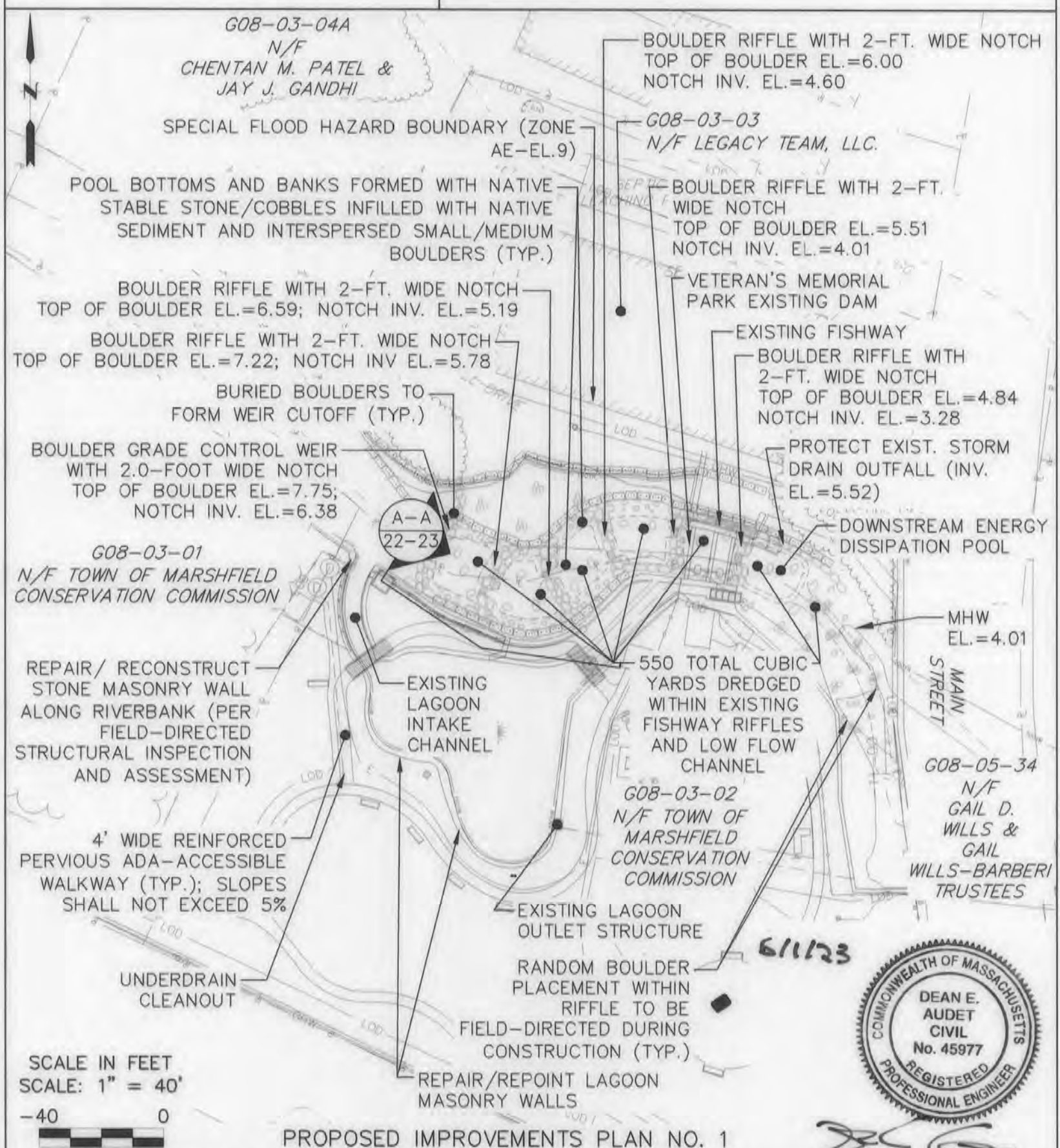
Approved by Department of Environmental Protection  
of Massachusetts

*[Signature]*  
*[Signature]*  
NOV 20 2023

I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER



PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 2 OF 23

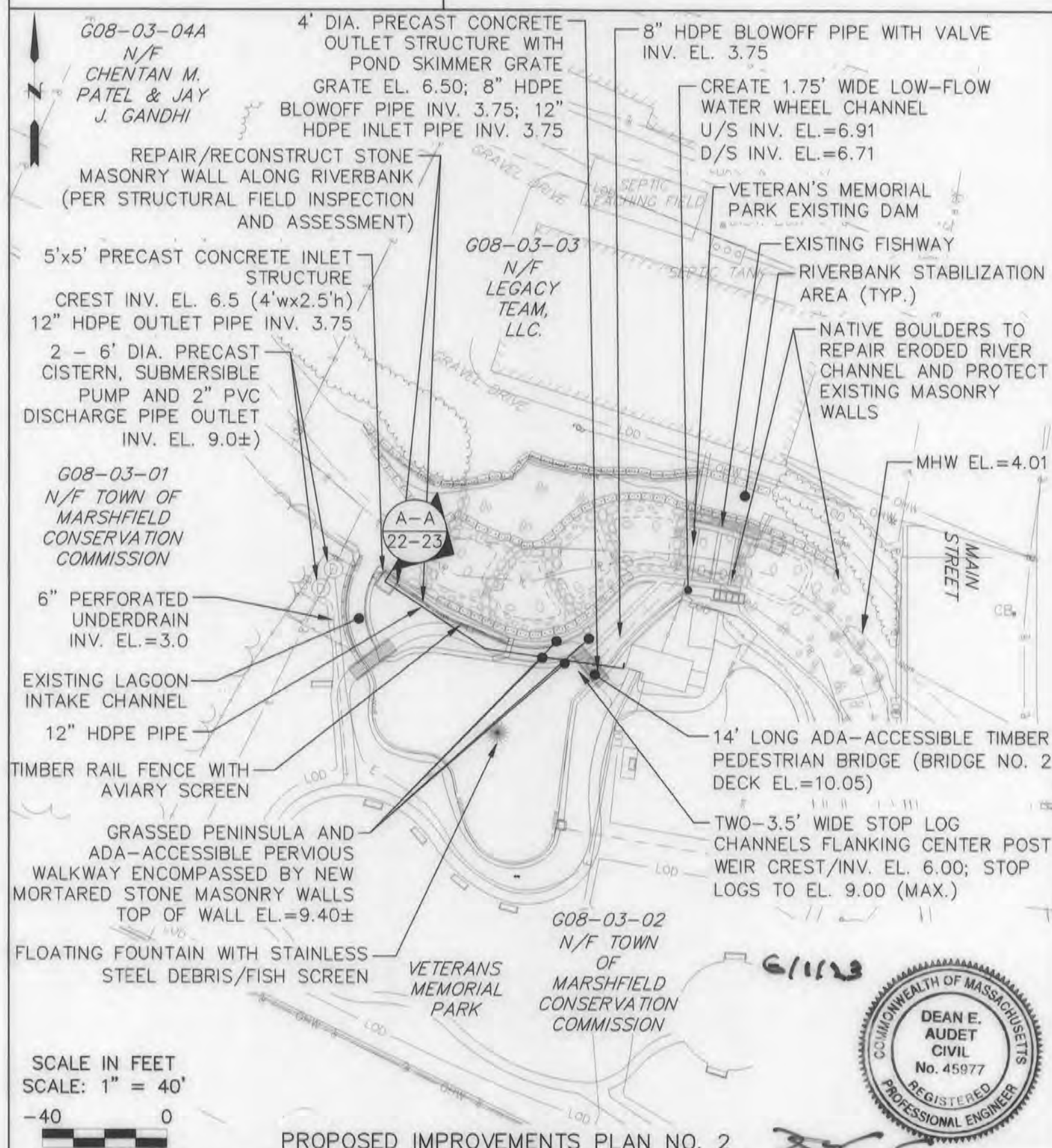
LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**



I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

*[Signature]*  
REGISTERED PROFESSIONAL ENGINEER



SCALE IN FEET  
SCALE: 1" = 40'  
-40 0

PROPOSED IMPROVEMENTS PLAN NO. 2

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 3 OF 23

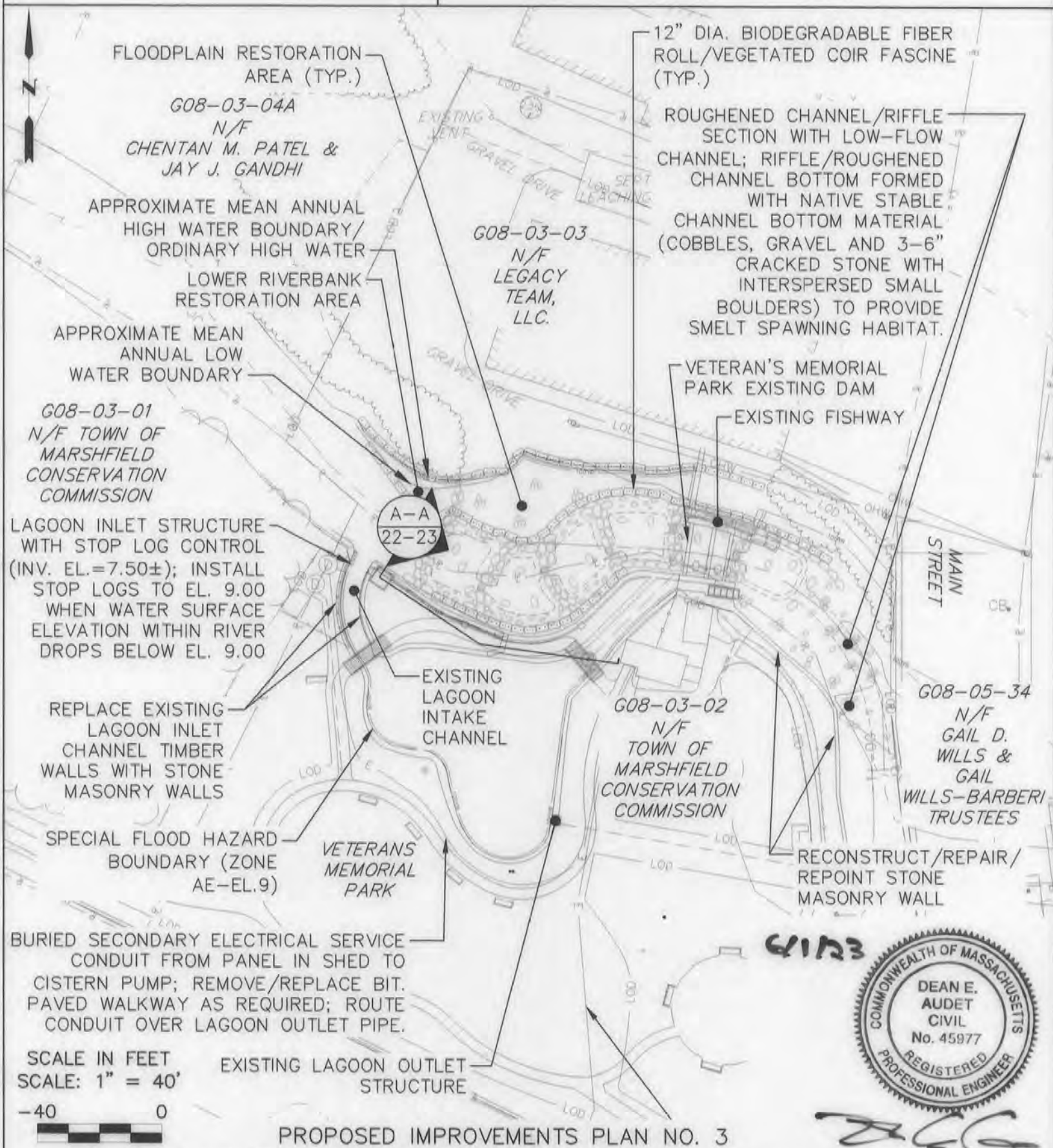
LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**



I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

*[Signature]*  
REGISTERED PROFESSIONAL ENGINEER



SCALE IN FEET  
SCALE: 1" = 40'  
-40 0

PROPOSED IMPROVEMENTS PLAN NO. 3

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 4 OF 23



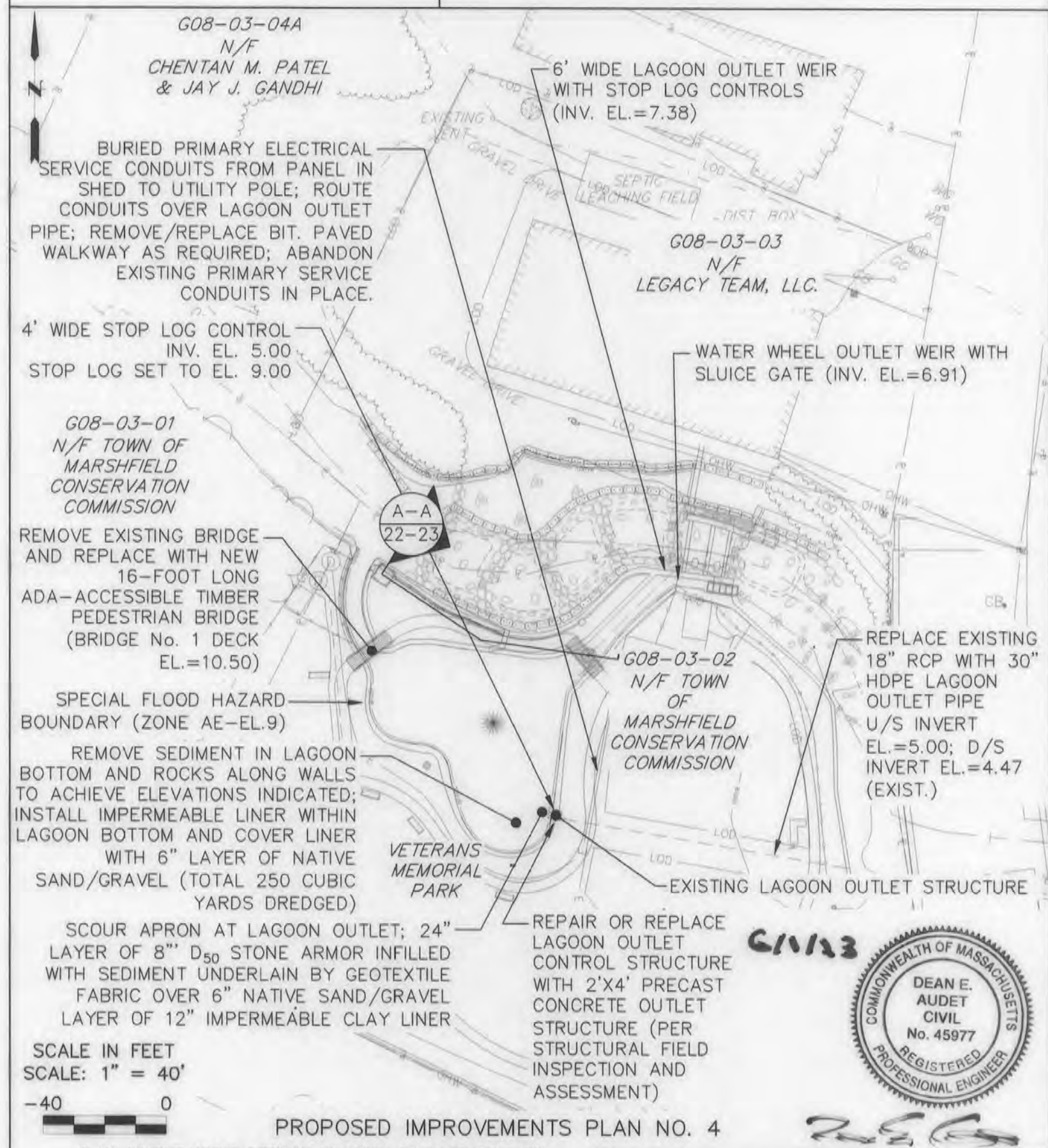
LICENSE PLAN NO. **WW01-00002-59**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**



I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

*[Signature]*  
REGISTERED PROFESSIONAL ENGINEER



SCALE IN FEET  
SCALE: 1" = 40'  
-40 0

PROPOSED IMPROVEMENTS PLAN NO. 4

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 5 OF 23

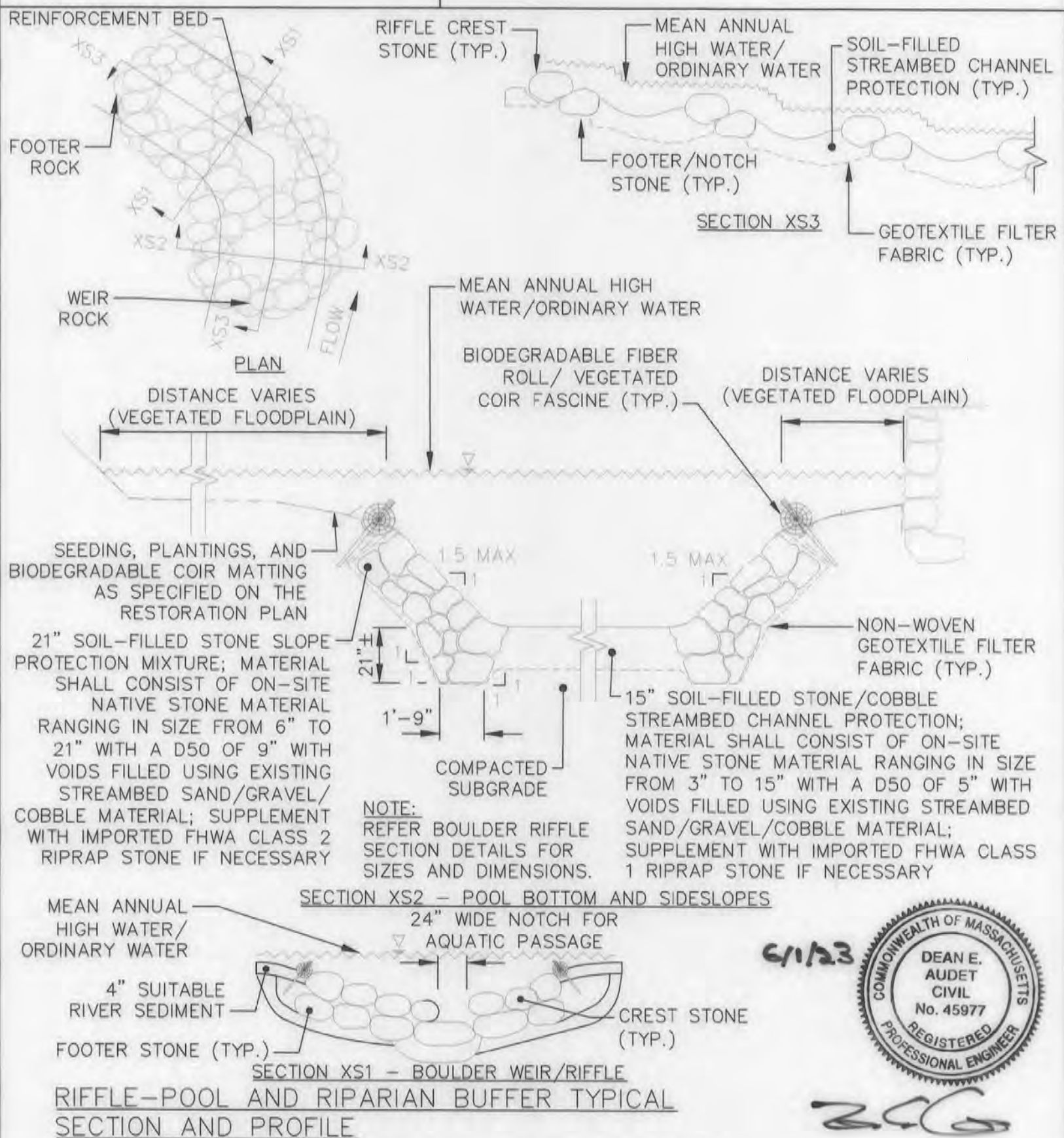
LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**



I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER



NOT TO SCALE PROPOSED IMPROVEMENTS PLAN NO. 5

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 6 OF 23

LICENSE PLAN NO. WW01-0000259  
Approved by Department of Environmental Protection  
Date: NOV 20 2023

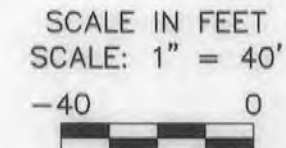
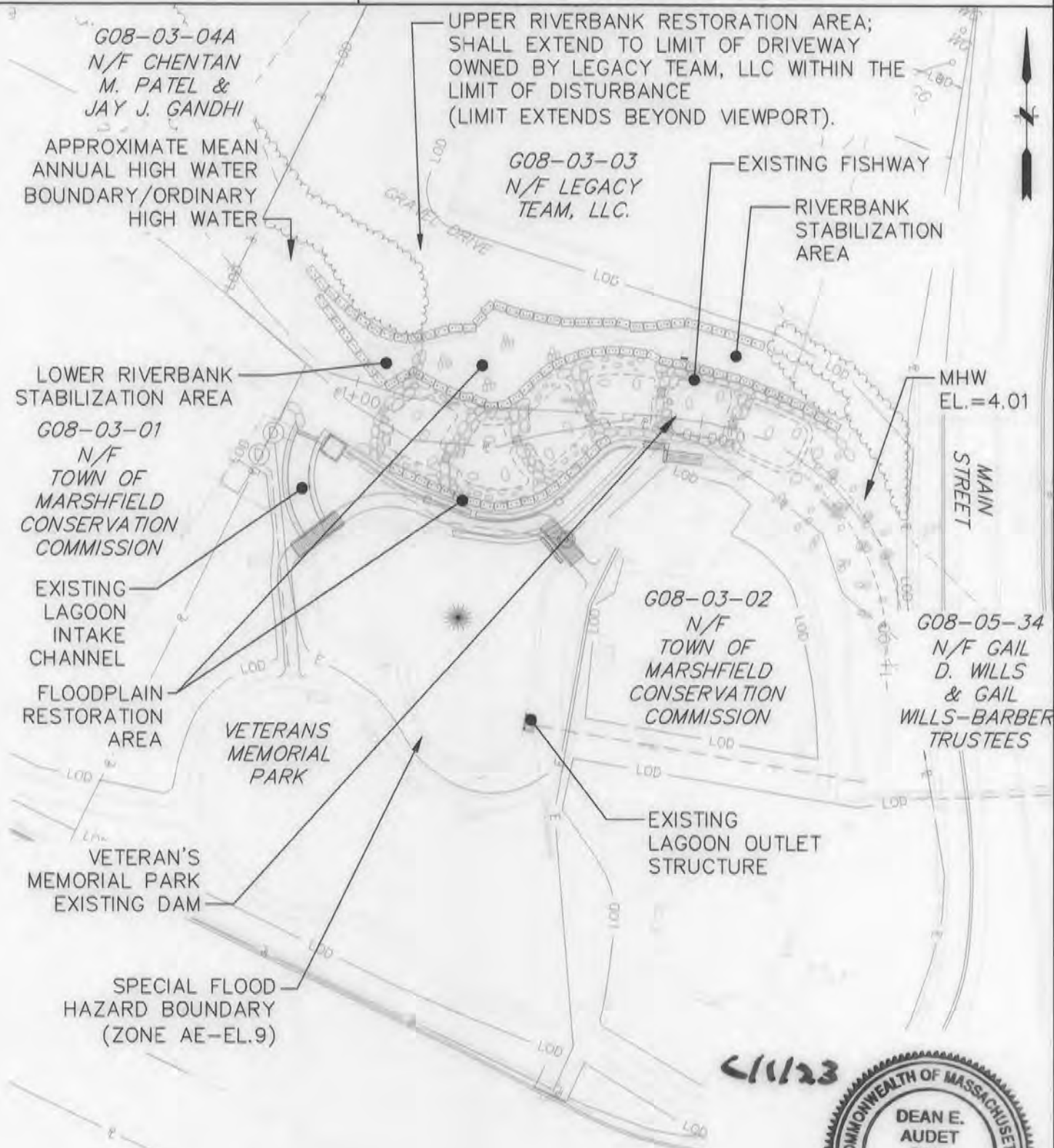




I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

*DEAN E. AUDET*  
REGISTERED PROFESSIONAL ENGINEER



### RIPARIAN HABITAT AND PARK AREA RESTORATION PLAN NO. 1

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
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VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 7 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

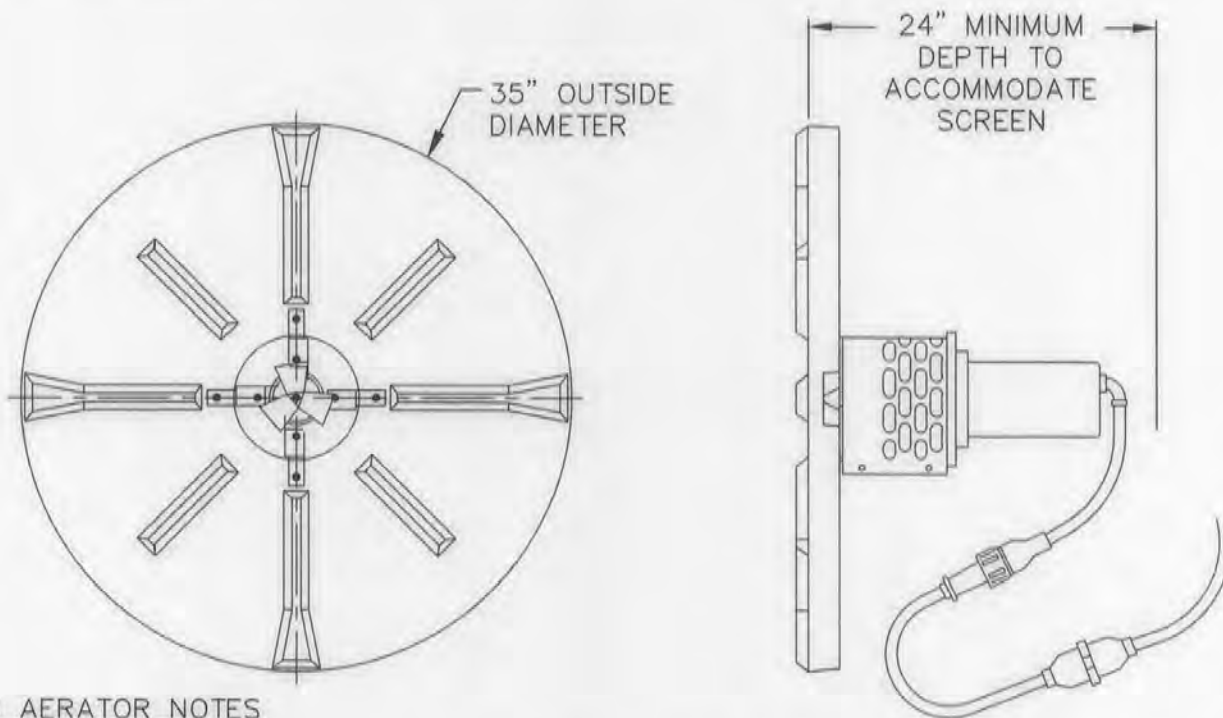


*DEAN E. AUDET*

I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER



FOUNTAIN AND AERATOR NOTES

1. THE TOWN'S EXISTING FOUNTAIN/AERATOR (PHOTOGRAPH) IS PLANNED FOR CONTINUED USE AFTER COMPLETION OF LAGOON IMPROVEMENTS. IN THE EVENT A REPLACEMENT UNIT IS REQUIRED AT THAT TIME, THE UNIT DEPICTED IN THE ABOVE SCHEMATIC IS PLANNED AS A REPLACEMENT. ANY REPLACEMENT UNIT SHALL COMPLY WITH THE FOLLOWING:
  - 1.A. UNIT SHALL RUN ON 120 VOLT SINGLE PHASE ELECTRIC SERVICE.
  - 1.B. UNIT SHALL BE CONSTRUCTED OF STAINLESS STEEL COMPONENTS DUE TO POTENTIAL CONTACT WITH BRACKISH WATER.
  - 1.C. FOUNTAIN INTAKE SHALL BE FITTED WITH 10 GAUGE, SERIES 316 STAINLESS STEEL INTAKE SCREEN.
  - 1.D. UNIT SHALL BE MANUFACTURED BY AQUAMASTER FOUNTAINS, OR APPROVED EQUAL:

16204 COUNTY ROAD X  
KEIL, WI 53042  
(800) 693-3144  
WWW.AQUAMASTERFOUNTAINS.COM  
STYLE : HYDROMAX SERIES (OR APPROVED EQUAL)  
AERATOR : VOLCANO II FLOATING SURFACE AERATOR  
PATTERN : ETNA SPRAY PATTERN ADAPTER  
SIZE : 1/2 HP  
MINIMUM DEPTH: REQUIRES MIN. 2' WATER DEPTH TO OPERATE.

FLOATING FOUNTAIN/AERATOR  
WITH INTAKE SCREEN

NOT TO SCALE

6/1/23





DETAIL PLAN NO. 1

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO  
LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND  
VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN  
MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

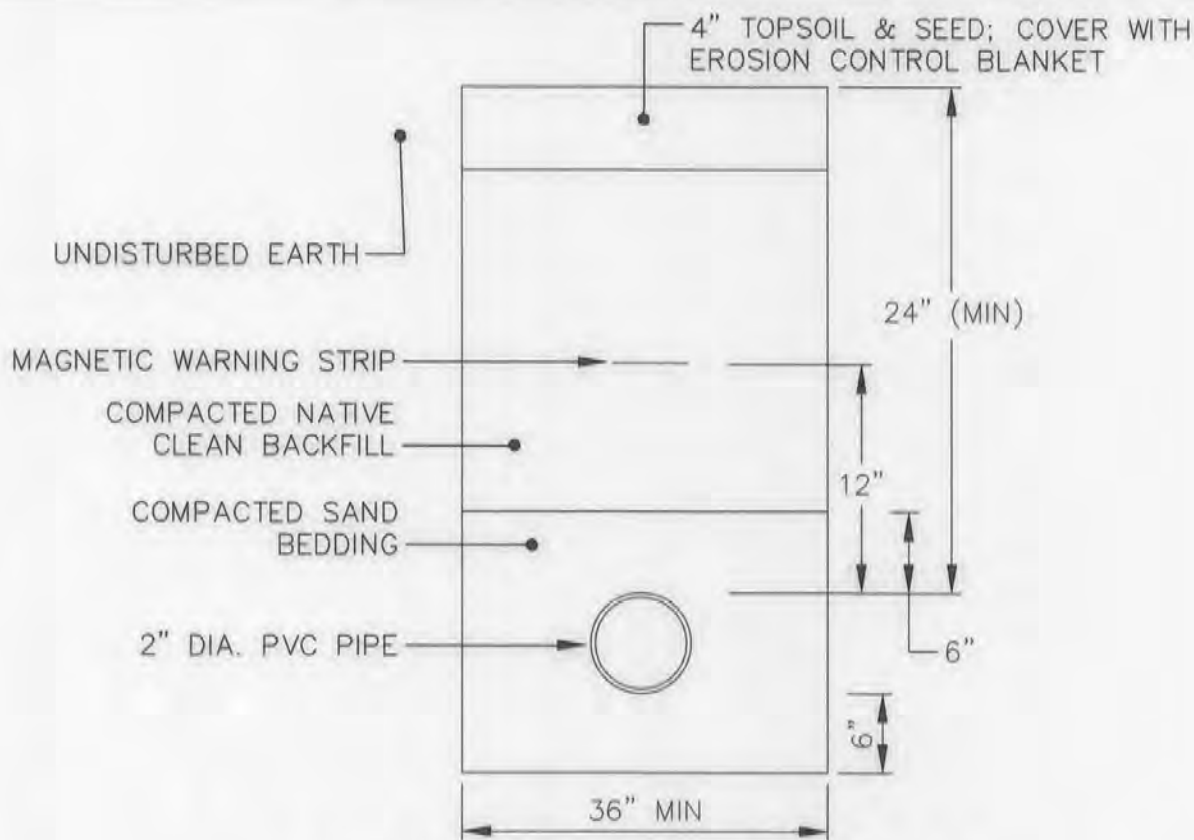
SHEET: 8 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

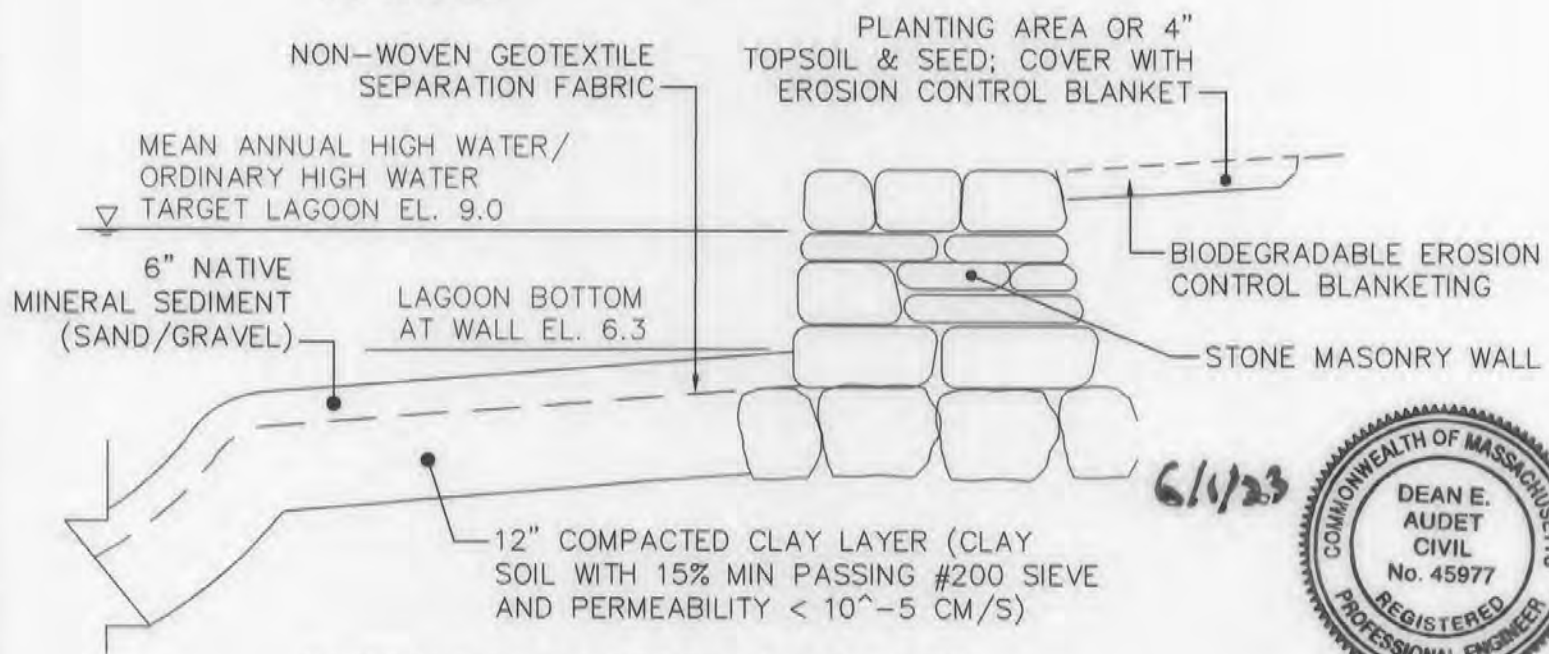
I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

*[Signature]*  
REGISTERED PROFESSIONAL ENGINEER



**TYPICAL SUPPLEMENTAL WATER SYSTEM PUMP DISCHARGE PIPE RENCH**  
NOT TO SCALE



**IMPERMEABLE LAGOON CLAY LINER**  
NOT TO SCALE

DETAIL PLAN NO. 2

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

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PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 9 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**



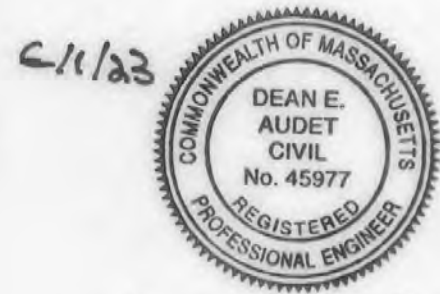
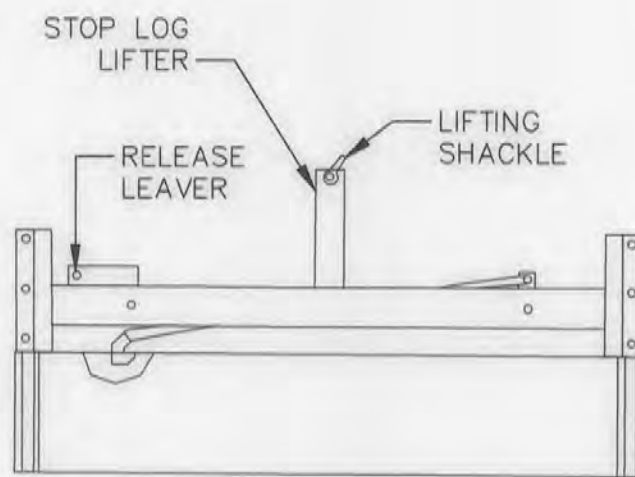
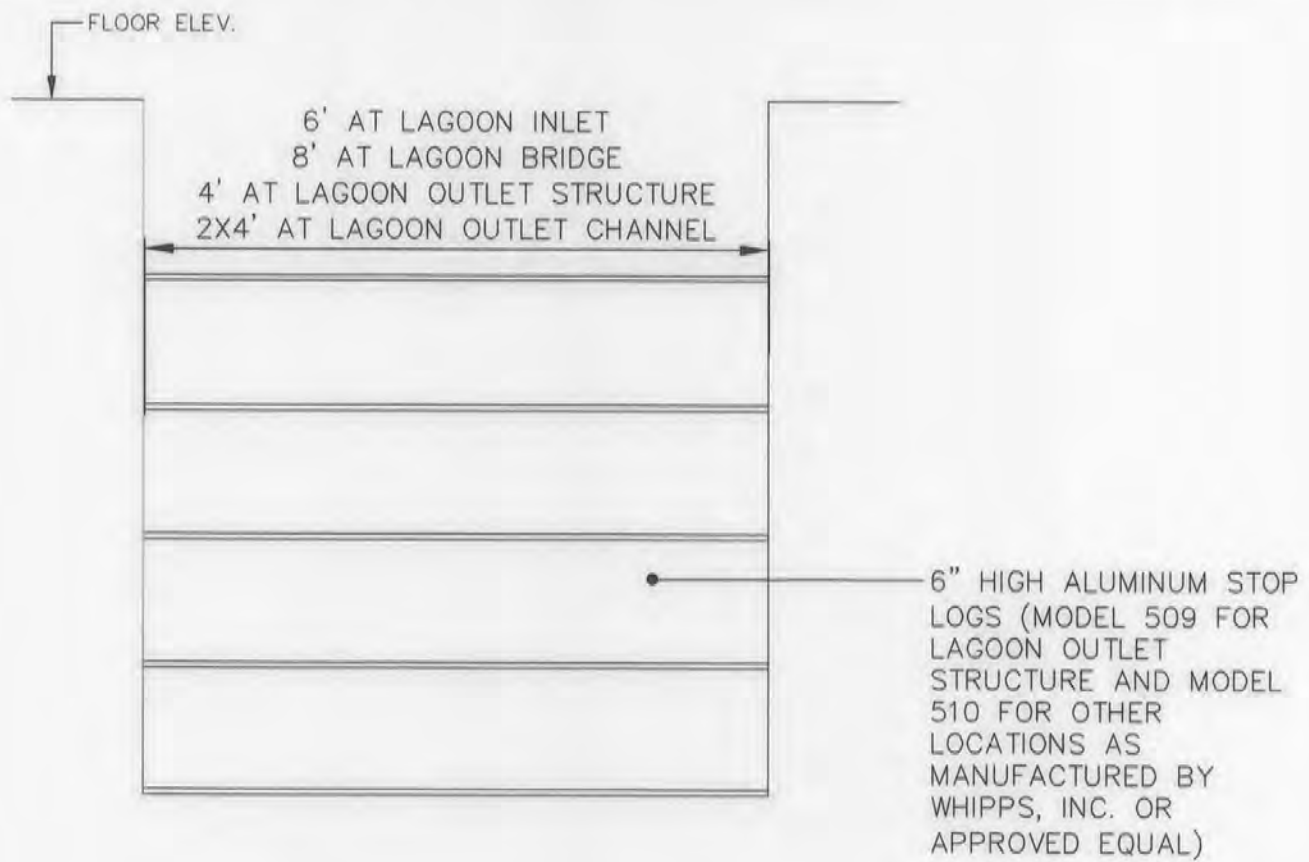
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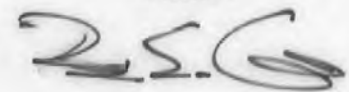


I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER





### TYPICAL STOP LOG CONTROL STRUCTURE DETAILS

NOT TO SCALE

#### DETAIL PLAN NO. 3

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

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VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

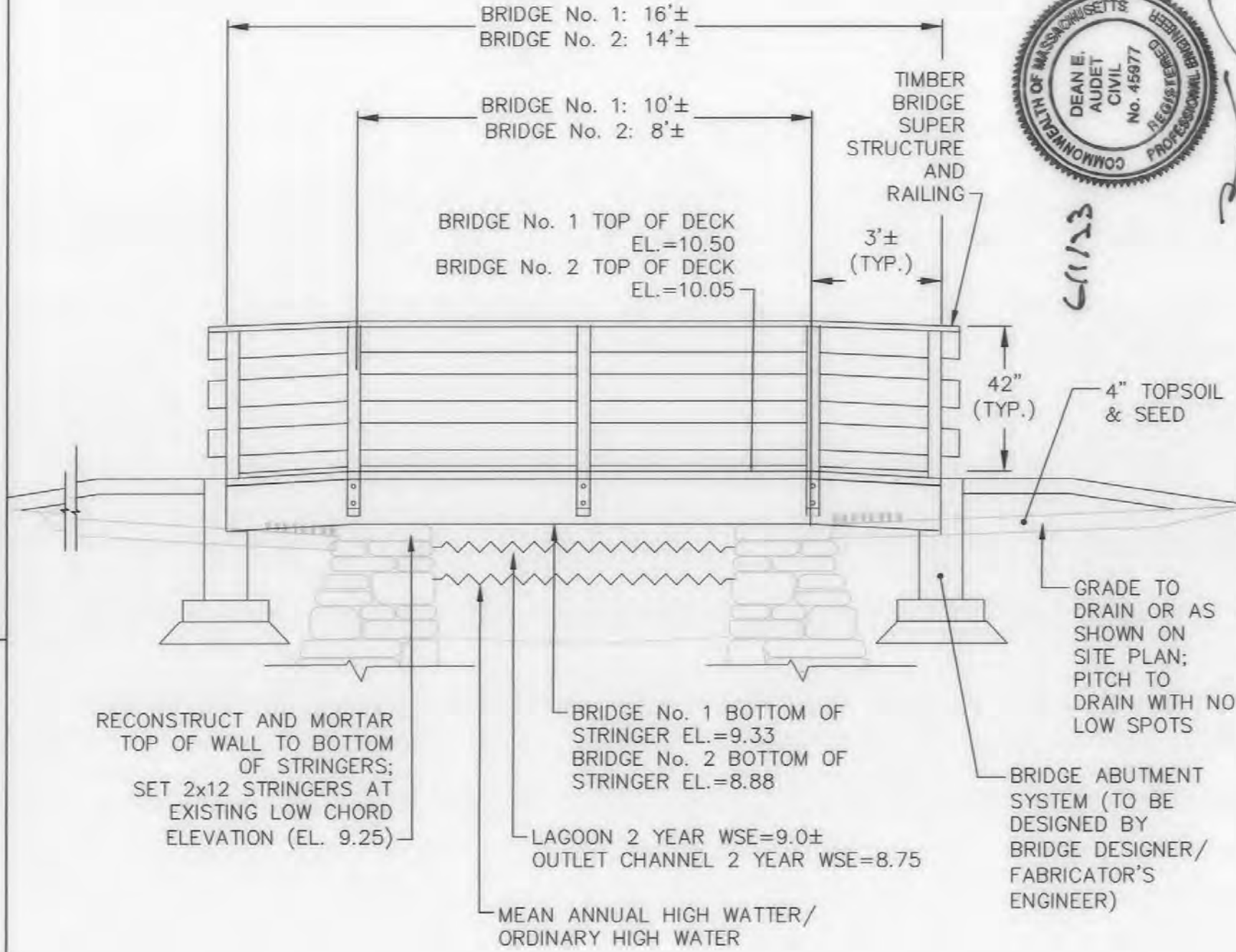
SHEET: 10 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

  
REGISTERED PROFESSIONAL ENGINEER

6/1/23  
DATE



6/1/23



DETAIL PLAN NO. 4

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 11 OF 23

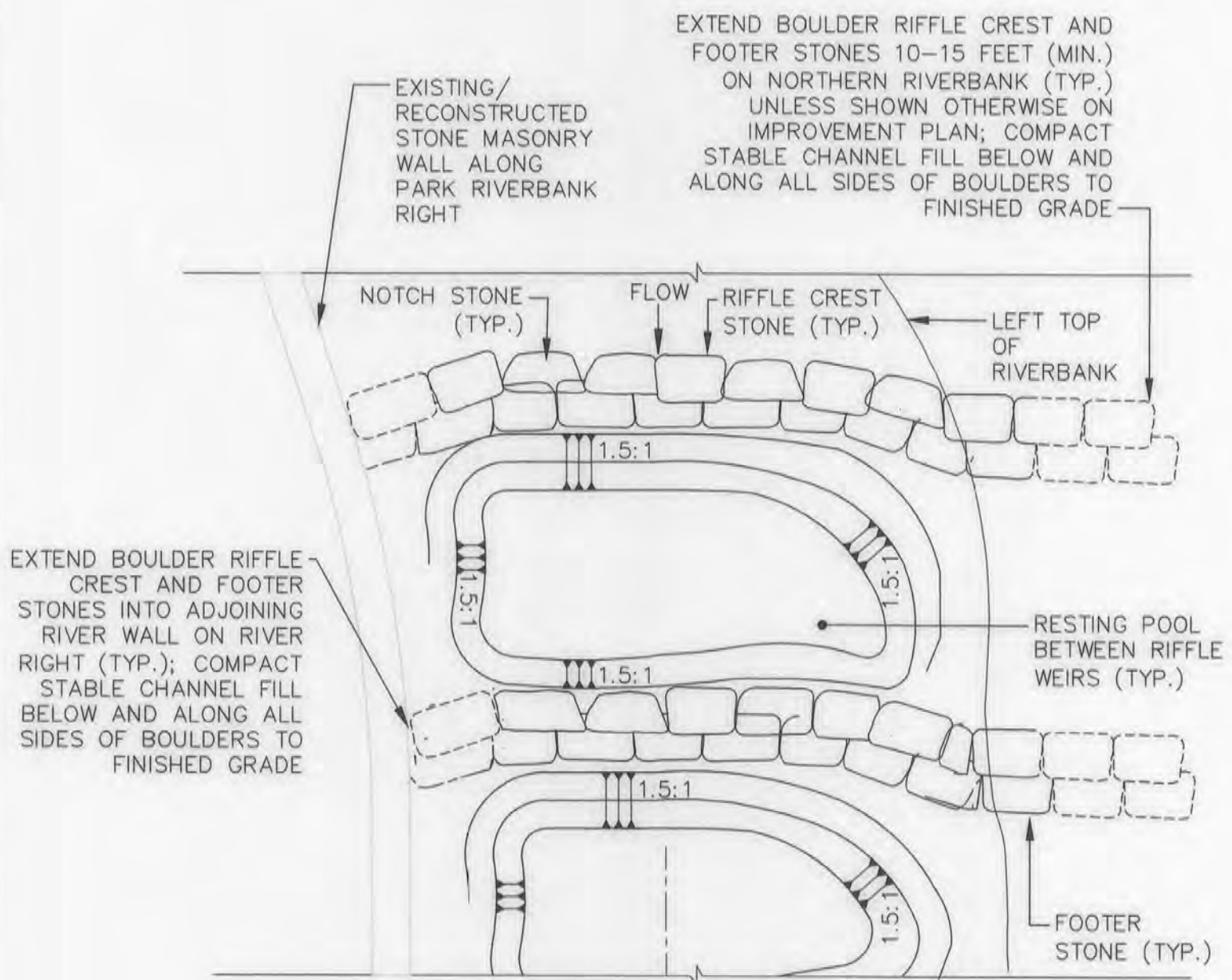
**TIMBER PEDESTRIAN BRIDGE DETAIL**  
NOT TO SCALE



I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER



PLAN VIEW

BOULDER RIFFLE AND POOL DETAIL NO. 1  
NOT TO SCALE

6/1/23





DETAIL PLAN NO. 5

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 12 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER

**NOTES:**

1. WEIR NOTCH OPENINGS SHALL BE STAGGERED AS APPROXIMATELY SHOWN ON THE IMPROVEMENT PLAN.
2. RESTING POOLS BETWEEN RIFFLES SHALL BE CONSTRUCTED IN THE LOCATIONS AND TO THE DIMENSIONS INDICATED ON THE IMPROVEMENT PLAN. RESTING POOLS SHOWN HEREON ARE APPROXIMATE AND DEPICTED TO SHOW BASIC INFORMATION ONLY IN ADDITION TO THE OVERALL INTENT OF LOCATIONS OF POOLS IN RESPECT TO RIFFLE WEIRS.
3. FOOTER, NOTCH AND CREST STONES SHALL BE PLACED IN A STRUCTURALLY STABLE CONFIGURATION GENERALLY SHOWN ON THESE DRAWINGS, AS DIRECTED AND ACCEPTED BY THE ENGINEER IN THE FIELD.

STONE TYPE	STONE LENGTH (A)*	STONE WIDTH (B)	STONE HEIGHT (C)
FOOTER STONE	3.0'-4.0'	3.0-3.5'	3.0-3.5'
NOTCH STONE	3.0'-4.0'	3.0'-3.5'	3.0'-3.5'
CREST STONE	3.0'-4.0'	3.0'-3.5'	2.5'-3.0'

\* 'A' DIMENSION REFERS TO LENGTH OF STONE PERPENDICULAR TO FLOW; 'C' DIMENSION REFERS TO WIDTH OF STONE PARALLEL TO FLOW.

\*\* ADDITIONAL STONES MAY BE PLACED BEHIND & ABUTTING THE NOTCH STONES AS DIRECTED BY THE ENGINEER TO OBTAIN REQUIRED NOTCH WIDTH AND RIFFLE FLOW CONDITIONS..

\*\*\* DIMENSIONS SELECTED FOR ANY FOUNDATION, NOTCH, AND WEIR STONES SHALL RESULT IN A MINIMUM WEIGHT OF 3,900 LBS ASSUMING THE STONE HAS AN APPROXIMATE UNIT WEIGHT OF 160 LBS/CF.

**BOULDER RIFFLE AND POOL DETAIL NO. 2**

NOT TO SCALE

6/1/23





**DETAIL PLAN NO. 6**

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

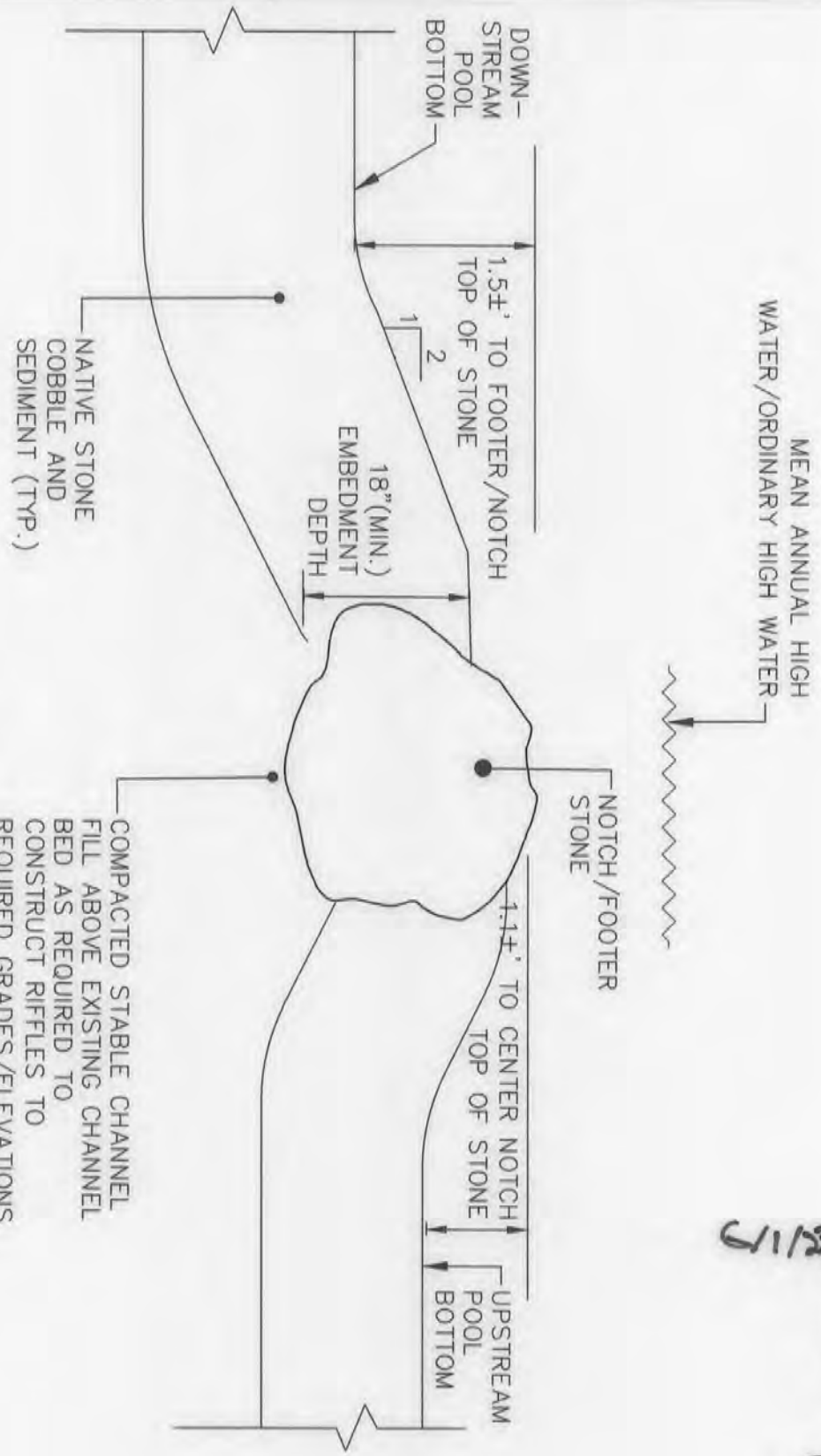
SHEET: 13 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

*[Signature]*  
REGISTERED PROFESSIONAL ENGINEER



**BOULDER RIFFLE SECTION DETAILS NO. 1**  
NOT TO SCALE

**RIFFLE NOTCH SECTION**

6/1/23



*[Signature]*

DETAIL PLAN NO. 7

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 14 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date:

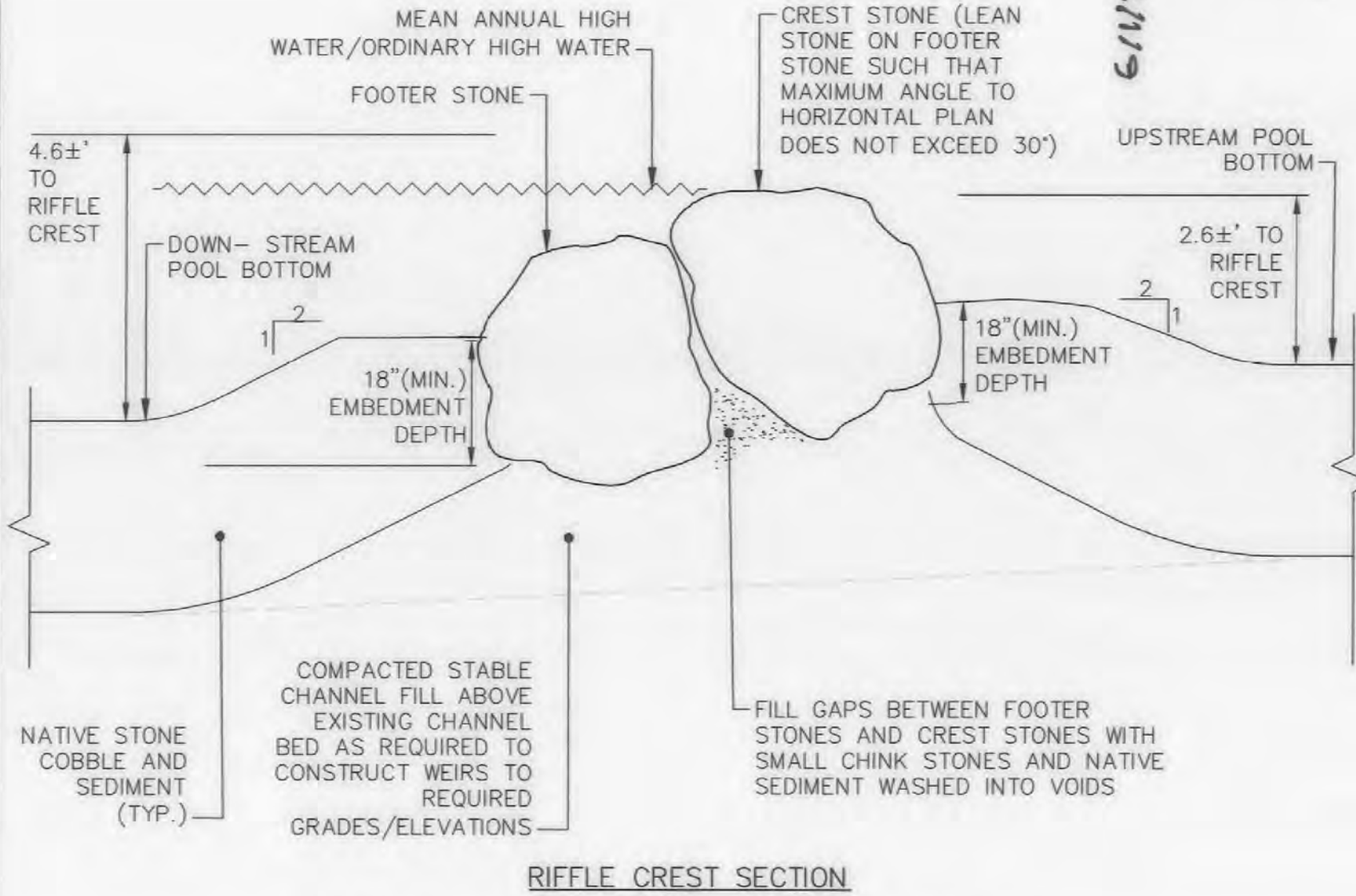
NOV 20 2023



I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

*[Signature]*  
REGISTERED PROFESSIONAL ENGINEER

6/1/23  
DATE



6/1/23

*[Signature]*

DETAIL PLAN NO. 8

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

SHEET: 15 OF 23

**BOULDER RIFFLE SECTION DETAILS NO. 2**  
NOT TO SCALE

I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

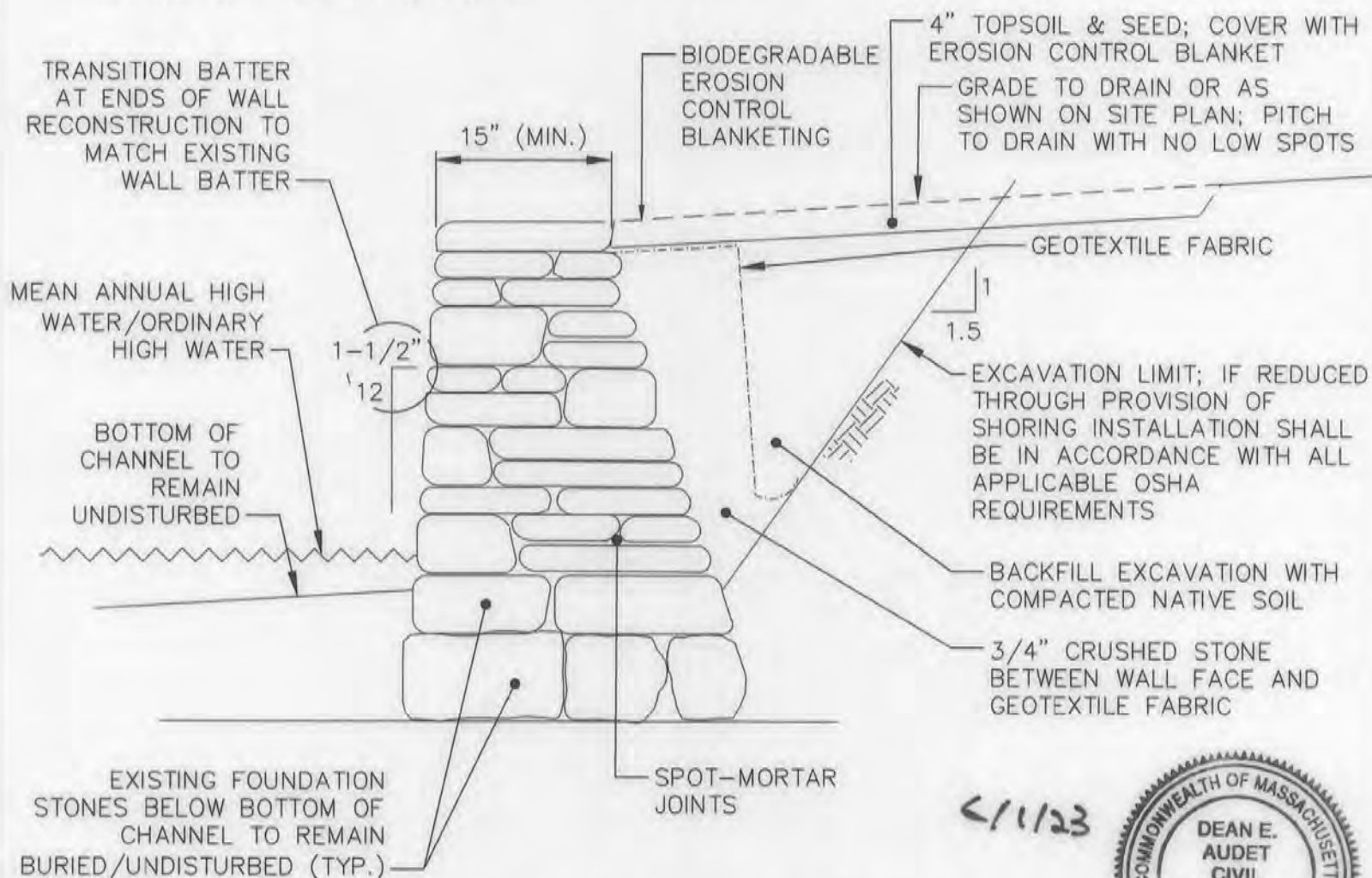
  
REGISTERED PROFESSIONAL ENGINEER

SPOT-MORTAR NOTES:

1. SPOT-MORTAR JOINTS BETWEEN PLACED FOUNDATION STONES AND INTERIOR PORTIONS OF REPAIRED WALL.
2. MORTAR SHALL NOT BE PLACED IN FIRST COURSE ABOVE FOUNDATION STONES TO ENSURE FREE DRAINAGE.
3. MORTAR SHALL BE PLACED IN JOINTS ABOVE FIRST COURSE TO SECURE STONES IN PLACE WHILE ALLOWING FREE DRAINAGE. MORTAR SHALL NOT BE VISIBLE ON THE WALL FACE.
4. ALL MORTAR SHALL BE CAREFULLY REMOVED FROM EXPOSED JOINTS ON WALL FACE; NO MORTAR SHALL BE VISIBLE UPON COMPLETION OF WORK.

MEDIUM SIZED WALL NOTES:

1. STAGGER VERTICAL JOINTS FROM COURSE TO COURSE SIX INCH MINIMUM HORIZONTALLY.
2. THE SIZE, COURSE, ORIENTATION, AND PLACEMENT OF STONES SHALL MATCH THE EXISTING STONES AND BLEND WITH ADJACENT WALL SECTIONS.
3. GEOTEXTILE FABRIC SHALL BE AT LEAST 85 PERCENT BY WEIGHT OF PROPYLENE, ETHYLENE, ESTER, OR AMIDE. THE EDGES SHALL BE FINISHED TO PREVENT THE OUTER FIBER FROM PULLING AWAY FROM THE FABRIC.



RECONSTRUCT MEDIUM STONE WALL  
(H < 6') DETAIL

NOT TO SCALE

DETAIL PLAN NO. 9

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 16 OF 23

LICENSE PLAN NO. WW01-0000259  
Approved by Department of Environmental Protection  
Date: NOV 20 2023



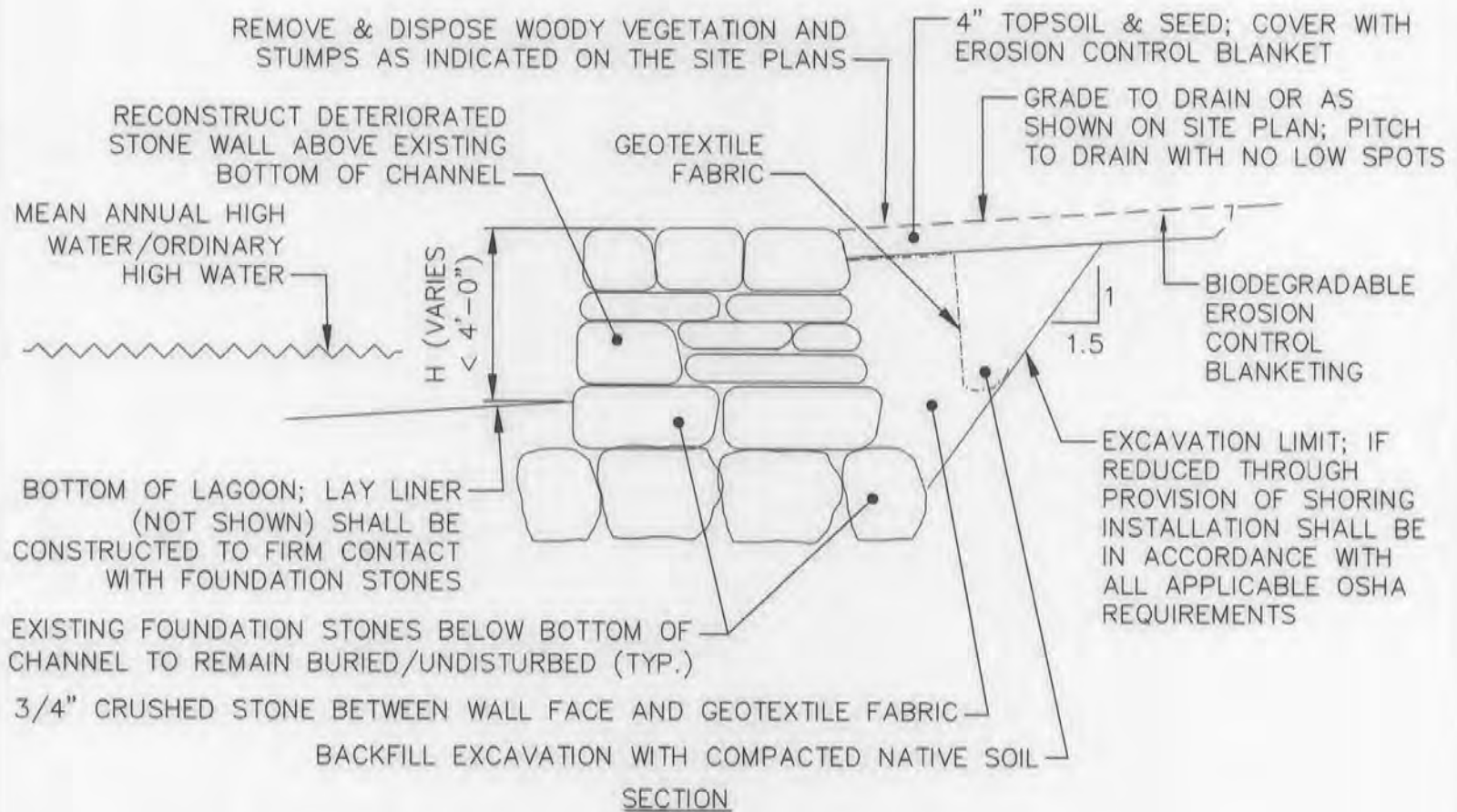
I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER

LOW STONE WALL REPAIR NOTES:

1. THE SIZE, COURSE, ORIENTATION, AND PLACEMENT OF STONES SHALL MATCH THE EXISTING STONES AND BLEND WITH ADJACENT WALL SECTIONS. THE CONTRACTOR SHALL TAKE PRECONSTRUCTION PHOTOGRAPHS OF THE COMPLETE SURFACE OF EACH WALL TO BE REPAIRED FOR ARCHIVAL AND COMPARISON PURPOSES.



RECONSTRUCT/CONSTRUCT LOW STONE WALL

NOT TO SCALE

6/1/23





DETAIL PLAN NO. 10

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 17 OF 23

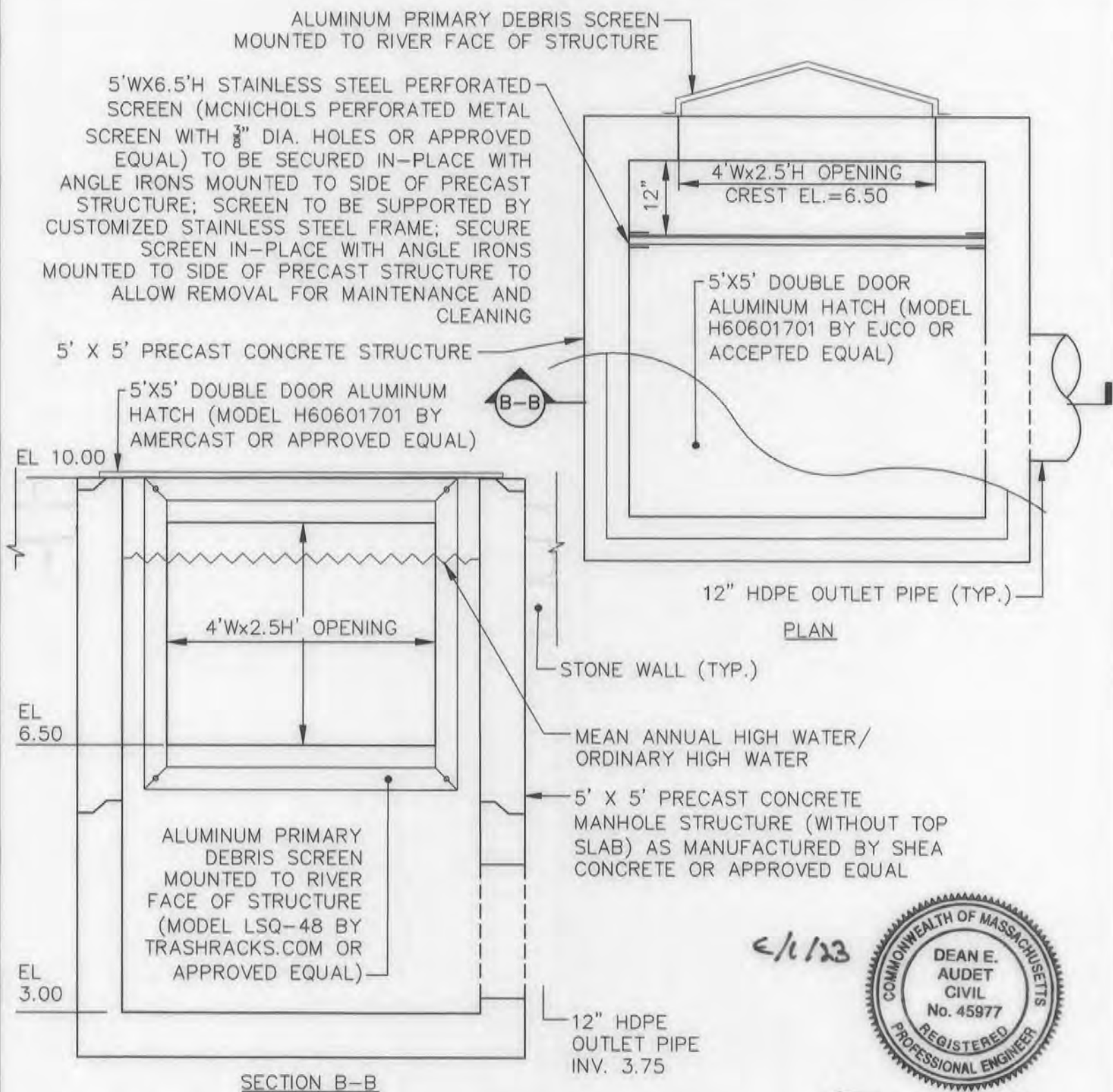
LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**



I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

*[Signature]*  
REGISTERED PROFESSIONAL ENGINEER



**5'X5' PRECAST CONCRETE INLET STRUCTURE**

NOT TO SCALE

DETAIL PLAN NO. 11

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 18 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**



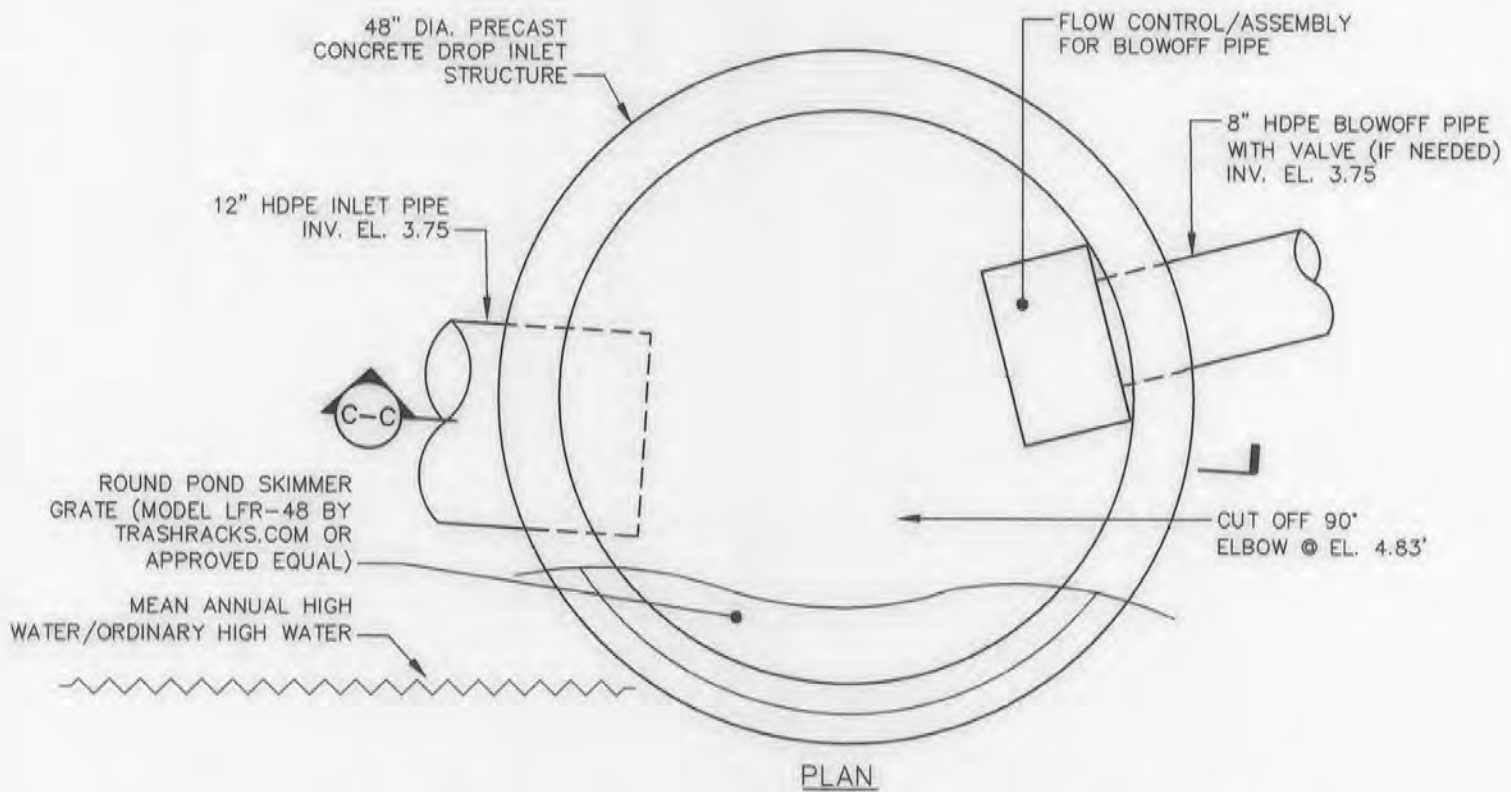
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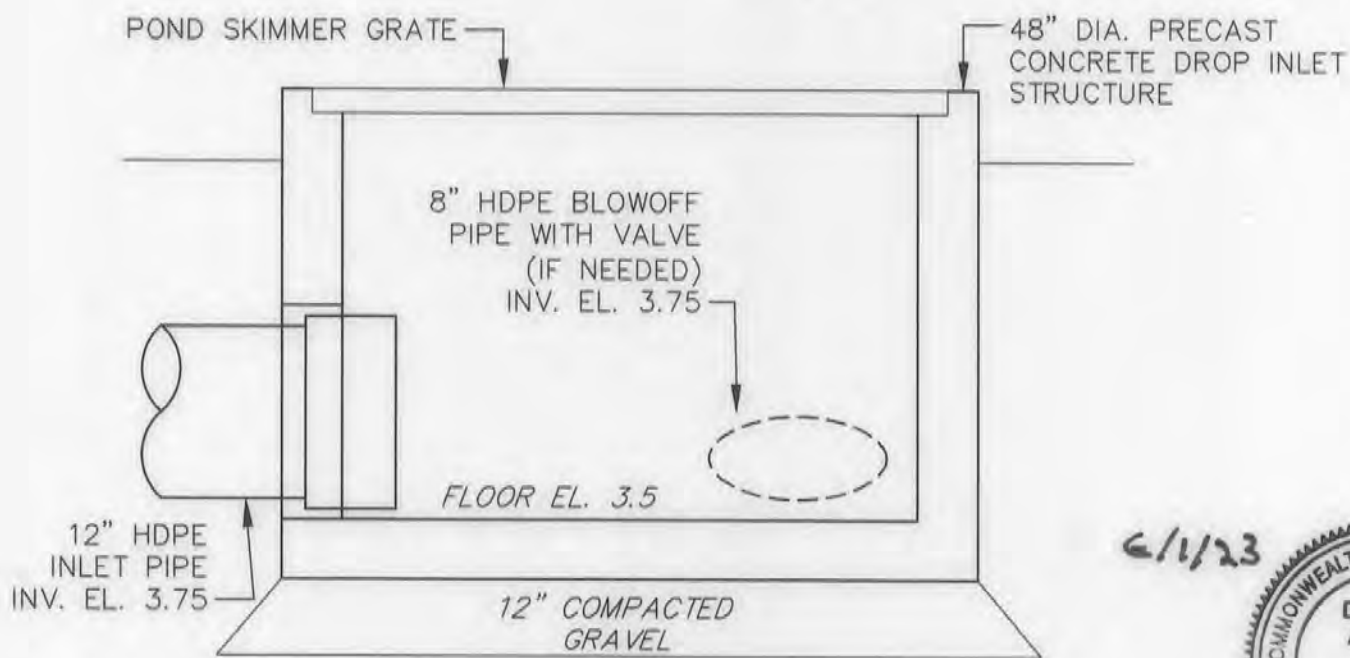
I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER



PLAN



SECTION C-C

**48" DIA. PRECAST CONCRETE OUTLET STRUCTURE**  
NOT TO SCALE

DETAIL PLAN NO. 12

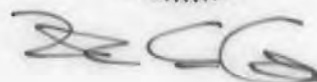
PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
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PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 19 OF 23

6/1/23



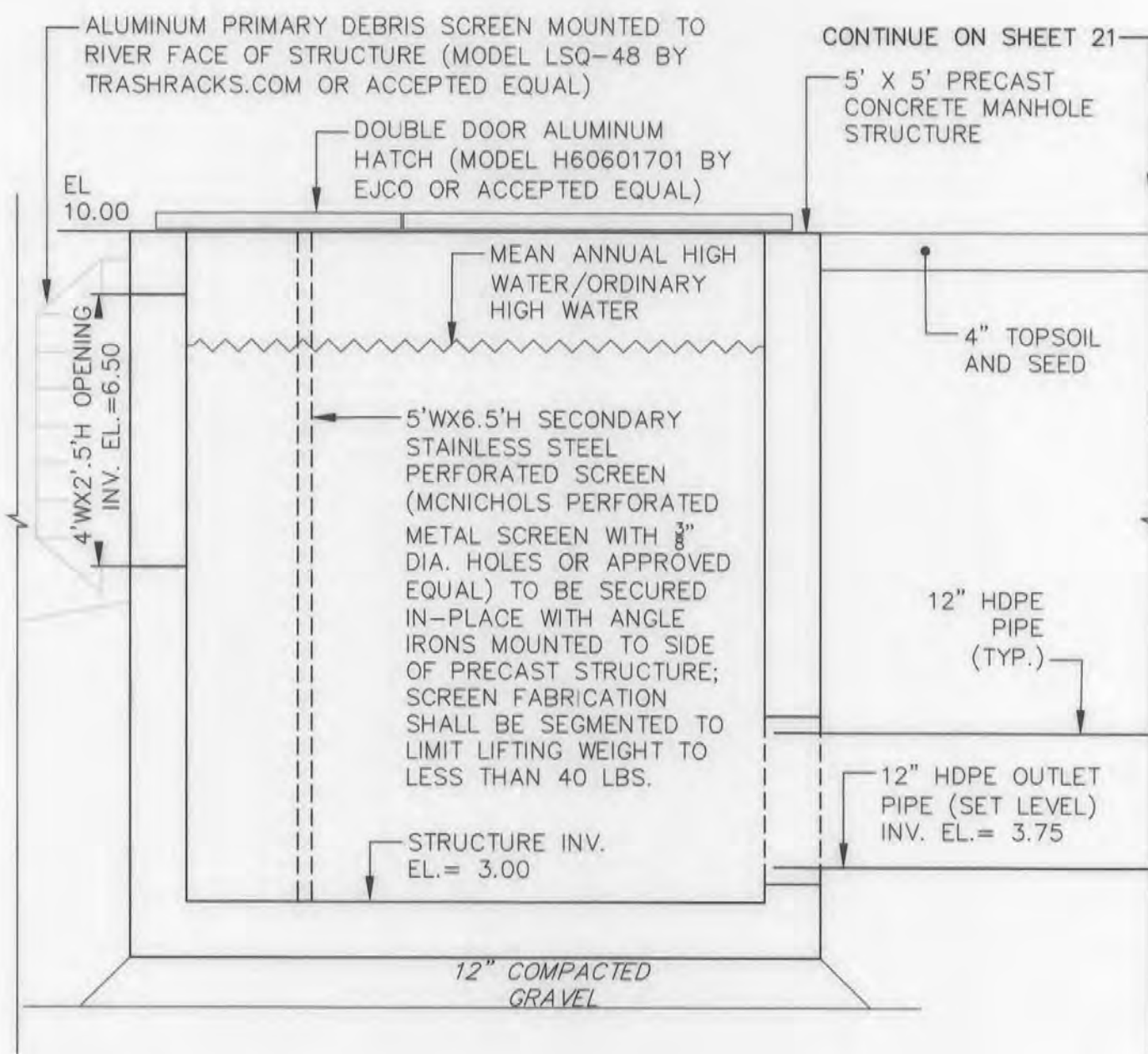


LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

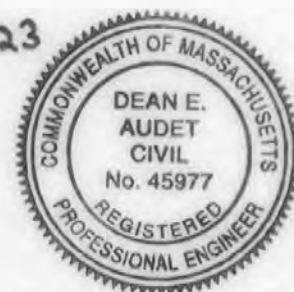
6/1/23  
DATE

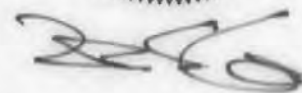
  
REGISTERED PROFESSIONAL ENGINEER



SECTION A-A  
CONTINUE ON SHEET 21 (PLAN VIEW ON SHEET 2)  
NOT TO SCALE

6/1/23





DETAIL PLAN NO. 13

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

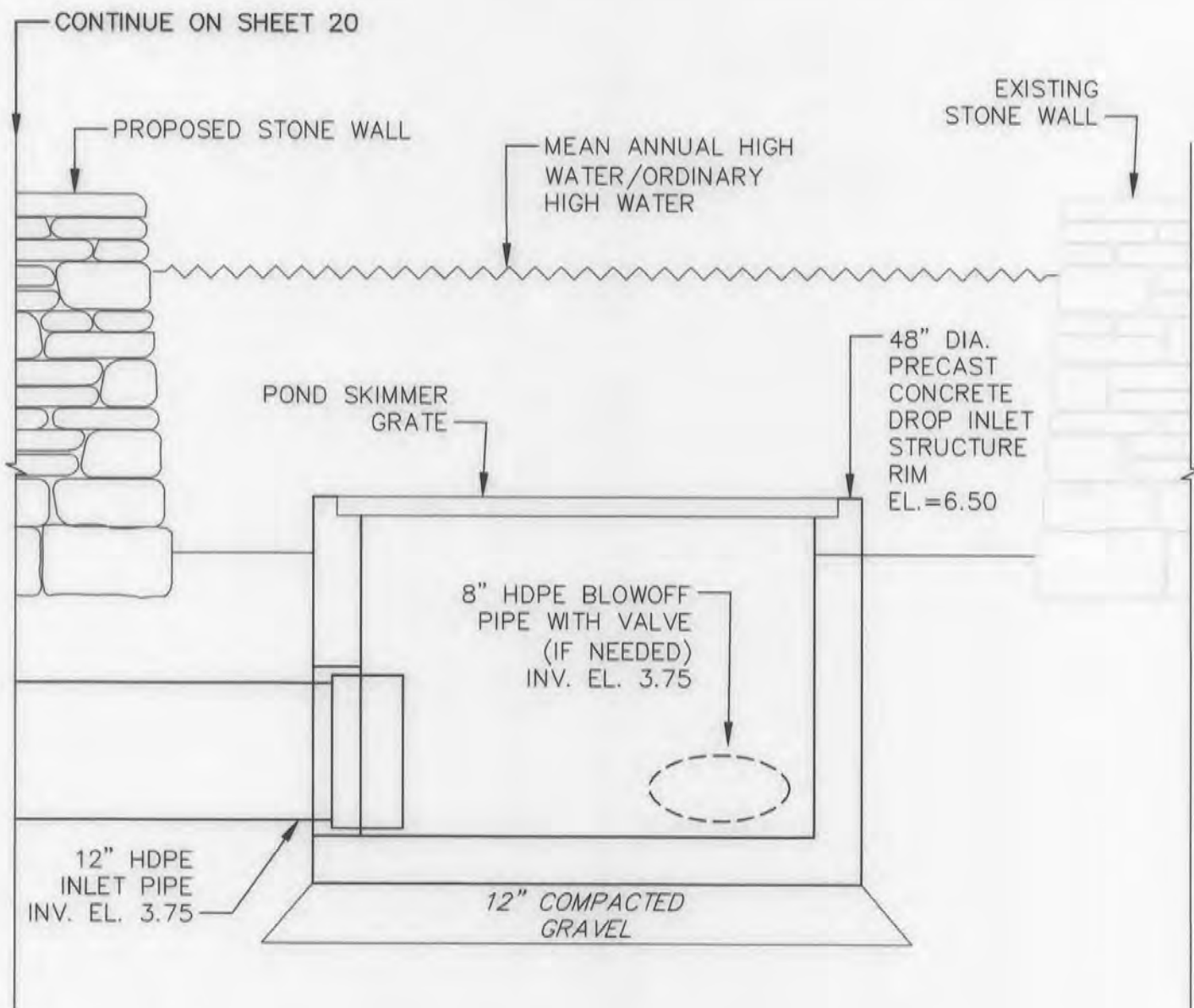
SHEET: 20 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER



SECTION A-A  
CONTINUE ON SHEET 20 (PLAN VIEW ON SHEET 2)  
NOT TO SCALE

6/1/23





DETAIL PLAN NO. 14

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
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PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 21 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**

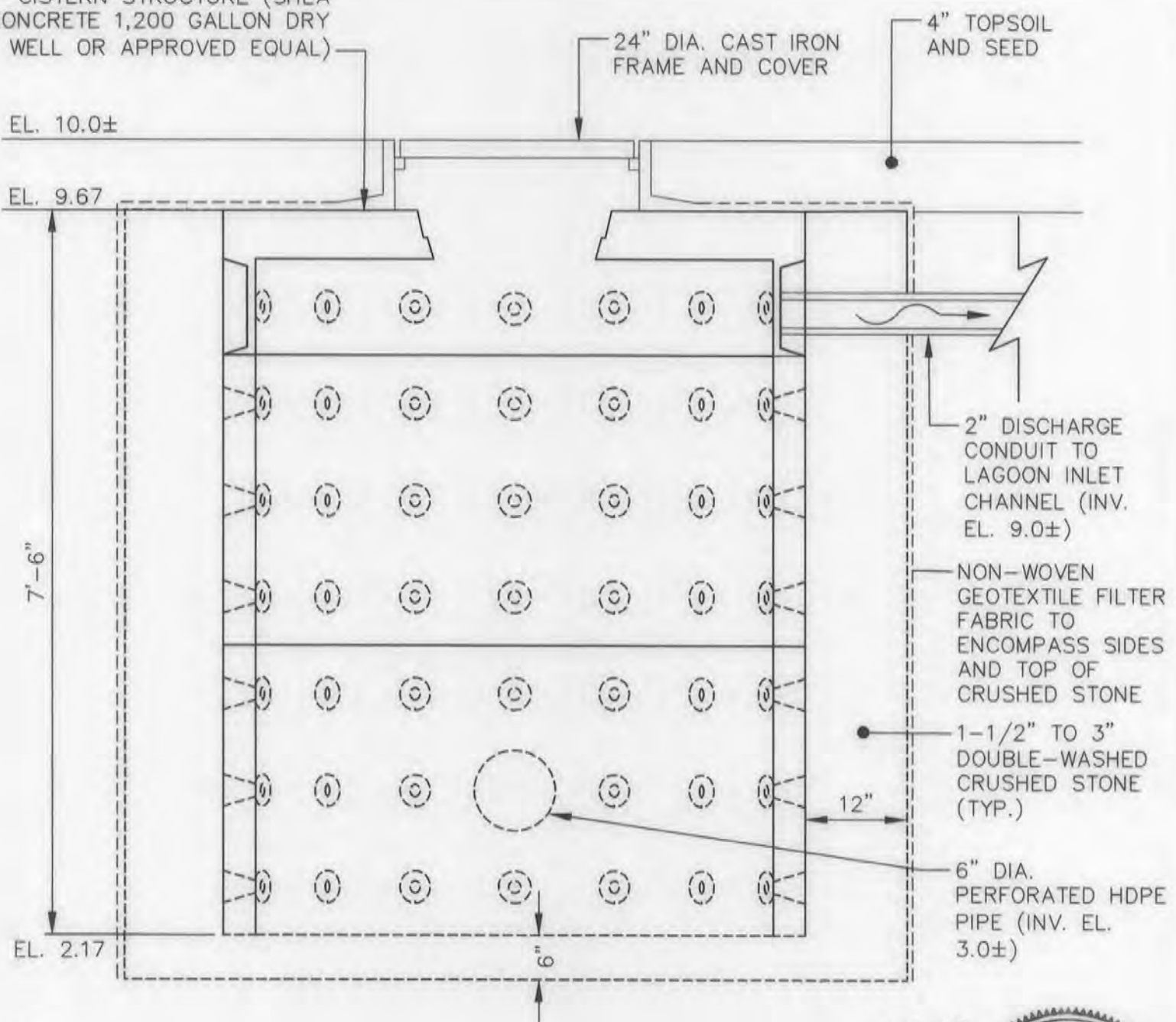


I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

6/1/23  
DATE

  
REGISTERED PROFESSIONAL ENGINEER

6' DIA. PRECAST CONCRETE  
CISTERN STRUCTURE (SHEA  
CONCRETE 1,200 GALLON DRY  
WELL OR APPROVED EQUAL)



NOTE:

SUBMERSIBLE PUMP, ELECTRICAL CONDUIT AND DISCHARGE HOSE INSIDE CISTERN NOT SHOWN FOR CLARITY.

PRECAST CONCRETE CISTERN  
NOT TO SCALE

DETAIL PLAN NO. 15

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO  
LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND  
VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN  
MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 22 OF 23

LICENSE PLAN NO. **WW01-0000259**  
Approved by Department of Environmental Protection  
Date:

NOV 20 2023

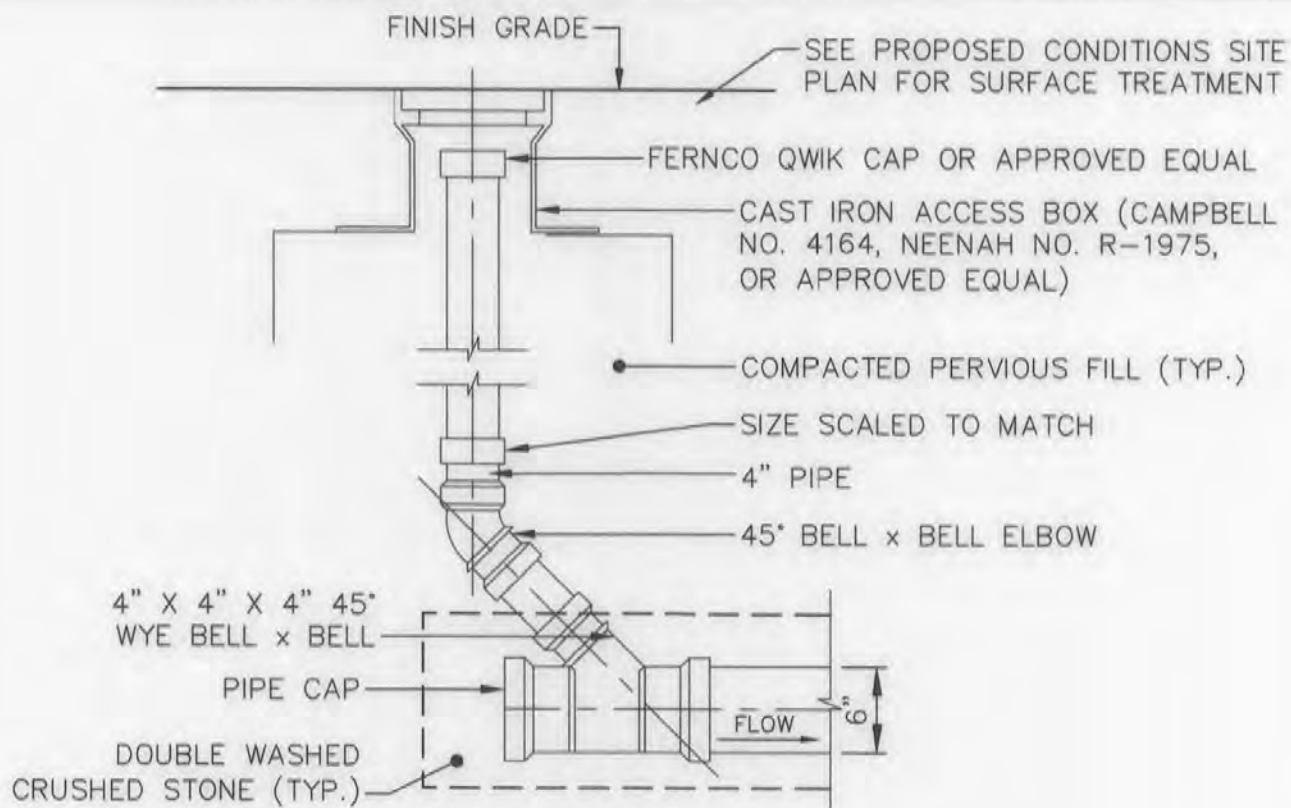




I CERTIFY THAT THIS PLAN WAS MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

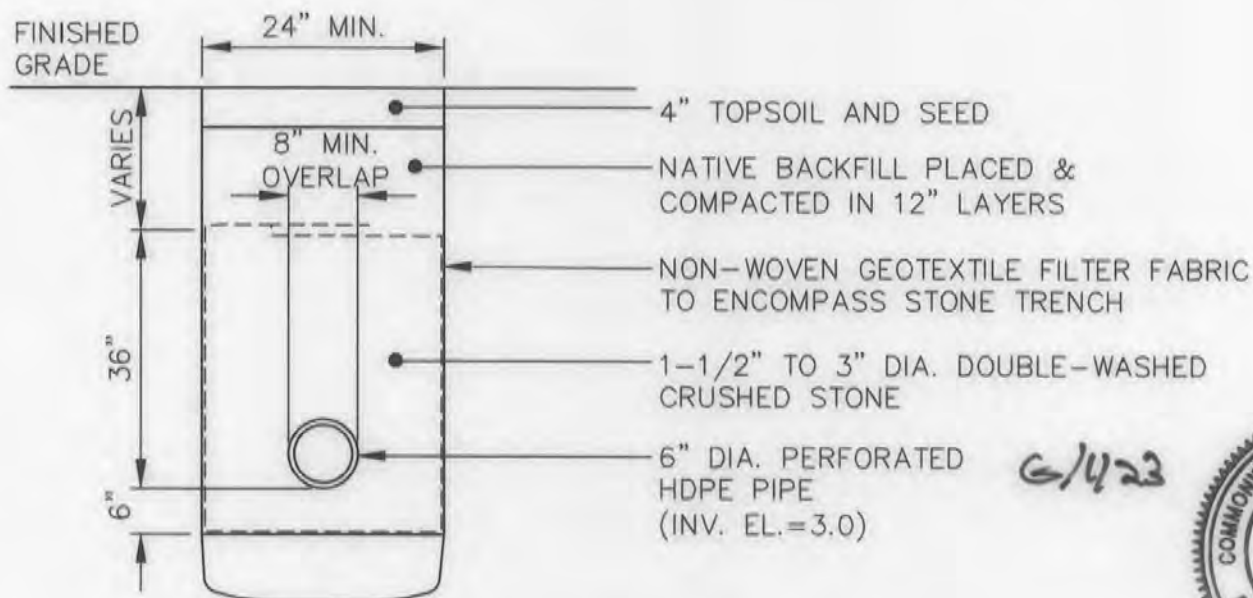
6/11/23  
DATE

*[Signature]*  
REGISTERED PROFESSIONAL ENGINEER



**UNDERDRAIN CLEANOUT**

NOT TO SCALE



**PERFORATED UNDERDRAIN**

NOT TO SCALE



**DETAIL PLAN NO. 16**

PLAN ACCOMPANYING PETITION BY TOWN OF MARSHFIELD TO LICENSE AND MAINTAIN THE SOUTH RIVER FISH PASSAGE AND VETERANS MEMORIAL PARK IMPROVEMENTS PROJECT IN MARSHFIELD, PLYMOUTH COUNTY, MA.

PLAN BY: FUSS & O'NEILL  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
VERT. DATUM: NAVD 88  
HORZ. DATUM: NAD 83  
DATE: MAY 24, 2023

SHEET: 23 OF 23

LICENSE PLAN NO. **WWD1-0000259**  
Approved by Department of Environmental Protection  
Date: **NOV 20 2023**



*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

Bethany A. Card  
SECRETARY

Tel: (617) 626-1000  
Fax: (617) 626-1181  
<http://www.mass.gov/envir>

November 14, 2022

FINAL RECORD OF DECISION

PROJECT NAME : Veterans Memorial Park and South River Improvement Project  
PROJECT MUNICIPALITY : Marshfield  
PROJECT WATERSHED : South Coastal  
EEA NUMBER : 16602  
PROJECT PROPONENT : Town of Marshfield  
DATE NOTICED IN MONITOR : October 24, 2022

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L.c.30, ss. 61-62I) and Section 11.11 of the MEPA Regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby **grant a Waiver** from the requirement to prepare an Environmental Impact Report (EIR).

Project Description

As described in the EENF, the project includes the removal of an existing dam and fishway at Veterans Memorial Park in the Town of Marshfield (Town) and the installation of a pool-riffle nature-like fishway to restore natural riverine ecological functions. It also includes measures to improve park access, safety, and aesthetics and to maintain water levels within an adjacent lagoon in the park. The Veterans Memorial Park Dam is located along the South River, with a fishway consisting of a concrete and stone weir-pool fish ladder, which will be removed as part of the project. The dam maintains a small impoundment, the northern half of which is a widened slowly flowing portion of the native river channel, while the southern half is a heart-shaped lagoon (with a non-functioning water fountain), separated from the main river channel by a small earthen peninsula. The run-of-river dam includes a water wheel. As described in the EENF, the fountain is dedicated to the Town's female veterans; the water wheel is dedicated to the Town's male veterans, and the lagoon is dedicated to the sacrifice of all veterans. Given their significance, all three features will be retained as part of the project. The project proposes to

maintain and increase water levels within the lagoon through the removal of accumulated sediment, and installation of a clay liner and stop log controls to improve water conservation. A supplemental water supply pump and water wheel flow bypass system are also proposed, in order to ensure that the water wheel still functions during periods of low-flow, when adequate flows for the proposed nature-like fishway will be prioritized.

An existing pedestrian bridge will be replaced, and an additional pedestrian bridge will be installed to improve accessibility by persons with disabilities and enhance opportunities for public access and viewing of the South River and the annual fish migration through the site. The EENF states that removal of the flow restrictions at the project site will result in enhanced fish passage and reductions in flood elevations upstream of the site. The project is being funded in part by the Massachusetts Division of Ecological Restoration (DER). The EENF states the restoration of the entire South River mainstem was made a priority project by DER in 2014.

### Project Site

The 1.06-acre project site includes Veterans Memorial Park, the dam, and the portions of the South River immediately upstream and downstream of the dam. According to the EENF, the dam (which is non-jurisdictional under the Massachusetts Dam Safety Regulations (302 CMR 10.00)), is a successor to several hydropower dams at the site dating back to 1654. The concrete and mortared stone dam consists of three boulder tiers downstream of a concrete crest fitted with slots for timber stoplogs that are installed seasonally to raise impoundment water levels and limit flow over the spillway during the upstream passage season for migratory fish. The dam's spillway length is 7.4 feet (ft) and its structural height is 5.5 ft. The concrete pool-and-weir fish ladder abuts the north end of the dam's spillway while the water wheel is immediately south of the spillway. The EENF describes the South River as a major tributary to the North River in the South Shore Coastal Drainage Area, providing important habitat for at least five species of diadromous fish. The river's total length is 13.3 miles, with the Veterans Memorial Park Dam located at river mile 8.2. The EENF states that the dam has been determined to have significant backwater effect on the South River upstream of the dam, due to the relatively low gradient of this section of the river. The existing pool-and-weir fish ladder was originally installed in 1960, and despite upgrades in 2011, still only allows limited passage of migratory species. A significant quantity of sediment has accumulated immediately upstream of the dam and in the lagoon, preventing operation of the water fountain; the now stagnant water in the lagoon has resulted in the deterioration of its the aesthetic and ecological benefits.

The dam currently restricts high tide levels from extending upstream of the dam; the section of the river downstream of the dam (between the dam and the Main Street Bridge) is currently affected by tidal conditions during periods of mean high water, mean higher high water, king high tides, and coastal storm surge events. As such, wetland resources on site include both coastal and inland resource areas, including Land Under the Ocean (LUO), Coastal Bank, Fish Runs, Land Subject to Coastal Storm Flowage (LSCSF), Inland Bank, Bordering Vegetated Wetlands (BVW), Land Under Water (LUW), and Riverfront Area. The South River is classified as an Outstanding Resource Water (ORW), as well as an impaired water body due to dissolved oxygen, fish passage barriers, enterococcus, and fecal coliform. Portions of the project site are mapped as Flood Zone AE (an area inundated during a 100-year storm), with a Base Flood



Elevation (BFE) of elevation (el.) 9 ft NAVD88, as delineated by the Federal Emergency Management Agency (FEMA) map 25023C0227L (effective date July 6, 2021). The project site does not contain *Estimated and Priority Habitat of Rare Species* as delineated by the Natural Heritage and Endangered Species Program (NHESP) in the 15<sup>th</sup> Edition of the Massachusetts Natural Heritage Atlas or an Area of Critical Environmental Concern (ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth, although the Park is a National Natural Landmark. The project site is not located within one mile of an Environmental Justice (EJ) population.

### Environmental Impacts and Mitigation

Potential environmental impacts associated with the project include the alteration of 2,419 square feet (sf) of LUO; 199 linear feet (lf) of Coastal Bank; 11,117 lf of Fish Runs; 17,884 sf (0.41 acres) of LSCSF; 554 lf of Inland Bank; 772 sf of BVW; 8,698 sf (0.20 acres) of LUW; and 32,944 sf (0.76 acres) of Riverfront Area. Included in this alteration is the permanent conversion of some coastal/wetland resource areas following removal of the dam; the project is expected result in the elimination of 2,325 sf of LUW and the creation of 293 sf of LUO, 182 sf of BVW, 52 lf of Inland Bank, 102 lf of Coastal Bank, 196 sf of Riverfront Area, and 587 sf of LSCSF. The project will dredge approximately 800 cubic yards (cy) of sediment and create 0.10 acres of impervious surface (associated with the construction of Americans with Disabilities Act (ADA) compliant pathways).

Measures to avoid, minimize, and mitigate project impacts include wetland plantings, use of turbidity curtains, beneficial re-use of dredged sediments on-site, implementation of a post construction invasive species prevention and control plan, time of year (TOY) restrictions, and use of sediment and erosion controls. As described by the EENF, the project will restore riverine function and will increase the resiliency of the South River to climate change impacts.

### Jurisdiction and Permitting

The project is undergoing MEPA review and is subject to a mandatory EIR pursuant to 301 CMR 11.03(3)(a)(4) of the MEPA regulations because it requires Agency Actions and will result in the structural alteration of an existing dam that causes a decrease in impoundment capacity. The project also exceeds the ENF thresholds at 11.03(3)(b)(1)(a) and 11.03(3)(b)(1)(c) because it involves the alteration of coastal bank and the alteration of 1,000 or more sf of outstanding resource waters (respectively). The project requires a 401 Water Quality Certificate (WQC) and Chapter 91 (c. 91) License from the Massachusetts Department of Environmental Protection (MassDEP).

The project will undergo Federal Consistency Review by the Massachusetts Office of Coastal Zone Management (CZM). Comments from the Massachusetts Department of Marine Fisheries (DMF) state the project will also require a Fishway Permit and an approved Fishway Operation and Maintenance Plan from DMF.

The project will require an Order of Conditions (OOC) from the Marshfield Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP). Comments from MassDEP indicate the project may qualify as an Ecological Restoration Limited Project. It requires authorization from the U.S. Army Corps of Engineers (USACE) under the General Permits for Massachusetts in accordance with Section 404 of the Federal Clean Water Act.

Because the project will receive Financial Assistance in the form of \$71,855 from DER and \$10,000 from Massachusetts Environmental Trust, 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.

### Waiver Request

The Proponent submitted an EENF for the project with a request for a Waiver from the requirement to prepare a Draft and Final EIR. The EENF generally described how the project meets the Waiver criteria outlined in 301 CMR 11.11 and the EENF was subject to an extended comment period, as required. Comments from MassDEP submitted on the EENF stated that, as a dam removal and ecological restoration project, MassDEP's Wetlands and Waterways Programs support the Proponent's request for Waiver from the preparation of a mandatory EIR. Comments from CZM on the EENF commended the Town and its many project partners for pursuing proactive ecological and fisheries restoration at this location. CZM further stated that, given the significant amount of analysis and consideration of alternatives provided in the filing and the strong environmental benefits and enhancements this project will provide, CZM is supportive of the Waiver request. Comments on the EENF from the NSRWA and MassBays expressed support for the project and granting of the Waiver request as well.

### Standards for Waivers

The MEPA regulations at 301 CMR 11.11(1) state that I may waive any provision or requirement in 301 CMR 11.00 not specifically required by MEPA and may impose appropriate and relevant conditions or restrictions, provided that I find that strict compliance with the provision or requirement would:

- (a) result in an undue hardship for the Proponent, unless based on delay in compliance by the Proponent; **and**
- (b) not serve to avoid or minimize Damage to the Environment.

The MEPA regulations at 301 CMR 11.11(3) state that, in the case of a Waiver of a mandatory EIR review threshold, I shall at a minimum base the finding required in accordance with 301 CMR 11.11(1)(b) stated above on a determination that:

- (a) the Project is likely to cause no Damage to the Environment; and
- (b) ample and unconstrained infrastructure facilities and services exist to support the Project (in the case of a Project undertaken by an Agency or involving Financial Assistance) or those aspects of the Project within subject matter jurisdiction (in the

case of a Project undertaken by a Person and requiring one or more Permits or involving a Land Transfer but not involving Financial Assistance).

### Findings

Based on the EENF, supplemental information and consultation with Agencies, I find that the Waiver request has merit, and that the Proponent has demonstrated that the project meets the standards for all waivers at 301 CMR 11.11(1). I find that strict compliance with the requirement to prepare a Mandatory EIR for the project would result in undue hardship by delaying completion of an environmental restoration project and the associated public benefits associated with the project. Specifically, the dam removal will eliminate an aging dam, restore ecological function to the South River, and increase the project area's resilience to climate change. A mandatory EIR also would not serve to further avoid or minimize Damage to the Environment, as the Proponent has adequately analyzed project alternatives and mitigation measures, and comment letters from Agencies do not request further analysis through an EIR. Agency comments note that the permitting process will support resolution of any remaining issues.

In accordance with 301 CMR 11.11(3), my finding under 301 CMR 11.11(1)(b) is based on the following determinations:

1. The project is not likely to cause Damage to the Environment. While the project exceeds mandatory EIR thresholds, it will employ the following measures to ensure that the impacts of the project are avoided, minimized and mitigated to the maximum extent practicable:
  - Obtaining a Section 401 WQC from MassDEP for the dredging of greater than 100 cy of material. The project will be designed and constructed in a manner consistent with applicable Water Quality Regulations (314 CMR 9.00)
  - Obtaining a c. 91 Permit from MassDEP
  - Obtaining an Order of Conditions from the Marshfield Conservation Commission
  - A pre-construction meeting will be held on site with the selected contractor, project engineer, Town of Marshfield, Marshfield conservation agent and project partners.
  - Wetland vegetation will be established in the lower channel and along the banks of the river.
  - Erosion and sedimentation controls will be installed and maintained in all access, staging and construction areas.
  - TOY restrictions for all work, as required by applicable regulatory agencies, will be enforced to protect vulnerable species, unless an incursion into the TOY restriction is granted for project construction.
  - Turbidity curtains will be deployed during dredging activities.
  - Dewatering discharges shall be treated by a dewatering basin prior to entering the river.
  - Construction will be phased in the river and the lagoon to divert flows alternating between these watercourses to allow construction activities in a dewatered condition; flows to be maintained through the entire period of construction.
  - Dredged sediment will be beneficially reused within the fishway and lagoon to minimize off-site transport and avoid the need to import these materials.

- Storage of all fuels, hydraulic oil, etc. will be in a locked storage trailer in the approved staging area or removed off site daily.
- Vehicles/equipment will be refueled in an approved staging area away from the river, wetlands, and any stormwater systems.
- A post-construction operation and maintenance plan and post-construction invasive species prevention and control plan will be implemented.

The Marshfield Conservation Commission will review the project to determine its consistency with the Wetlands Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00), and associated performance standards. MassDEP will review the project to determine its consistency with the 401 WQC Regulations (314 CMR 9.00) and c. 91 Waterways Regulations (310 CMR 9.00). The c. 91 authorization from MassDEP will include conditions maintaining appropriate public navigation access. An appropriate sediment management plan will be developed during MassDEP's 401 WQC permitting process.

Comments from MassDEP submitted on the EENF indicated that the project may qualify as an Ecological Restoration Limited Project. The EENF described ecological benefits associated with the project as restoring lotic and riparian wetland habitats from what is currently a lentic (impounded) river segment within the park, reducing habitat fragmentation, reconnecting anadromous and catadromous species' spawning and juvenile rearing habitat to the ocean, restoring natural sediment and nutrient transport mechanisms, and reducing water temperatures that will improve water quality by increased oxygen levels. The EENF stated that these ecological improvements will benefit aquatic, amphibian, and terrestrial communities along the river currently, as well as in the future under changed climate conditions exhibited by higher temperatures, rising ocean levels and changing regional hydrology. Thus, despite the immediate impacts to wetlands and other resource areas, the project will not cause "Damage to the Environment," as it will ultimately benefit the environment through ecological improvements.

2. Ample and unconstrained infrastructure facilities and services exist to support those aspects of the project within subject matter jurisdiction:
  - The project does not require any infrastructure or services to accomplish its overall goal of habitat restoration and addressing safety and liability issues through removal of an existing, aging dam. Therefore, this criterion has been met.

### Conclusion

Based on these findings, I have determined that the Waiver request has merit, and issued a Draft Record of Decision (DROD), which was published in the *Environmental Monitor* on October 24, 2022 in accordance with 301 CMR 11.15(2), which began the public comment period. The public comment period lasted for 14 days and ended on November 7, 2022. No comments were received. Accordingly, I hereby grant a Waiver from the requirement to prepare a mandatory EIR.



November 14, 2022  
Date

Bethany A. Card

Comments received: *No Comments Received*

BAC/ELV/elv







**Massachusetts Department of Environmental Protection**  
**Bureau of Resource Protection - Wetlands**  
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**A. General Information (cont.)**

Latitude and Longitude, if known: 42.09482363235699 -70.71843466577259  
 d. Latitude (in decimal) e. Longitude (in decimal)

Note: If the Ecological Restoration Project involves work on a stream crossing, baseline photo-points that capture longitudinal views of the crossing inlet, the crossing outlet and the upstream and downstream channel beds during low flow conditions. The latitude and longitude coordinates of the photo-points shall be included in the baseline data.

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):

Plymouth  
 a. County b. Certificate Number (if registered land)  
See attached Adendum A  
 c. Book d. Page

7. Dates: 02/07/2023 03/15/2023 03/16/2023  
 a. Date Ecological Restoration NOI Filed b. Date Public Hearing Closed c. Issuance Date

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

South River Fish Passage and Veterans Memorial Park Improvements Project  
 a. Plan Title  
Fuss & O'Neill, Inc. Dean E. Audet, P.E.  
 b. Prepared By c. Signed and Stamped by  
02/24/2023 Various  
 d. Final Revision Date e. Scale  
 f. Additional Plan or Document Title g. Date

**B. Findings**

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the Ecological Restoration Notice of Intent described in Section A 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.  Private Water Supply
- c.  Groundwater Supply
- d.  Flood Control
- e.  Storm Damage Prevention
- f.  Prevention of Pollution
- g.  Land Containing Shellfish
- h.  Fisheries
- i.  Wildlife Habitat



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**B. Findings (cont.)**

2. This Commission hereby finds the project, as proposed, is an Ecological Restoration Project for:

- Dam Removal
- Freshwater Stream Crossing Repair and Replacement
- Stream Daylighting
- Tidal Restoration
- Rare Species Habitat Restoration
- Restoring Fish Passageways

**Approved** subject to:

The following conditions are required in accordance with the Ecological Restoration eligibility criteria 310 CMR 10.13 (1) through (7) and performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Ecological Restoration Notice of Intent for the project described in Section A. The General Conditions in Section C and Special Conditions checked in Section D are incorporated into this Restoration Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Ecological Restoration Notice of Intent, these conditions shall control.

**Denied** because:

The proposed work does not meet the eligibility criteria in 310 CMR 10.13(1) through (7). Therefore, work on this project may not go forward unless and until a new Notice of Intent (WPA Form 3 or 3A) is submitted and a Final Order of Conditions (WPA Form 5 or 5A) has been issued. The Commission has determined that following the eligibility criteria have NOT been met.

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**B. Findings (cont.)**

**Inland Resource Area Impacts:** Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input checked="" type="checkbox"/> Bank	59 (T); 495 (P) a. linear feet	59 (T); 495 (P) b. linear feet	606 c. linear feet	606 d. linear feet
5. <input checked="" type="checkbox"/> Bordering Vegetated Wetland	693 (T); 79 (P) a. square feet	693 (T); 79 (P) b. square feet	954 c. square feet	954 d. square feet
6. <input checked="" type="checkbox"/> Land Under Waterbodies and Waterways	1,733 (T); 9,384 (P)	1,733 (T); 9,384 (P)	9,085 c. square feet	9,384 d. square feet
	e. c/y dredged	f. c/y dredged		
7. <input type="checkbox"/> 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
8. <input type="checkbox"/> Isolated Land Subject to Flooding	a. square feet	b. square feet		h. cubic feet
	Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet
9. <input checked="" type="checkbox"/> Riverfront Area	31,243 (T) 1,701 (P)	31,243 (T) 1,701 (P)		f. cubic feet
	Sq ft within 100 ft	31,243 (T) 1,701 (P)		
	Sq ft between 100-200 ft	0 g. square feet	0 i. square feet	0 f. square feet j. square feet

\*\*\* (T) = Temporary (P) = Permanent

**Coastal Resource Area Impacts:** Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. <input type="checkbox"/> Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. <input type="checkbox"/> Barrier Beaches	<b>Note:</b> No armoring of a Coastal Dune or Barrier Beach is permitted. Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. <input type="checkbox"/> Coastal Beaches	a. square feet	b. square feet	c/y c. nourishment	c/y d. nourishment



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**B. Findings (cont.)**

14.  Coastal Dunes

a. square feet	b. square feet	c. <u>          </u> /y	d. <u>          </u> /y
		nourishment	nourishment

**Note:** No armoring of a Coastal Dune or Barrier Beach is permitted.

15.  Coastal Banks

<u>23 (T); 176 (P)</u>	<u>23 (T); 176 (P)</u>
a. linear feet	b. linear feet

16.  Rocky Intertidal Shores

a. square feet	b. square feet
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17.  Salt Marshes

a. square feet	b. square feet	c. square feet	d. square feet
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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
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20.  Fish Runs

Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above

<u>800</u>	<u>800</u>
a. c/y dredged	b. c/y dredged

21.  Land Subject to Coastal Storm Flowage

<u>15,738 (T);</u>	<u>15,738 (T);</u>
<u>2,146 (P)</u>	<u>2,146 (P)</u>

\* If the project is for 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

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

23.  Restoration/Enhancement \*:

954

a. square feet of BVW	b. square feet of salt marsh	c. square feet of other wetland resource areas
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24.  Stream Crossing(s):

a. number of new stream crossings	b. number of replacement stream crossings
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### 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 Restoration Order of
2. The Restoration 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 Restoration 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 Restoration 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 Restoration 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 Restoration Order.
5. This Restoration 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 Restoration Order.
6. If this Restoration Order constitutes an Amended Restoration Order of Conditions, this Amended Restoration Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Restoration Order will expire on 03/16/2026 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.
8. This Restoration Order is not final until all administrative appeal periods from this Restoration Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Restoration 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 Restoration 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 Restoration 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 Restoration Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.



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C. General Conditions Under Massachusetts Wetlands Protection Act (**cont.**)

10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,  

“Massachusetts Department of Environmental Protection” [or, “MassDEP”]  
“File Number            SE42-3031 ”
11. Where the Department of Environmental Protection is requested to issue a Superseding Restoration 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 Restoration Order at reasonable hours to evaluate compliance with the conditions stated in this Restoration Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Restoration Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Restoration Order and to any contractor or other person performing work conditioned by this Restoration Order.
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 Restoration Order.



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**C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)**

**General Conditions for all Ecological Restoration Projects**

19. The project shall be conducted in accordance with any preliminary written determination obtained from the Natural Heritage and Endangered Species Program as set forth in 310 CMR 10.11(2) and any time of year restrictions or other conditions recommended in writing by the Division of Marine Fisheries (for projects in coastal Resource Areas) and the Division of Fisheries and Wildlife (for projects in inland Resource Areas) as set forth in 310 CMR 10.11(3), (4) and (5).
20. The applicant shall implement the plan submitted with the Notice of Intent as approved by the Issuing Authority to prevent and control invasive species.
21. If the project involves the dredging of 100 cubic yards or more in a Resource Area or dredging of any amount in an Outstanding Resource Water, the dredging and Dredged Material management shall be performed in accordance with the Water Quality Certification submitted with the Notice of Intent.
22. If the project involves infrastructure, the owner shall operate and maintain the infrastructure in accordance with the operation and maintenance plan submitted with the Notice of Intent as approved by the Issuing Authority. Implementation of the operation and maintenance plan as approved by the Issuing Authority shall be a continuing condition that shall be set forth in the Certificate of Compliance.
23. 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;





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**C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)**

- ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
  - iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;
  - iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;
  - v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:
- i.)* the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and
  - ii.)* the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Restoration 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.



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**C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)**

- 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.
- 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 Restoration 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.



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#### D. Special Conditions for Ecological Restoration Projects

**Dam Removal**

This project involves dam removal and the following special conditions shall apply in addition to the general conditions set forth in 310 CMR 10.14(1):

- a) An as-built plan and a written statement from a registered professional engineer and an environmental professional expert in ecological restoration certifying substantial compliance with the design plan and construction specifications approved in the Restoration Order of Conditions shall be submitted to the Issuing Authority within 90 days of completion of the dam removal.
- b) The applicant shall monitor the dam removal site during the first two years following completion of the dam removal. Said monitoring shall include a topographic survey of the longitudinal profile and stream cross-sections from downstream of the former dam through the upstream end of the former impoundment. The survey reference point shall comprise a permanent marker or recoverable survey point with known coordinates, such as a fixed point shown on the as-built plan, an existing bench mark, or a new benchmark. That marker should be identified or referenced on the plans and on the as-built plans. The applicant shall establish at least two photo-points for pre- and post-restoration monitoring at the dam removal site. At least one photo-point location shall be chosen to document a view of the dam pre-restoration and to document the same site after the dam is removed. A second location shall be chosen to document a view of the impoundment pre- and post-restoration. Photos shall be taken for two years after the dam removal is completed.
- c) The applicant shall submit a report detailing the results of this monitoring within six months of the completion of the two year post-construction monitoring period, or within 30 months after the dam removal is complete whichever is sooner. The report shall include a comparison of post-restoration survey data with pre-restoration survey data as illustrated by the photos taken during the monitoring period.

**Freshwater Stream Crossing Repair and Replacement Projects**

The project involves one or more freshwater crossing repair or replacement and the following special conditions in addition to the general conditions apply:

- a) An as-built plan and/or a written statement from a registered professional engineer or other environmental professional expert in ecological restoration certifying substantial compliance with the design plans and construction specifications approved in the Restoration Order of Conditions shall be completed within 90 days of completion of construction. The as-built plan shall include the dimensions of the structure, the invert elevation of the upstream and downstream ends of the structure and the road or other surface elevation above the structure.



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**D. Special Conditions for Ecological Restoration Projects (cont.)**

- b) The applicant shall monitor the site by collecting sufficient data within 12 months after construction is complete to evaluate the effect of the structure. At a minimum, when a Certificate of Compliance is requested, the applicant shall provide post-construction photo-points that capture longitudinal views of the crossing inlet, the crossing outlet and the upstream and downstream channel beds during low flow conditions. The photo-points shall be located at the same geographic photo-point latitude and longitude coordinates as required in the Notice of Intent per 310 CMR 10.12(1)(n). The applicant shall submit a report to the Issuing Authority detailing the results of this monitoring within 18 months after construction is complete. The report shall include a comparison of the post-restoration data with pre-restoration data.

**Stream Daylighting**

The project involves stream daylighting and the following special conditions in addition to the general conditions apply:

- a) An as-built plan and a written statement from a registered professional engineer or other environmental professional expert in ecological restoration certifying substantial compliance with the design plan and construction specifications approved in the Restoration Order of Conditions shall be submitted to the Issuing Authority within 90 days of completion of the project. At a minimum, when a Certificate of Compliance is requested, the applicant shall provide post-construction photo-points that capture longitudinal views of the upstream and downstream channel beds of the daylighted reach during low flow conditions.
- b) The applicant shall conduct photo-point monitoring by establishing at least three photo-points for pre- and post-restoration monitoring at the stream daylighting site. One photo-point location shall be chosen to document the upstream end of the site and one photo-point location shall be chosen to document the downstream end of the site. A third photo-point shall be chosen to document conditions in the restored channel. Photos shall be taken during high flow and low (summer) flow of each year during the two years following completion of the project.
- c) Within 30 months after the completion of the project, the applicant shall submit a report describing the ecological changes observed at the project site during the two years following completion of the project, as illustrated by the photos.



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#### D. Special Conditions for Ecological Restoration Projects (cont.)

**Tidal Restoration Projects**

The project involves restoration of tidal influence and the following special conditions in addition to the general conditions apply:

- a) If the project is a culvert or bridge replacement or repair project, an as-built plan and a written statement from a registered professional engineer or other environmental professional expert in ecological restoration certifying substantial compliance with the design plans and construction specifications approved in the Restoration Order of Conditions shall be submitted to the Issuing Authority within 90 days of completion of construction. The as-built plan shall include the dimensions of the structure, the invert elevation of the upstream and downstream ends of the structure and the road or other surface elevation above the structure.
- b) The applicant shall monitor pre- and post-construction tidal conditions upstream and downstream of the tidal restriction with water level readings measured at an interval no greater than every 10 minutes over a minimum of a one-week period that includes a spring tide. Pre- and post-construction water level readings shall be taken at approximately the same locations and shall be referenced to the same vertical elevation datum. The applicant shall prepare a report detailing the results of this monitoring within 12 months after construction is complete. The report shall include and compare pre- and post-construction tidal elevation monitoring data to assess attainment of the project's predicted post-restoration tidal conditions.

**Rare Species Habitat Restoration**

The project is a Rare Species Habitat Restoration Project and in addition to the general conditions the following special conditions apply:

- a) An as-built plan and a written statement from a registered professional engineer or other environmental professional expert in ecological restoration certifying substantial compliance with the design plan, construction specifications, and the Habitat Management Plan submitted with the Notice of Intent as approved in the Restoration Order of Conditions shall be submitted to the Issuing Authority within 90 days of completion of the project.
- b) The applicant shall establish at least two photo-points for pre- and post-restoration monitoring at the project site. Photos shall be taken for two years after construction is complete. Within 30 months of completion of the project, the applicant shall submit to the Issuing Authority a report describing the ecological changes observed at the project site as illustrated by the photos.



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands  
**WPA Form 5A – Restoration Order of Conditions**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
SE42-3031  
MassDEP File #

Marshfield  
City/Town

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**D. Special Conditions for Ecological Restoration Projects (cont.)**

**Fish Passageway Restoration**

The project involves the repair or replacement of a fish passageway and in addition to the general conditions the following special conditions:

- a) The property owner is responsible for maintaining and repairing the fishway in good condition so that it will support safe and efficient fish passage in accordance with an operation and maintenance plan approved by the Division of Marine Fisheries. This requirement is a continuing condition that shall be set forth in the Certificate of Compliance.
- b) a post-construction project summary using surveys, a narrative and photographs as needed, that confirm the fishway slope and entrance and exit elevations shall be submitted to and approved by the Division of Marine Fisheries, prior to submittal of a request for a Certificate of Compliance.



### E. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable?  Yes  No
2. The \_\_\_\_\_ hereby finds (check one that applies):  
     Conservation Commission
  - 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:

\_\_\_\_\_  
 1. Municipal Ordinance or Bylaw

\_\_\_\_\_  
 2. Citation

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

- (1) Maintenance and control of invasive species at the site is to be done as a cooperative effort between the Marshfield Trustees of Veterans Memorial Parks and the Marshfield Conservation Commission.
- (2) The Town of Marshfield will retain the services of an archeological professional to conduct monitoring and reconnaissance visual surveys of dewatered portions of the lagoon and river channel during the dam removal under a Board of Underwater Archeological Resources Special Use Permit (312 CMR 2.06)
- (3) Only native plantings shall be used in any planting plans associated with the riverine section of the project only.
- (4) The Ecological Restoration Project shall be conducted in accordance with all applicable conditions and provisions contained as stated in the Notice of Intent, SE42-3031, and herein incorporated by reference and made part of this Order of Conditions as approved by the Marshfield Conservation Commission on March 15<sup>th</sup>, 2023.
- (5) Any remaining unused dredge material shall be sent to the transfer station for any use excluding incorporation into residential compost. This requirement is a continuing condition that shall be set forth in the Certificate of Compliance.
- (6) The Town of Marshfield responsible through its Conservation Administrator or his or her designee, for maintaining and repairing the fishway in good condition so that it will support safe and efficient fish passage in accordance with an operation and maintenance plan approved by the Division of Marine Fisheries. This requirement is a continuing condition that shall be set forth in the Certificate of Compliance.





**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 5A – Restoration Order of Conditions**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
 SE42-3031  
 MassDEP File #

Marshfield  
 City/Town

**F. Signatures**

This Restoration Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

3/14/2023

1. Date of Issuance

Please indicate the number of members who will sign this form.  
 This Restoration Order must be signed by a majority of the Conservation Commission.

5

2. Number of Signers

The Restoration 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 and the property owner, if different from applicant.

Signatures:

\_\_\_\_\_  
 Craig Hannafin, Chair

\_\_\_\_\_  
 Bert O'Donnell, Vice Chair

\_\_\_\_\_  
 Joseph Ring

\_\_\_\_\_  
 Susan Caron

\_\_\_\_\_  
 John O'Donnell

\_\_\_\_\_  
 Ken Dodge

by hand delivery on

by certified mail, return receipt requested, on

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Date

3/14/2023



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands  
**WPA Form 5A – Restoration Order of Conditions**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
SE42-3031  
MassDEP File #

Marshfield  
City/Town

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## G. Appeals

The applicant, the owner, any person aggrieved by this Restoration Order, any owner of land abutting the land subject to this Restoration 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 Restoration 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 Restoration 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 Restoration Order of Conditions 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 Restoration Order, or providing written information to the Department prior to issuance of a Superseding Restoration Order.

The request shall state clearly and concisely how the project permitted under the Restoration Order which is being appealed does or does not meet the eligibility criteria in 310 CMR 10.13(1) and the relevant provisions of 310 CMR 10.13(2) through (7). To the extent that the Restoration 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.



**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 5A – Restoration Order of Conditions**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
 SE42-3031  
 MassDEP File #

Marshfield  
 City/Town

## H. Recording Information

Prior to commencement of work, this Restoration 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 Restoration Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Restoration Order. In the case of registered land, this Restoration Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Restoration Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Marshfield  
 Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Marshfield  
 Conservation Commission

Please be advised that the Restoration Order of Conditions for the Project at:

2200 Ocean Street & 25 Main Street      SE42-3031  
 Project Location      MassDEP File Number

Has been recorded at the Registry of Deeds of:

Plymouth  
 County      Book      Page

For Town of Marshfield & Legacy Team LLC (Sittuate Chair Company)  
 Property Owner

and has been noted in the chain of title of the affected property in:

Book      Page

In accordance with the Restoration 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**

DEP File Number:

**Request for Departmental Action Fee  
Transmittal Form**

Provided by DEP

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**A. Request Information**

1. Location of Project

_____	_____
a. Street Address	b. City/Town, Zip
_____	_____
c. Check number	d. Fee amount

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

\_\_\_\_\_

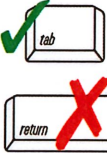
Mailing Address

_____	_____	_____
City/Town	State	Zip Code
_____	_____	_____
Phone Number	Fax Number (if applicable)	

4. DEP File Number:

\_\_\_\_\_

**Important:**  
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



**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



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:

\_\_\_\_\_  
Provided by DEP

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**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 <http://www.mass.gov/eea/agencies/massdep/about/contacts/>).
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.



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

June 20, 2023

Mr. Michael Maresco  
Marshfield Town Hall  
870 Moraine Street  
Marshfield, MA 02050

TRANSMITTAL # 23-WW26-0003-APP  
DEP File # 042-3031  
EOEEA File # 16602  
NHESP File # N/A  
USACE File # TBD

RE: **COMBINED CHAPTER 91 DREDGE PERMIT/401 WATER QUALITY  
CERTIFICATION FOR DREDGING & FILL/EXCAVATION**  
BWR WW26-401 WATER QUALITY CERTIFICATION FOR DREDGING &  
FILL/EXCAVATION

AT: 2200 Ocean Street, Marshfield, MA 02050  
South Coastal Drainage Area

Dear Mr. Maresco:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed your application for a Combined Chapter 91 Permit/401 Water Quality Certification for Dredging and Fill/Excavation (Combined Permit), 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. As a reminder, the Chapter 91 Permit will be issued as a separate document.

The waters of this portion of the South River drainage area are designated in the *Massachusetts Surface Water Quality Standards* as Class B, Outstanding Resource Water (ORW) from the source to the dam on Main Street and Class SA for shellfishing and Outstanding Resource Water from the dam at Main Street to the confluence with North River in Marshfield. Per 314 CMR 4.05(3), Class B waters are designated 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. Pursuant to 314 CMR 4.05(4), Class SA waters are “designated as an excellent 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...Where designated for shellfishing in 314 CMR 4.06(6)(b), these waters shall be suitable for shellfish harvesting without depuration...” The Anti-degradation provisions of the

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](http://www.mass.gov/dep)

Printed on Recycled Paper



Massachusetts Surface Water Quality Standards (314 CMR 4.04) require that “existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”

Project Description

The Veterans Memorial Park project proposes to replace a run-of-the-river dam and adjoining fish-weir ladder with a riffle-pool fishway designed to restore the river channel to its natural stream characteristics and to protect the nearby infrastructure. The project will also dredge and repair a heart shaped lagoon created within the impoundment using stone masonry walls and separated from the river by a small peninsula. A series of flow controls are proposed to maintain the water level in the lagoon independent of stream flow conditions.

Restoring the natural stream channel characteristics will reconnect riverine ecosystems, and significantly improve fish passage and spawning and nursery habitat for diadromous fish species including Alewife (*Alosa pseudoharengus*), Blueback herring (*Alosa aestivalis*), American shad (*Alosa sapidissima*), Rainbow smelt (*Osmerus mordax*), and others. The project is expected to improve water quality by reducing water temperatures, increasing the amount of dissolved oxygen, and reestablishing sediment transport mechanisms. Dredging and restoring the lagoon in a manner that will maintain the depth and quality of this ORW is a significant component of the project designed to honor the Vietnam veterans.

Per 314 CMR 9.06(3) and 314 CMR 9.07(1)(c), dredging and the discharge of dredged or fill material is permitted within an ORW for purposes of ecological restoration when conducted in a manner that will not reduce or alter the habitat functions of the ORW and wetlands. The requirement for 1:1 restoration and replication of wetland resources is waived for this Ecological Restoration project as per 314 CMR 9.06(2)(a) to allow resource area conversion combined with wetland replication to facilitate a stream channel design that optimally replaces and restores fish passage, aquatic habitat, and riparian connectivity of the river to pre-dam conditions.

Table 1. Wetland Resource Area Impacts<sup>1</sup>

<b>Wetland Resource Area</b>	<b>Temporary Impact</b>	<b>Permanent Impact</b>	<b>Total Impact</b>
Fish Runs (sq ft)	1,733	9,384	11,117
a. Land Under Water (sq ft)	1189	7509	8,698
b. Land Under Ocean (sq ft)	544	1875	2,419
Bordering Vegetated Wetland (sq ft)	693	79	772
Bank (linear ft)	59	495	554
Coastal Bank (linear ft)	23	176	199
Riverfront Area (sq ft)	31,243	1,701	32,944
LSCSF (sq ft)	15,738	2,146	17,884

Dredging and Dredge Material Disposal

The project will mechanically dredge 800 cubic yards of sediment from the South River and the lagoon and its inlet channel. Approximately 275 cubic yards of suitable dredge material will be

<sup>1</sup> Town of Marshfield 401 Water Quality Certification Application, Section B. Project Narrative.



beneficially reused onsite to restore the river channel, construct the riffle weirs and pools and to create a 6 inch protective layer of sediment over 12 inches of compacted clay on the lagoon bottom. The excess dredged sediment will be dewatered and transported offsite to the Marshfield compost facility for beneficial reuse in upland areas.

The project will be implemented in two phases. Phase-1 removes 250 cubic yards of accumulated sediment from the lagoon, its inlet channel from South River, and downstream outlet. A compacted clay liner and protective sediment layer will be installed to minimize water loss by infiltration. Stop-log controls will be fitted across the lagoon inlet and outlets to maintain the design water level. Groundwater will be pumped into the lagoon during low flow and drought periods to maintain water levels in the lagoon and ensure continued flows to support water wheel function however, adjacent wetland and stream water levels shall also be maintained.

Phase-2 proposes to demolish a 5.5 foot high concrete and stone dam and a 21 foot long fish ladder that abuts the north end of the dam's 7.4 foot spillway. The river channel will be restored to a series of six boulder riffles interspersed with 22' x 17' resting pools constructed by reusing natural boulders from the dam debris and dredged sand and gravel from the project site. Low flow channels are designed into the project to provide minimum required water depths for fish migration during low flow periods.

#### Dewatering and Water Control

Cofferdams will be constructed to redirect stream flows to locations downstream of the project site. This will allow construction to occur in the dry and maintain constant flow to protect fish and aquatic habitat. The cofferdam configurations will differ for each phase of the project to first allow dredging for lagoon improvements and then, by redirecting flows through the lagoon and bypass channel, to facilitate the river channel construction.

Dredged material will be stockpiled on land adjacent to the lagoon to dewater during phase-1 and on the peninsula between the lagoon and the river to dewater during phase-2. Geotextile fabric and haybales will provide sediment and erosion control around the dredged material. Best Management Practices ("BMPs") such as silt bags, discharge control structures will be used to treat water pumped from sumps prior to discharge to downstream locations in South River.

#### Grain Size Analysis

Six core samples (S-1A, S-1B, S-1C, S-2, S-3, S-4, S-5, S-6) were collected on May 22, 2019, from the South River channel at the following locations: S-2, S-3 behind the dam, S-4 downstream of the project site at Willow Street, and S-5, S-6 upstream of the project site. The locations shown on the SAP provide a representative sample of sediments at the dredge site as per 413 CMR 9.07(2)(b)(2.and 3.) to analyze grain size distribution onsite.

Core sample depths are consistent with the proposed dredge depths and provide sufficient information to estimate the dredge volume required to accomplish the project goals. Grain size distribution was determined for each core samples separately. Results indicates that samples S-1A and S-1C contain greater than 10 percent by weight of particles passing the No. 200 U.S. Standard Series Testing Sieve. Chemical characterization is indicated based on particle size distribution.

#### Sediment Chemical Analysis

Three sediment samples (S-1A, S-1B, S-1C) from the lagoon were combined to make a single composite sample. The remaining samples were analyzed individually Results from the chemical analysis were compared to MassDEP's *Interim Policy for Sampling, Analysis, Handling*

*and Tracking Requirements for Dredged Sediment Reuse and Disposal (COMM-94-007).* Contaminant levels for all samples tested were below the Reportable Concentration (RC) S-1 criteria of the Massachusetts Contingency Plan (MCP).

#### NHESP

The Veterans Memorial Park and South River Improvements Project site is not within Estimated and Priority Habitat for Rare Species as delineated by the Natural Heritage Atlas.<sup>2</sup>

#### Time of Year Restrictions

The Massachusetts Division of Marine Fisheries (MA DMF) recommends a time-of-year (TOY) restriction on in-water work from February 1 to July 15, to protect adult diadromous fish spawning periods and from September 1 to November 15 to protect juvenile diadromous fish emigration. MA DMF suggests that the data on spawning runs for American Shad in this region of the South River would support a request to start work as soon as July 1 with the appropriate BMPs in place.

#### Public Notice

Public Notice for the 401 Water Quality Certification Application was published in the Coastal Mariner on February 2, 2023. No comments were received by MassDEP during the 21-day public comment period pursuant to 314 CMR 9.05(3)(e), which ended on February 23, 2023.

#### 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 Combined Permit Application, DEP 23-WW26-0003-APP, was required to file an Expanded Environmental Notification Form (EENF). The Town of Marshfield (the Proponent) filed the EENF for the construction of the project under EEA #16602 and noticed the EENF in the Environmental Monitor (the Monitor) on September 9, 2022.

In the Certificate issued on October 18, 2022, 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.” In the Final Record of Decision (FROD) issued on November 14, 2022, the Secretary granted “a Waiver from the requirement to prepare a mandatory 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 Combined 401 WQC, all outstanding issues have been addressed satisfactorily.

**Therefore, based on information currently in the record, MassDEP grants a Combined 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.**

#### CONDITIONS

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<sup>2</sup> NHESP Estimated Habitats of Rare Species 15th Edition of the Massachusetts Natural Heritage Atlas, effective beginning **August 1, 2021**

1. Pursuant to 314 CMR 9.01(3), the applicant and its 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 and will protect all waters, including wetlands. This condition is necessary to assure that any discharge from the project site will comply with the Massachusetts Surface Water Quality Standards, as provided in 314 CMR 4.00, to protect the public health, and to restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
2. Pursuant to 314 CMR 9.09(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 project Plan of Record that may affect the quality of waters or wetlands. MassDEP will determine whether the change(s) will require a revision to this 401 Water Quality Certification to ensure that any project modification(s) adhere to 314 CMR 9.00 and the *Massachusetts Surface Water Quality Standards* at 314 CMR 4.00. This condition is necessary to ensure that the project is completed according to the approved Plan of Record for this permit to protect water quality and that any changes to the approved plans are reviewed and approved prior to implementation to ensure that water quality is protected.
3. Pursuant to 314 CMR 9.09(1)(e), Dredging and filling/excavation in accordance with this Combined 401 WQC may begin following the 21-day appeal period and once all other permits have been received. This condition assures that all the appropriate permits have been obtained and that grievances and additional concerns regarding impacts to water quality, protection of public health, or restoration and maintenance of the chemical, physical, and biological integrity of the water resources are identified and addressed before work begins.
4. Pursuant to 314 CMR 9.05(1), all work shall be performed in accordance with the following documents and plans submitted with the application. This condition is necessary to ensure that the project is completed according to the approved Plan of Record for this permit. The plans illustrate how the project will meet the criteria of 314 CMR 9.06 and 9.07 and thereby the applicable water quality standards, how the project will minimize environmental impacts, and how the project will prevent degradation to wetlands and water resources.
  - Application for a Combined 401 WQC, # 23-WW26-0003-APP, dated January 25, 2023, and including all revisions and additional information requested and submitted up to the issuance date of this permit.
  - MADMF specified Time of Year Restrictions and comments.<sup>3</sup>
  - Combined 401 WQC Approved Plans entitled: Proposed South River Fish Passage and Veterans Memorial Park Improvements Project, 2200 Ocean Street and Main Street at South River, Town of Marshfield, Massachusetts as signed and stamped by *Dean E. Audet*, Civil No. 45977, dated January 12, 2023, Thirty Sheets including:

<u>NO.</u>	<u>TITLE</u>
01	LOCAL & INDEX PLAN
02	LEGEND

---

<sup>3</sup> Massachusetts Division of Marine Fisheries Letter dated October 6, 2022, from Daniel J. McKiernan to Bethany Card, EOEAA providing comments on the EENF for the Veteran Memorial Park Dam Removal Project in Marshfield, MA.

03	EXISTING CONDITIONS PLAN
	SOUTH RIVER FISH PASSAGE AND PARK LAGOON
04-06	IMPROVEMENTS PLAN NO. 1-3
07	DEMOLITION AND EROSION CONTROL PLAN
	WATER CONTROLAND CONSTRUCTION PHASING PLAN NO. 1-
08-11	4
	RIPARIAN HABITAT AND PARKAREA RESTORATION PLAN NO.
12-15	1-4
16-18	WETLAND IMPACT PLAN NO. 1-3
19-30	DETAIL PLAN NO. 1-15

MassDEP shall be notified if there are modifications and/or deletions of work as specified in the plans. Depending on the nature and the scope of any change, approval by the Department may be required.

5. Pursuant to 314 CMR 9.05(4), MassDEP shall be notified in writing, attention Alice Smith, [Alice.Smith@mass.gov](mailto:Alice.Smith@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 Combined 401 WQC. This condition assures that MassDEP is notified in reasonable time to plan a site visit, if needed, to observe the work and conduct site inspection for compliance with 401 WQC to ensure that water quality is protected.
6. Pursuant to 314 CMR 9.05(4), the applicant and its contractor shall allow agents of MassDEP to enter the project sites to verify compliance with the conditions of this Certification and to ensure water quality is maintained during project preparation, construction, and post-construction phases. This condition assures permission from the applicant for MassDEP personnel to access the project site to monitor project progress and to verify that the project is implemented in compliance with requirements of Combined 401 WQC to protect water quality.
7. Pursuant to 314 CMR 9.01(3)(a), 314 CMR 9.07(1), 314 CMR 9.09(1), no later than 21 days prior to commencement of dredging activity, the name and contact information for the project site manager designated by the applicant and its contractor who will be responsible for installation, monitoring, inspection, and correction of erosion control measures shall be provided to MassDEP. This condition is necessary to ensure communication with the onsite person responsible for compliance with this Certification to protect water quality.
8. Pursuant to 314 CMR 9.07(5), Best Management Practices shall be implemented during transportation of the dredged material to the licensed receiving facility. At a minimum, when transported upon public roadways, all dredged material shall have no free liquid as determined by the Paint Filter Test or other suitably analogous methodology acceptable to the MassDEP and a tarpaulin or other means shall be used to cover the dredged material during transport. This condition ensures that water quality in waters and wetlands along the travel route are not degraded by spills or discharges during transport and avoids inadvertent contribution to degradation of other waters of the Commonwealth. These practices help to avoid fugitive dust and siltation into wetland resources and waters.
9. Pursuant to 314 CMR 9.07(1), Within 30 days of the completion of the initial dredging, construction photos of the site depicting post-dredge conditions shall be submitted to Alice Smith [Alice.Smith@mass.gov](mailto:Alice.Smith@mass.gov) at MassDEP. This condition is necessary to ensure that the

dredging was completed as proposed on the approved Plan of Record and that the final depths and grades designed and approved to protect water quality have been accurately achieved.

10. Pursuant to 314 CMR 9.07(1), the applicant shall utilize construction Best Management Practices in accordance with the MassDEP's Stormwater Standards to minimize stormwater runoff and erosion from impacting water quality. This includes stabilized construction entrances, vehicle wash down pads, perimeter erosion controls, and re-vegetation of disturbed areas with native plantings and seed mixes to minimize potential water quality impact resulting from construction activities. This condition is necessary to minimize the potential for construction related activities to adversely impact land under water, land under ocean, intertidal zone, and special aquatic sites. Stormwater runoff from construction activities can deliver concentrated pollutants and eroded sediments to downstream waters unless proper erosion and sediment controls are used. The effects may result in waters failing to meet designated uses and/or water quality criteria.
11. Pursuant to 314 CMR 9.07(1) and 314 CMR 4.04(1), all equipment and machinery storage, servicing, or cleaning, including but not limited to fueling, changing, adding, or applying lubricants or hydraulic fluids, or washing/rinsing of trucks or equipment, shall be performed above Mean High Tide Line for coastal projects or High Water Mark for inland sites and outside any wetland resource areas. This condition is necessary to protect water quality by ensuring that pollutants associated with the use and maintenance of equipment used for the project are not released to the water.
12. Pursuant to 314 CMR 4.04(1), 314 CMR 9.01(3), 314 CMR 9.07, during the project period, there shall be no discharge or spillage of fuel, oil, or other pollutants into any waters of the Commonwealth. The applicant shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident, or vandalism. This condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters.
13. Pursuant to 314 CMR 9.09(1), in case of a storm event, the site shall be secured beforehand in such a way as to protect waters on site and downstream of the site, including covering of stockpiles of soil; installation of erosion control mats over-areas of exposed soil; and removal of any debris, equipment, materials, etc. that could potentially enter the waters on-site. This condition is necessary to minimize stormwater runoff and erosion from impacting wetland resources.
14. Pursuant to 314 CMR 9.09(1), no later than one week prior to the start of in-water work, 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. Incidents that trigger reporting include, but are not limited to, observed dead or distressed fish or other aquatic organisms, observed oily sheen on the surface of the water, a sediment spill, or a turbidity plume beyond the deployed BMPs. 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 quality shall cease until the source of the problem is identified and adequate mitigating measures are deployed to the satisfaction of MassDEP. This condition assures that MassDEP can respond quickly to dredge related incidents that may impact water quality and allows MassDEP to oversee the implementation of measures designed to protect water quality.

15. Pursuant to 314 CMR 4.06, the applicant or contractor shall safely convey all ranges of flow in the river to the downstream portion of the stream channel throughout construction of the project in a manner that does not impair water quality. Post-Construction, adjacent wetland and stream levels shall be maintained during periods of pumping in drought or other conditions. This condition is necessary to protect downstream and adjacent aquatic habitat and ensure that existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected in accordance with the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards.
16. Pursuant to 314 CMR 9.07(3), Best Management Practices (“BMPs”) shall be deployed to minimize turbidity during temporary cofferdam construction. Water quality nearby the construction areas such as turbidity (NTU) should be monitored before, during, and after cofferdam construction to ensure that water quality standards are met. Turbidity monitoring data should be kept on site and available for MassDEP review upon request. This condition ensures that dredging is planned and conducted to minimize short-term, long term, and cumulative impacts on aquatic ecosystem and to protect human health.
17. During dredging operations, measures should be taken to avoid the potential spread of aquatic invasive species to other waterbodies. The dredged material shall be loaded directly into the sediment dewatering area. All vehicles, equipment and tools that have direct contact with invasive species should be cleaned before leaving the project areas. Under no circumstances shall sediment with invasive species seeds or rhizomes be reused or transported. This condition is necessary to protect the existing uses of the South River and the chemical, physical, and biological integrity of the Outstanding Resource Waters pursuant to 314 CMR 4.04 Antidegradation Provisions of the *Massachusetts Surface Water Quality Standards*.
18. Pursuant to 314 CMR 9.07(1), 314 CMR 9.07(3)(d), and in accordance with recommendations from the Commonwealth of Massachusetts Division of Marine Fisheries (DMF), a time-of-year (TOY) restriction on in-water work is in place from February 1 to July 15, and from September 1 to November 15. No in-water, silt-producing, and noise-producing activities, including, but not limited to dredging shall occur during the TOY restriction. This condition is necessary to minimize sedimentation or turbidity resulting from shoreline projects and in-water work that can negatively impact adult diadromous fish spawning periods and juvenile diadromous fish emigration.<sup>4</sup>
19. Pursuant to 314 CMR 9.09(2) the applicant, or its contractor, shall make every feasible effort to complete the project within the Combined 401 WQC timeframe. Should the applicant, or their contractor, fail to complete the project and wish to request an amendment to the Combined 401 WQC for incursion into the no-dredge period, the written request shall be received by MassDEP by January 1<sup>st</sup>. The following information shall be included in the request:
  - a. project location and transmittal number,
  - b. the date on which dredging started,
  - c. the number of days and hours per day the dredge operated,
  - d. expected daily average production rate and the actual daily average production rate, an explanation of why the project failed to remain on schedule,
  - e. an account of efforts made to get the project back on schedule,

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<sup>4</sup> Letter from Daniel J. McKiernan, the Commonwealth of Massachusetts, Division of Marine Fisheries dated October 6, 2022, to Bethany Card

- f. a plan depicting the areas that remain to be dredged,
- g. the number of cubic yards that remain to be dredged,
- h. an accurate estimate of the number of days required to complete the project,
- i. an evaluation of the impact of continued dredging on the species of concern,
- j. a description of any efforts that will be made to minimize the impacts of the project on
- k. the species of concern, and a realistic assessment of any societal/financial effects of a denial of permission to continue dredging.

MassDEP will share the information with other resource agencies and a decision to grant or deny the amendment shall be made by January 15<sup>th</sup>. Requests for amendment received after January 1<sup>st</sup> will be considered at MassDEP's discretion.

20. Pursuant to 314 CMR 9.07(9) MassDEP shall be notified in writing of the name and location of the upland facility accepting the dredged material for disposal or reuse as daily cover material. Documentation shall be provided to MassDEP that the dredged material disposal/reuse has been approved and will be accepted at the receiving location. The dredged material shall not be transported to the facility without concurrence of MassDEP.

Failure to comply with this Combined 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 Combined 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 Combined 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.

Case Administrator  
Department of Environmental Protection



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 and Waterways Program at:

Department of Environmental Protection  
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 Combined Permit Transmittal 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 Combined 401 WQC, please contact Alice Smith at [Alice.Smith@mass.gov](mailto:Alice.Smith@mass.gov) .

Sincerely,



Lisa Rhodes  
Wetlands Program Chief

ecc:

Craig Hannafin, Marshfield Conservation Commission, 870 Moraine, 2nd Floor, Marshfield, MA 02050 [channafin@townofmarshfield.org](mailto:channafin@townofmarshfield.org)

Michael Seele, Marshfield Conservation Commission, 870 Moraine, 2nd Floor, Marshfield, MA 02050 [mseele@townofmarshfield.org](mailto:mseele@townofmarshfield.org)

Gregory DeCesare, MassDEP Southeast Regional Office 20 Riverside Drive, Lakeville, MA 02347 [Daniel.Gilmore@mass.gov](mailto:Daniel.Gilmore@mass.gov)

Paul Sneeringer, Department of the Army, New England District Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751 [Paul.J.Sneeringer@usace.army.mil](mailto:Paul.J.Sneeringer@usace.army.mil)

John Logan, MassDMF, 836 S Rodney French Blvd, New Bedford, MA 02744 [John.Logan@mass.gov](mailto:John.Logan@mass.gov)

Stephen McKenna, MassCZM, 3195 Main Street, P.O. Box 220, Barnstable, MA 02630 [stephen.mckenna@mass.gov](mailto:stephen.mckenna@mass.gov)

Amanda Davis, MassDMF, 836 S Rodney French Blvd, New Bedford, MA 02744 [Amanda.Davis@mass.gov](mailto:Amanda.Davis@mass.gov)

Everose Schluter, MassDFW, 1 Rabbit Hill Road, Westborough, MA 01580 [Everose.Schluter@mass.gov](mailto:Everose.Schluter@mass.gov)

Edward Reiner, US EPA, 5 Post Office Square, Suite 100, Boston, MA 02109 [Ed.Reiner@epa.gov](mailto:Ed.Reiner@epa.gov)

Robert Boeri, Samuel Haines, MassCZM, 100 Cambridge Street, Suite 900, Boston, MA 02114 [Robert.Boeri@mass.gov](mailto:Robert.Boeri@mass.gov), [Samuel.Haines@mass.gov](mailto:Samuel.Haines@mass.gov).

attachments:

Communication for Non-English Speaking Parties document  
Plan 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，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與 MassDEP 的多元化主任聯繫。

**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**

ឯកសារនេះគឺសំខាន់ហើយត្រូវបានបកប្រែភ្លាមៗ។ ប្រសិនបើអ្នកត្រូវការត្រួតពិនិត្យឯកសារនេះ សូមទាក់ទងមកនាយកដ្ឋានពិពិធកម្មរបស់ MassDEP តាមលេខទូរស័ព្ទខាងក្រោម។

**Kriolu Kabuverdianu Cape Verdean**

*Kel dokumentu li é inportáti y debe ser traduzidu imediatamenti. Se bu meste di kel dokumentu 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 9<sup>th</sup> 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. إذا كنت بحاجة إلى هذه الوثيقة مترجمة، يرجى الاتصال بمدير الشؤون PMassDE على أرقام الهواتف المدرجة أدناه.

### 한국어 Korean

이 문서는 중요하고 즉시 번역해야 합니다. 이 문서의 번역이 필요하시다면, 아래의 전화 번호로 MassDEP의 다양성 담당 이사에 문의하시기 바랍니다.

### հայերէն 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 فوراً ترجمه شود.  
اگر به ترجمه این سند نیاز دارید، لطفاً 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 दस्तावेज 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 9<sup>th</sup> 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)

MARSHFIELD TOWN CLERK  
RECEIVED

2024 FEB 26 PM 5:40

DATE: FEBRUARY 13, 2024

DECISION: GRANT OF SITE PLAN APPROVAL CASE #24-08

APPLICANT: TOWN OF MARSHFIELD  
CONSERVATION COMMISSION

PROPERTY OWNER: TOWN OF MARSHFIELD VETERANS DEPARTMENT  
LEGACY TEAM, L.L.C.

PROPERTY ADDRESS: 2200 OCEAN STREET, MARSHFIELD, MA  
25 MAIN STREET, MARSHFIELD, MA

OWNER'S ADDRESS: 870 MORaine STREET, MARSHFIELD, MA

APPLICANT'S ADDRESS: SAME

MAILING ADDRESS: MICHAEL SEELE, CONSERVATION ADMINISTRATOR  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA 02050

TITLE REFERENCE: PLYMOUTH COUNTY REGISTRY OF DEEDS  
BOOK #2005, PAGE #492  
BOOK #47697, PAGE #320

The Marshfield Zoning Board of Appeals has considered the request of **Town of Marshfield/Conservation Commission**, the Petitioner, who is seeking Site Plan approval under §305-12.02 of the Marshfield Municipal Code to remove the dam at Veterans Park to restore passage of multiple fish species identified in local, state and federal watershed and fisheries management plans and restore the river channel to a riffle-pool configuration with natural boulders and native sediment/cobble substrate to provide flow complexity and improved riverine ecological processes on the property located at Veterans Park, **2200 Ocean Street and 25 Main**





**Street**, which is further identified on the Assessors' Maps as being on parcels G08-03-02 and G08-03-03 and is located in the B-2 zoning district. Locus is also identified on "Proposed South River Fish Passage and Veterans Memorial Park Improvements Project" consisting of eight (8) pages by Fuss and O'Neill, Inc. signed and stamped by Dean E. Audet, Registered Professional Engineer. A fourteen (14) page presentation titled "South River Fish Passage & Veterans Memorial Park Improvements Project" was also submitted.

The Board certifies that it has complied with all statutory requirements and has filed copies of this decision and all plans referred to herein with the Town Clerk, Planning Board and the Building Department pursuant to Mass. Gen. L. c. 40A, Section 11. The Board has taken into consideration the testimony of the applicant and its representatives, communications from various town boards and with interested parties. A Hybrid Public Hearing was held on February 13, 2024 at 6:30 P.M. at Marshfield Town Hall and on Zoom.

The Board, consisting of Chair Brian Murphy, Heidi Conway, Larry Keane, Grover Hensley, Jr., Brian Sullivan and Jean Lee considered the request.

#### **SITE PLAN DECISION:**

Upon a motion duly made and seconded, the Board unanimously voted 5-0 to **GRANT** Site Plan approval in accordance with §305-12.02 of the Marshfield Municipal Code with Murphy, Conway, Keane, Hensley and Sullivan voting in favor.

#### **CONDITIONS:**

1. A Certified Final "As-Built Plan" prepared by a Professional Land Surveyor shall be submitted to the Zoning Board of Appeals and the Building Department prior to occupancy;
2. The Petitioner shall comply with all Conservation Commission requirements;
3. The Petitioner shall comply with all local, state and federal laws and regulations;
4. For this Site Plan approval to become effective, a copy of this decision bearing the certification of the Town Clerk that 20 days have elapsed after the decision was filed in that office, that no appeal has been filed, or if an appeal has been filed, that it was dismissed or denied, shall be recorded in the Plymouth County Registry of Deeds.

#### **REASON FOR DECISION:**

Testimony indicated that the Petitioner is proposing to replace the dam with a series of pools and ripples. The project is also an ecological restoration of the fish passage as the existing passage is too narrow (18") and the fish are not able to go up the fish ladder. The proposed passage will allow the fish to navigate through two foot (2') wide notches and be able to rest and recover. The upper and lower river banks will be restored and the lagoon will be dredged to ensure adequate depth for the fountain to function.

Testimony also indicated that there will be two (2) footbridges instead of one (1) and they will be ADA (Americans with Disabilities Act) compliant; the peninsula will also be ADA compliant.



The water wheel, which does not function during low periods, will be improved by cisterns. The revetment will also be addressed as the lagoon water is seeping through the revetment walls.

The Board further finds that all of the conditions under §305-12.02.F (1) through (9) inclusive are complied with as conditioned by the granting of this Site Plan Approval.

**APPEAL:**

Any judicial appeal from this decision shall be made pursuant to MGL 40A, Section 17, and must be filed with the office of the Town Clerk within 20 days from the filing of this decision.

MARSHFIELD ZONING BOARD OF APPEALS,



BRIAN MURPHY, CHAIR

cc: Town Clerk, Planning Board, Fire Department, Building Department, Board of Assessors, Board of Selectmen, Town Engineer, Conservation Commission, Historical Commission, Board of Health, Police Department, Applicant & Abutters, Town Counsel







Town of Marshfield, MA

Aug 2, 2024

FP-23-26

## Floodplain Permit Issuance

Floodplain Permit

**Status:** Issued

**Became Active:** Jun 17, 2024

**Issued by:** Andrew Stewart

**Completed:** Jun 17, 2024

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### Primary Location

2200 OCEAN STREET  
MARSHFIELD, MA 02050

### Owner:

TOWN OF MARSHFIELD VETERAN DPT  
870 MORAIN STREET MARSHFIELD, MA  
02050

### Floodplain Permit

**Issued:** Jun 17, 2024

**Expires:**



**Veterans Memorial Park &  
South River Improvement Project Information Packet**

**In Support of a Pre-Application Meeting for a Beneficial Use  
Determination**



**November 2023**

**Prepared for:**  
Town of Marshfield  
Massachusetts Department of Environmental Protection

**Prepared by:**  
Woods Hole Group  
A CLS Company  
107 Waterhouse Road  
Bourne, MA 02532 USA  
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## 1.0 INTRODUCTION

Veterans Memorial Park Dam is located along the South River in Marshfield, MA (Figure 1). A fishway is integrated into the dam consisting of a concrete and stone weir-pool fish ladder. The dam at the site maintains a small impoundment, the northern half which is formed as a widened slowly flowing river channel, and the southern half forms a lagoon bordered by mortared stone walls. The dam prevents the passage of diadromous fish species and has a significant backwater effect on the South River upstream of the dam. There is a fish ladder at the site, but it is not functioning well and most of the fish attempting to travel upstream are unable to traverse the ladder.

This project aims to restore the tidal river system and enhance fish migration pathways. The project will include dredging a total of 800 cubic yards of sediment; 550 from the river impoundment and 250 from the lagoon. A total of 275 cubic yards of dredged sediment will be reused on site within the river and lagoon, and the remaining 525 cubic yards of material are proposed for beneficial reuse as grass-seeded loam atop the Town of Marshfield's closed landfill.

The remainder of this document provides background information in support of a pre-application consultation meeting regarding a Beneficial Use Determination (BUD) for the 525 cubic yards of dredge material proposed for upland beneficial re-use. The Information herein includes a description of existing conditions, a project description, volume of material dredged and proposed for upland beneficial reuse, sediment physical and chemical properties, and proposed use of the material.



Figure 1. Veterans Memorial Park project area.

## 2.0 EXISTING CONDITIONS

This section describes existing conditions within the project area, including site use, site history, physical conditions and species of concern.

### 2.1 Physical Characteristics

The site includes a river channel and a small impoundment maintained by a dam. The northern half of the impoundment is a widened, slowly flowing portion of the native river channel. The southern half of the impoundment is formed as a “heart-shaped” lagoon principally bordered by partially-mortared stone masonry walls (see Figure 2).





**Figure 2. “Heart-shaped” lagoon (left), earthen peninsula and portion of river impoundment (far right), facing west.**

This lagoon is partially separated from the main river channel by a small earthen peninsula. A small, man-made inlet channel (screened with a single, fixed stop log at its upstream invert) extends across the upstream end of the peninsula, providing inlet flow to the lagoon. Flow discharges from the impoundment via a buried conduit, a channel outlet to a decorative timber water wheel, the pool-and-weir fish ladder (each of which can be closed/controlled by timber stop logs) and the dam spillway (which is seasonally raised by flash boards along its length). An aerial image depicting these elements is provided in Figure 3.



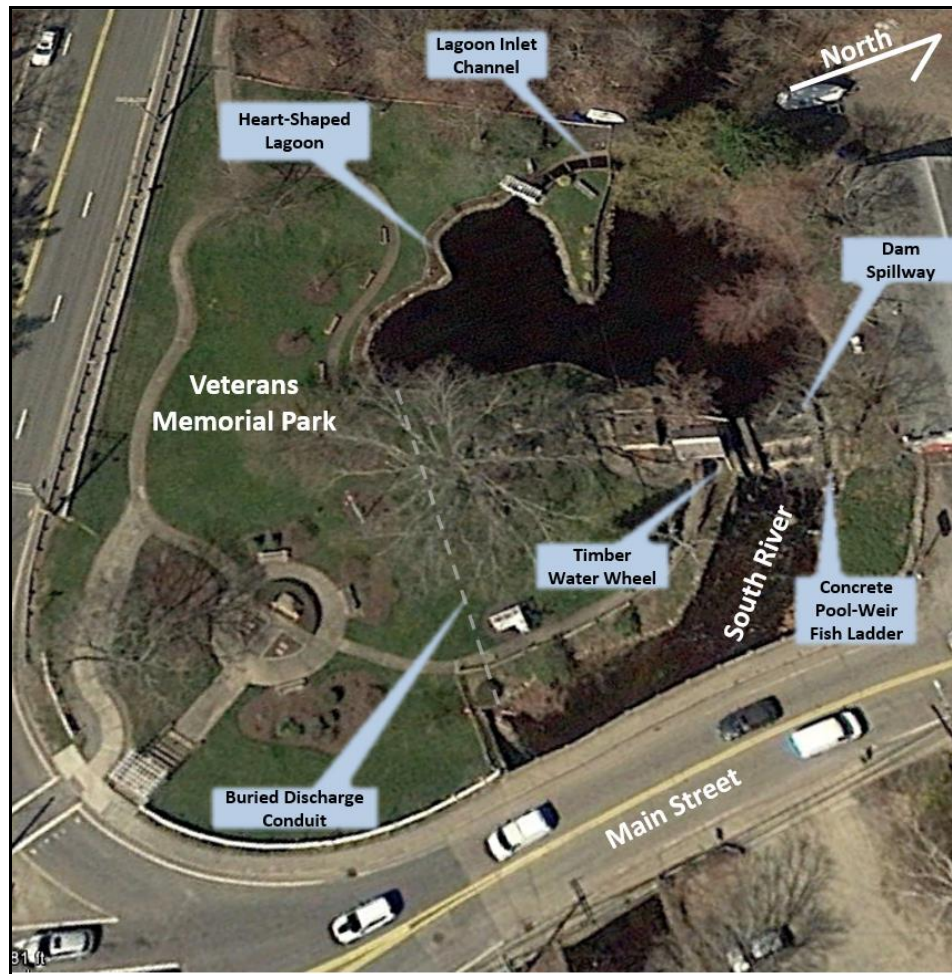


Figure 3. Veterans Memorial Park overview map.

## 2.2 Species of Special Concern

The South River is home to multiple species with special status and significance and based on a December 2019 memo from the Massachusetts Division of Marine Fisheries has been documented as spawning and nursery habitat for seven diadromous fish species - Alewife (*Alosa pseudoharengus*), Blueback herring (*Alosa aestivalis*), American shad (*Alosa sapidissima*), Rainbow smelt (*Osmerus mordax*), White perch (*Morone americana*), American eel (*Anguilla rostrata*) and Sea lamprey (*Petromyzon marinus*). The Atlantic tomcod (*Microgadus tomcod*) is another diadromous species that is expected to occur in the South River but has not been recently documented. American shad are the highest ranked priority (by Total Priority Index) in the Northeast Restoration Center's assessment of High Priority Watersheds and are a regionally important recreational species. River herring (a NOAA Species of Concern) are present in the South River downstream of Veterans Memorial Park Dam. Pocket populations of native brook trout have been seen in the cold-water tributaries both upstream and downstream of Veterans Memorial Park as well.

The existing fish ladder is constructed of concrete and has a total length of 21 ft, consisting of four weirs and pools configured within a 4 ft wide channel. The fish ladder was originally constructed in the 1960's and provided only limited fish passage within a narrow range of flows. Due to these performance



deficiencies, the fish ladder was modified by the DMF in 2011, working in collaboration with the Town of Marshfield and the North and South River Watershed Association (NRSWA), to reconfigure the downstream entrance channel to improve flows for migratory fish. At present, the fish ladder is passable only when no timber flashboards are installed on the dam crest, as flow conditions within the fish ladder when flashboards are installed exceed the swimming capabilities of target fish species. The NRSWA and Massachusetts Bays National Estuary Program have documented that less than 5% of river herring attempting to migrate upriver are able to make it through the site during spring migration.

### **2.3 Site Use**

Veterans Memorial Park was developed in 1948 to commemorate Marshfield servicemen killed in action during World War II. The park's site on the South River was selected because water features were a prominent part of its original design. The former mill building was razed and the hydrology of the river was altered to supply water to the water wheel and Bleeding Heart Lagoon. The mission of the park was later expanded to honor all of Marshfield's veterans and additional monuments were placed to veterans of other wars. It continues to be an important place of reflection and veneration of the sacrifices made by the town's veterans.

The park is a valued place for the community, where the service and sacrifices of veterans are memorialized, where people visit alone or with others to enjoy the sights and sounds of the South River and the park's heart-shaped lagoon and water fountain, and where the annual spring migration of river herring and other species is watched from the Main Street bridge and riverbanks adjacent to the fish ladder. The fountain is dedicated to the Town's women Veterans, the water wheel is dedicated to the Town's male Veterans, and the lagoon, which is in the shape of a bleeding heart, is dedicated to the sacrifice of all Veterans. The Park is a National Natural Landmark rededicated at a public ceremony on September 23, 2018.

## **3.0 PROJECT DESCRIPTION**

The goal of the project is to restore continuity of the South River by removing the existing fishway and replacing it with a nature like riffle-pool fishway, while maintaining water levels within the adjacent lagoon. The project also aims to maintain access to the waterfront, improve safety for park visitors, and enhance park aesthetics.

The project includes the following three (3) elements: river restoration, lagoon water quality improvements, and enhancement of park safety, access, and aesthetics. The first two elements require dredging and will result in approximately 525 cubic yards of material that is being proposed for beneficial reuse at the Town of Marshfield closed landfill.

### **3.1 River Restoration**

The river restoration portion of the project includes removal of the existing dam and fish ladder, and construction of a riffle-pool fishway. This type of fishway resembles a pool-and-weir technical fishway, although in a more naturalistic manner as the transitions between pools are characterized by gradual riffles as opposed to discrete/abrupt weirs (Figure 4). Fish navigate through this type of fishway by transitioning to a "bursting" swimming mode (i.e., short duration, high intensity/speed) through riffles, while in pools between riffles they rest before continuing through the next upstream riffle, eventually reaching the upstream end of the fishway. This activity will require dredging 550 cubic yards of sediment from the river. Approximately 210 cubic yards of the dredge material will be reused on site, filling voids between boulders, resulting in a surplus of approximately 340 cubic yards that will be transported off-site



to the Town's compost facility for blending and then use as grass-seeded loam on the Town of Marshfield's closed landfill. This would require approximately 22 roundtrips by a dump truck to transport this volume of material to the Marshfield Transfer Station and Recycling Center.



**Figure 4. Example constructed riffle-pool nature-like fishway.**

### **3.2 Lagoon Water Conservation Improvements:**

This aspect of the project will include dredging to restore depth, as well as installation of an impermeable liner to minimize water leakage out of the lagoon. Dredging will be conducted in the memorial lagoon, its inlet channel, and the existing downstream outlet discharge to the river. The purpose is to remove accumulated sediment and allow construction of the extended peninsula hydraulically isolating the lagoon to restore adequate water depths in the lagoon, to improve water quality, and to allow operation of the lagoon's fountain. The lagoon will be dredged to elevations ranging between 2.5 to 6.3 ft NAVD88, resulting in the removal of approximately 250 cubic yards of sediment from the lagoon and the adjacent inlet channel and outlet areas. Of the 250 cubic yards of dredge sediment, 65 cubic yards of material would be reused on site as a protective layer over an impermeable liner. The remaining 185 cubic yards of material is proposed for beneficial reuse at the Town's closed landfill. This would require approximately 12 roundtrips by a dump truck with 15+ cubic yard capacity.

### **3.3 Project Design – Dredge and Placement Areas**

The proposed dredge footprint within the existing channel and lagoon is shown by the red dashed line in Figure 5. The footprint encompasses a total area of 8,150 ft<sup>2</sup>. The proposed depth of dredging ranges from 0.5 to 5.0 ft depending on location. The proposed dredge volume is 550 cubic yards from the existing







### 3.4 Proposed Beneficial Use of Material

As noted, a BUD is being requested for the upland placement of the 525 cubic yards that will be reused off-site. The Town of Marshfield will conduct activities necessary for the sediment transport, handling and ultimate use. Specifically, the 525 cubic yards of dredge material that is not reused onsite will be transported to the Town’s compost facility (the ‘salt shed’ on Clay Pit Road) and mixed with compost from the Town composting facility to form a loamy mixture. Following blending, the material will be transported to the Town’s closed and capped landfill and then used to re-seed areas where needed on the cap of the closed landfill.

## 4.0 PREVIOUS SAMPLING AND ANALYSIS

### 4.1 2019 and 2023 Sediment Core Sampling

Two rounds of sediment sampling were conducted in support of project design. The first sampling was completed on May 22, 2019 and a second round was completed on April 27, 2023. A total of eight (8) sediment cores were collected in 2019 within the dredge footprint and areas upstream and downstream of the project (Figure 6). Four (4) additional samples were collected in 2023 as shown in Figure 7. The 2019 samples were analyzed for grain size, pesticides, PAHs, metals, total organic carbon and percent moisture. The 2023 sampling was done to characterize analytes that were not measured in the first round including PCBs and VOCs.

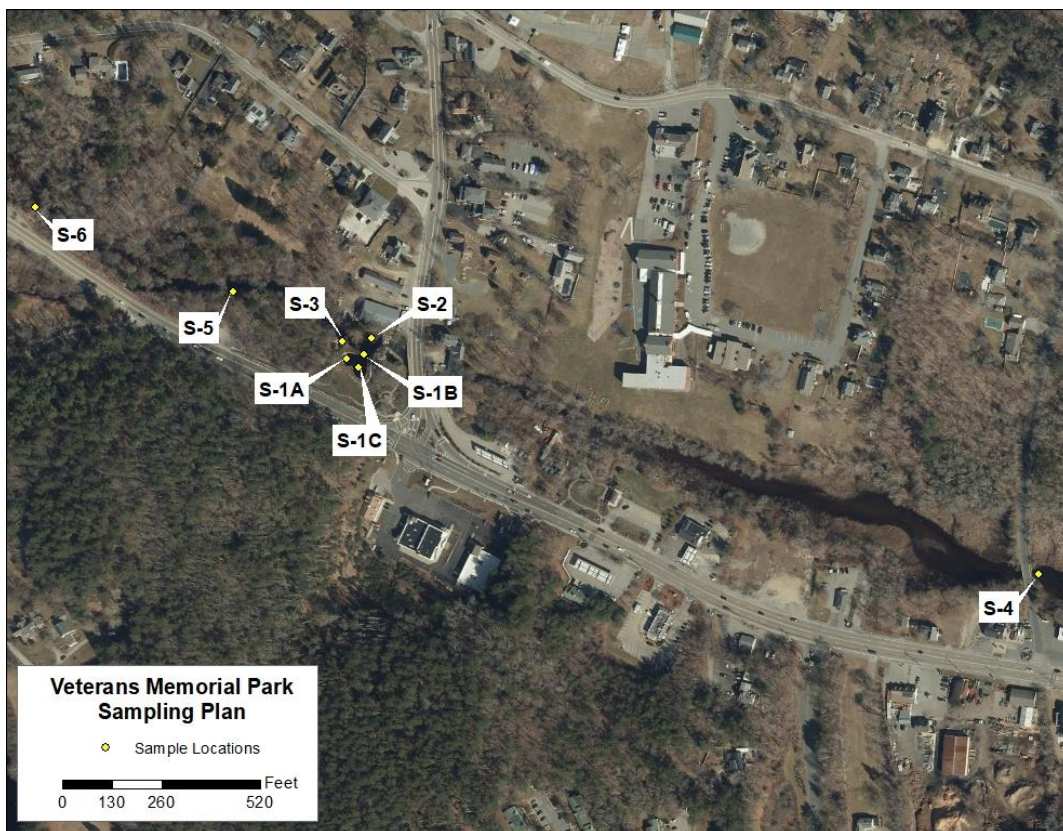


Figure 6. Veterans Memorial Park sample samples collected in 2019.





**Figure 6. Veterans Memorial Park samples collected in 2023.**

Samples were collected as sediment cores, to dredging depth. All cores were split, measured, photographed, and described by a trained sedimentologist at the project site. Sample core logs and photographs are provided in Appendices A and B.

The core log and grain size data show that the sediments are primarily sand mixed with silt, gravel, and some organics. Coarser-grained cobbles and boulders were not collected for grain-size analyses as part of this project, but visual inspection indicates that portions of the river channel contain significant quantities of cobble and boulder.

#### 4.2 Physical and Chemical testing

Laboratory analysis was conducted for grain size and for sediment chemistry. As noted the 2019 samples were analyzed for grain size, metals, pesticides, PAHs, organic carbon, and percent moisture, while the 2023 samples were analyzed for VOCs and PCBs. Sediment chemistry data in Appendices A and B include the analyte, analytic method, reporting limit, dilution, and time and date analyzed. Quality control samples were run and results are included. Data flags were issued as appropriate.

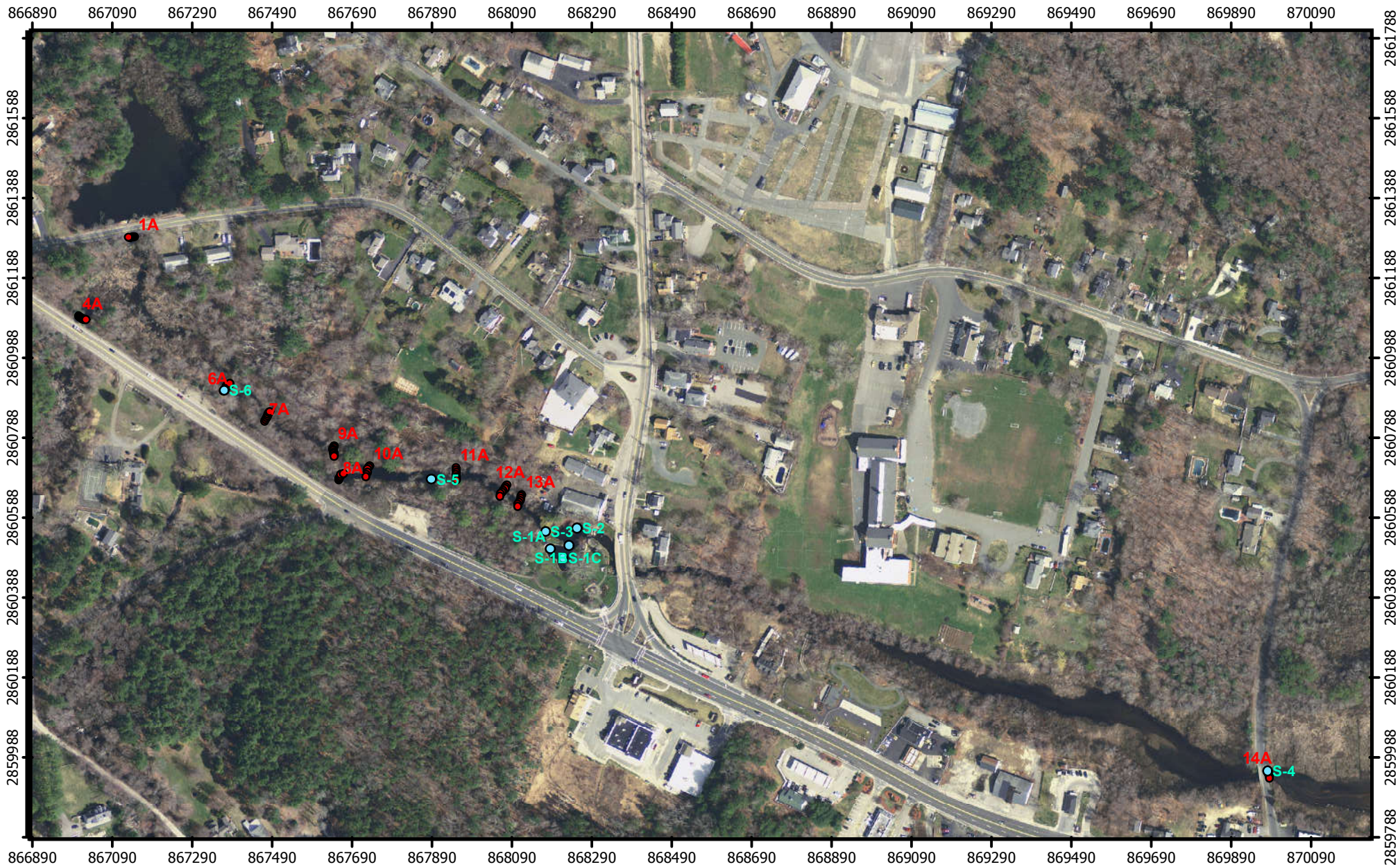
### 5.0 SUMMARY


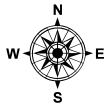
This document provides background information in support of a pre-application meeting regarding a BUD for dredge material from Veterans Memorial park proposed for upland beneficial use.

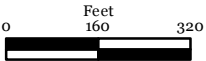


**Appendix A. 2019 Sample Locations, Core Logs, Photographs and Laboratory Results**





 <p><a href="http://www.crenvironmental.com">www.crenvironmental.com</a></p>	<p>VETERAN'S PARK TRANSECT AND CORING LOCATIONS</p> <p>Transects in Red Core Locations in Blue</p>	
	<p>NOTES:</p> <ol style="list-style-type: none"> <li>1) Survey conducted 21-May-2019</li> <li>2) Grid MA State Plane NAD 83 Ft.</li> </ol>	<p>Figure 3</p>







Station ID: S-1A

Northing: 2860508.99

All measurements are ±0.1 feet

Core Sample ID: \_\_\_\_\_

Easting: 868187.15

Penetration: 4.45

Date Collected: 7/10/06

GPS Accuracy: ± 0.5' (RTK)

Recovery: 4.2

Time: 22-May-2019

Water Depth: 0.7

Processed Date/Initials: MRF 5/22/19

Collection Mechanism: Piston Core/ Soil Auger

Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
	1.1	MH	Highly organic liquidy silt w/ leaf litter	10 YR 2/2 very dark brown	very soft	silt	None	
	1.5	SW	well sorted sand (f-z)	10 YR 6/3 pale brown	firm	coarse sand		
	1.8	OL	silty clay	10 YR 5/2 grayish brown	med	silt		
	2.4	MH	organic silt w/ leaf litter	10 YR 2/2 very dark brown	soft	silt		
	2.5	SW	well sorted sand (f-z)	10 YR 6/3 pale brown	firm	coarse sand		
	3.8	MH	Organic silt almost like peat (dry)	10 YR 2/2 very dark brown	med/firm	silt		
	4.2	SW	fine to coarse sand	10 YR 8/2 white	firm	coarse sand		

01564190522-01

Comments: collect VOAs between 1.5' + 1.7'

composited w/ S-1B + S-1C



www.crenvironmental.com

2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-1B Northing: 2860518.65 All measurements are ±0.1 feet  
 Core Sample ID: \_\_\_\_\_ Easting: 868233.25 Penetration: 2.5  
 Date Collected: 22-May-2019 GPS Accuracy: ± 0.5' (RTK) Recovery: 2.3  
 Time: 0934 Water Depth: 1.8 Processed Date/Initials: 5/23/19 MRF  
 Collection Mechanism: Piston Core Soil Auger Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USCS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-01	1.9	MH	Very organic liquidy silt w/ leaf litter	10YR 2/2 Very dark brown	soft	minor fine sand	None	
	2.3	SW	well sorted sand fine → med w/ pebbles	10YR 6/3 Pale brown	med	pebbles	None	

Comments: photo taken w/ table of C  
  
 composited w/ S-1A + S-1C



2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-1C Northing: 2860486.86 All measurements are ±0.1 feet  
 Core Sample ID: \_\_\_\_\_ Easting: 868219.61 Penetration: 2.8  
 Date Collected: 22-May-2019 GPS Accuracy: ± 0.5' (RTK) Recovery: 2.6  
 Time: 10:51 Water Depth: 3.8 Processed Date/Initials: 5/22/19 MRF  
 Collection Mechanism: Piston Core/Soil Auger Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-01	2.3	MH	very organic silt w/ leaf litter	10YR 2/2 very dark brown	loose/soft becoming firm @ 1.9'	minor f. sand	None	1 thin lense of gray clay @ 1.4 1 thin lense of Brown f→c sand @ 1.5 sticks from 1.7' → 1.9'
	2.6	SW	well sorted f→c sand	10YR 7/2 light gray	med firm	c. sand		

Comments:  
 looks like beach sand in bottom 0.3'  
 composited w/ S-1A + S-1B



www.crenviro.com

2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-2

Northing: 2860561.91

All measurements are ±0.1 feet

Core Sample ID: \_\_\_\_\_

Easting: 868254.31

Penetration: 2.9

Date Collected: 22-May-2019

GPS Accuracy: ±0.5' (RTK)

Recovery: 2.8

Time: 09:11

Water Depth: 0.3

Processed Date/Initials: MRF 5/22/19

Collection Mechanism: Piston Core/ Soil Auger

Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-02	1.4	MH	Highly organic liquidy silt w/ leaf & litter	10YR 2/2 very dark brown	soft	silt	None	
	2.8	GM	Silty/ gravelly fine to medium sand w/ pebbles + cobbles	10YR 5/3 Brown	med firm	cobble	None	

Comments:

Bottom 1.0' collected w/ an auger





www.creenvironmental.com

2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-3 Northing: 2860552.97 All measurements are ±0.1 feet  
 Core Sample ID: \_\_\_\_\_ Easting: 868175.85 Penetration: 3.3  
 Date Collected: 22-May-2019 GPS Accuracy: ± 0.5' (RTK) Recovery: 3.1  
 Time: 08:35 Water Depth: 0.5 Processed Date/Initials: MRF 5/22/19  
 Collection Mechanism: Piston Core/Soil Auger Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
015 641905 22 - 03	1.2	MH	highly organic silt high liquid content	10YR 2/2 very dark brown	soft	Fine sand	None	thin band
	1.3	Sm s	silty sand	10YR 5/3 brown	med soft	Fine sand		
		MH	organic silt	10YR 2/2 very dark brown	med	silt		
	2.1	SW	fine sand	10YR very 7/3 pale brown	firm	fine sand		
	2.2							
			MH	organic silt	10YR 2/2 very dark brown	med firm	silt	
2.9								
3.1		SW	fine sand	10YR very 7/3 pale brown	firm	f. sand		thin sand lense @ 2.9

Comments:





www.crenvironmental.com

2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-5 Northing: 2860683.21 All measurements are ±0.1 feet  
 Core Sample ID: \_\_\_\_\_ Easting: 867889.84 Penetration: 4.1  
 Date Collected: 22-May-2019 GPS Accuracy: ±0.5' Recovery: 3.8  
 Time: 11:27 Water Depth: 1.7' Processed Date/Initials: MRF ~~5/22~~ 5/22/2019  
 Collection Mechanism: Piston Core/ Soil Auger Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USCS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-06	0.8	MH	Very organic silt w/ leaf litter + stems	10 YR 2/2 very dark brown	loose soft	Silt	None	
	2.3	SP	Fine sand	10 YR 6/3 pale brown	med firm	C Sand		3 lenses of coarse sand @ 1.0', 1.4', 1.7' slight color change @ lense @ 1.7' to 10 YR 6/4 (light yellowish brown)
	2.8	SP	Fine sand	10 YR 4/1 dark gray	firm	f. sand		2 thin bands of organic material @ 2.3 - 2.4
	3.8	SW	f → med sand well sorted	10 YR 4/1 dark gray	med	med sand		

Comments: Composite Cores S-5 and S-6. So the 2 tops make 1 sample and the 2 bottoms make a separate sample



2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

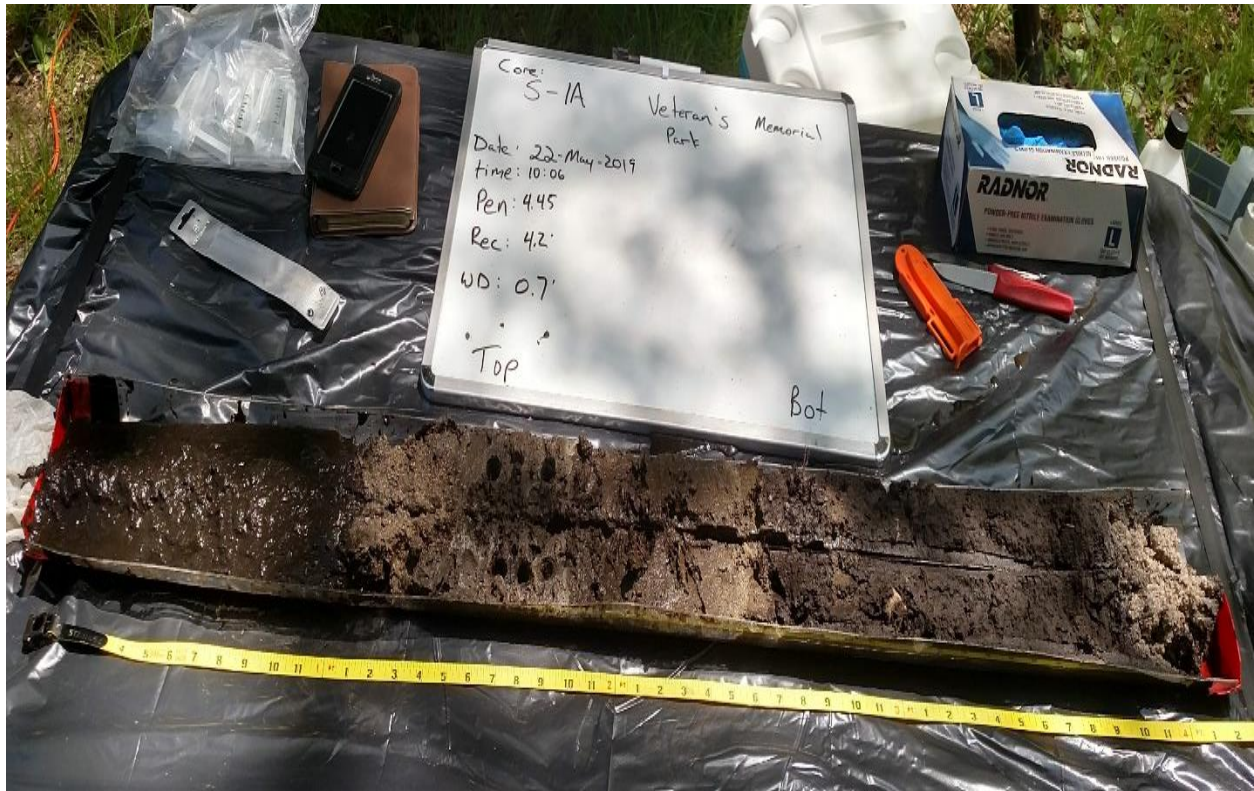
Station ID: S-6 Northing: 2860906.29 All measurements are  $\pm 0.1$  feet  
 Core Sample ID: \_\_\_\_\_ Easting: 867370.90 Penetration: 2.5  
 Date Collected: 22-May-2019 GPS Accuracy:  $\pm 0.5'$  (DGPS) RTK Recovery: 2.3  
 Time: 1450 Water Depth: 0.2 Processed Date/Initials: MRF 5/22/19  
 Collection Mechanism: Piston Core/ Soil Auger Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-6	1.0	MH	Very organic silt w/ leaf litter + stems	10 YR 2/2 Very dark Brown	Soft	Silt	None	
	1.3	X	X wood	X	X	X	X	discarded from sample
01564190522-5	2.3	GM	Silty Sandy Gravel mostly sand well sorted f $\rightarrow$ L	10 YR 3/1 very dark gray	med	gravel 2"		gravel to 2"

Comments: Composite cores S-5 and S-6 so that the 2 tops make 1 sample and the 2 bottoms make a separate sample

① S/B  $\pm 0.5'$  (RTK)





Sediment Core from Location S-1A (surface to depth from left to right)

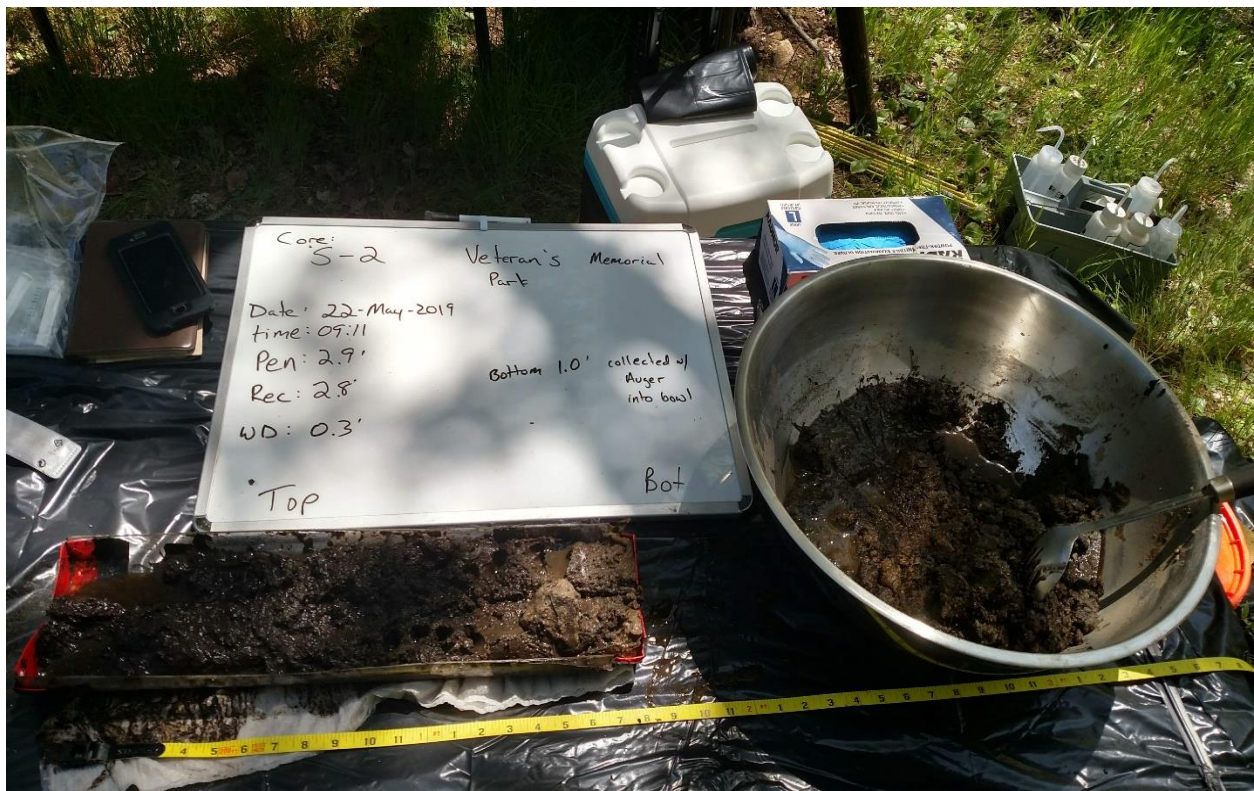


Sediment Core from Location S-1B (surface to depth from left to right)





Sediment Core from Location S-1C (surface to depth from left to right)



Sediment Core from Location S-2 (surface to depth from left to right)





Sediment Core from Location S-3 (surface to depth from left to right)

Note: There was no core taken for location S-4 (an auger was used) and therefore there is no core log nor photo of this sample.



Sediment Core from Location S-5 (surface to depth from left to right)



Sediment Core from Location S-6 (surface to depth from left to right)



June 10, 2019

Nils Wiberg  
Fuss & O'Neill - Providence  
317 Iron Horse Way, Suite 204  
Providence, RI 02908

Project Location: Marshfield, MA  
Client Job Number:  
Project Number: 20180319.A20  
Laboratory Work Order Number: 19E1341

Enclosed are results of analyses for samples received by the laboratory on May 23, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Jessica Hoffman", is displayed on a light blue rectangular background. The signature is written in a cursive, flowing style.

Jessica L. Hoffman  
Project Manager

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Chain of Custody/Sample Receipt

55

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Fuss & O'Neill - Providence  
 317 Iron Horse Way, Suite 204  
 Providence, RI 02908  
 ATTN: Nils Wiberg

REPORT DATE: 6/10/2019

PURCHASE ORDER NUMBER: 156420180319.A20

PROJECT NUMBER: 20180319.A20

**ANALYTICAL SUMMARY**

WORK ORDER NUMBER: 19E1341

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Marshfield, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
01564190522-01	19E1341-01	Sediment		-	MA M-MA071/CT PH-0520
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SW 846 9060A	
				SW-846 6010D	
				SW-846 6020B	
				SW-846 7471B	
				SW-846 8081B SW-846 8270D	
01564190522-02	19E1341-02	Sediment		-	MA M-MA071/CT PH-0520
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SW 846 9060A	
				SW-846 6010D	
				SW-846 6020B	
				SW-846 7471B	
				SW-846 8081B SW-846 8270D	
01564190522-03	19E1341-03	Sediment		-	MA M-MA071/CT PH-0520
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SW 846 9060A	
				SW-846 6010D	
				SW-846 6020B	
				SW-846 7471B	
				SW-846 8081B SW-846 8270D	
01564190522-04	19E1341-04	Sediment		-	MA M-MA071/CT PH-0520
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SW 846 9060A	
				SW-846 6010D	
				SW-846 6020B	
				SW-846 7471B	
				SW-846 8081B SW-846 8270D	

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Fuss & O'Neill - Providence  
317 Iron Horse Way, Suite 204  
Providence, RI 02908  
ATTN: Nils Wiberg

REPORT DATE: 6/10/2019

PURCHASE ORDER NUMBER: 156420180319.A20

PROJECT NUMBER: 20180319.A20

**ANALYTICAL SUMMARY**

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WORK ORDER NUMBER: 19E1341

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Marshfield, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
01564190522-05	19E1341-05	Sediment		SM D 422-63	GAI-LAP-20-1996/AASH TO
01564190522-06	19E1341-06	Sediment		SM D 422-63	GAI-LAP-20-1996/AASH TO

**CASE NARRATIVE SUMMARY**

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

For method 8270, only PAHs were requested and reported.

**SW 846 9060A****Qualifications:****MS-11**

Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

**Analyte & Samples(s) Qualified:****Total Organic Carbon**

B232199-MS1

**SW-846 8081B****Qualifications:****DL-03**

Elevated reporting limit due to matrix interference.

**Analyte & Samples(s) Qualified:**

19E1341-01[01564190522-01], 19E1341-02[01564190522-02], 19E1341-03[01564190522-03], 19E1341-04[01564190522-04]

**V-20**

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

**Analyte & Samples(s) Qualified:****Heptachlor Epoxide**

B232144-BSD1

**Hexachlorobenzene**

B232144-BS1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington  
Technical Representative



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	ND	0.13	0.13	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Acenaphthylene (SIM)	ND	0.13	0.13	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Anthracene (SIM)	ND	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(a)anthracene (SIM)	0.22	0.026	0.026	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(a)pyrene (SIM)	0.24	0.039	0.039	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(b)fluoranthene (SIM)	0.37	0.026	0.026	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(g,h,i)perylene (SIM)	ND	0.22	0.22	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(k)fluoranthene (SIM)	0.12	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Chrysene (SIM)	0.32	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Dibenz(a,h)anthracene (SIM)	ND	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Fluoranthene (SIM)	0.47	0.22	0.22	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Fluorene (SIM)	ND	0.39	0.039	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Indeno(1,2,3-cd)pyrene (SIM)	0.21	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
2-Methylnaphthalene (SIM)	ND	0.39	0.39	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Naphthalene (SIM)	ND	0.39	0.39	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Phenanthrene (SIM)	0.21	0.026	0.026	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Pyrene (SIM)	0.47	0.39	0.39	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Surrogates		% Recovery	Recovery Limits			Flag/Qual				
Nitrobenzene-d5 (SIM)		71.4	30-130						6/4/19 11:43	
2-Fluorobiphenyl (SIM)		44.5	30-130						6/4/19 11:43	
p-Terphenyl-d14 (SIM)		44.8	30-130						6/4/19 11:43	

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Sample Flags: DL-03

**Organochloride Pesticides by GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aldrin [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
alpha-BHC [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
beta-BHC [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
delta-BHC [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
gamma-BHC (Lindane) [1]	ND	0.055	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Chlordane [1]	ND	0.55	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
4,4'-DDD [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
4,4'-DDE [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
4,4'-DDT [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Dieldrin [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endosulfan I [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endosulfan II [1]	ND	0.22	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endosulfan sulfate [1]	ND	0.22	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endrin [1]	ND	0.22	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endrin ketone [1]	ND	0.22	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Heptachlor [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Heptachlor epoxide [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Hexachlorobenzene [1]	ND	0.17	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Methoxychlor [1]	ND	1.4	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG

Surrogates	% Recovery	Recovery Limits	Flag/Qual
Decachlorobiphenyl [1]	78.4	30-150	6/5/19 1:32
Decachlorobiphenyl [2]	73.9	30-150	6/5/19 1:32
Tetrachloro-m-xylene [1]	86.4	30-150	6/5/19 1:32
Tetrachloro-m-xylene [2]	83.9	30-150	6/5/19 1:32

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	4.9	0.48	0.078	mg/Kg dry	5		SW-846 6020B	5/31/19	6/3/19 12:32	MJH
Cadmium	0.56	0.48	0.29	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Chromium	11	0.95	0.59	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Copper	12	0.95	0.81	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Lead	72	1.4	0.84	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Mercury	0.046	0.069	0.021	mg/Kg dry	1	J	SW-846 7471B	6/3/19	6/4/19 9:59	AJL
Nickel	6.3	0.95	0.76	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Zinc	53	1.9	1.3	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	34.8		% Wt	1		SM 2540G	6/2/19	6/3/19 11:48	VLH
Total Organic Carbon	42000	100	mg/Kg	1		SW 846 9060A	5/30/19	5/31/19 10:33	KMV

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Miscellaneous Test

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
%Moisture	66.9	0.1	%	1		%Moisture		5/28/19 0:00	SAL



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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	ND	0.069	0.069	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Acenaphthylene (SIM)	ND	0.069	0.069	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Anthracene (SIM)	ND	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(a)anthracene (SIM)	0.089	0.014	0.014	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(a)pyrene (SIM)	0.095	0.021	0.021	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(b)fluoranthene (SIM)	0.13	0.014	0.014	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(g,h,i)perylene (SIM)	ND	0.12	0.12	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(k)fluoranthene (SIM)	ND	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Chrysene (SIM)	0.13	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Dibenz(a,h)anthracene (SIM)	ND	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Fluoranthene (SIM)	0.18	0.12	0.12	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Fluorene (SIM)	ND	0.21	0.021	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Indeno(1,2,3-cd)pyrene (SIM)	0.078	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
2-Methylnaphthalene (SIM)	ND	0.21	0.21	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Naphthalene (SIM)	ND	0.21	0.21	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Phenanthrene (SIM)	0.14	0.014	0.014	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Pyrene (SIM)	0.21	0.21	0.21	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Surrogates		% Recovery	Recovery Limits			Flag/Qual				
Nitrobenzene-d5 (SIM)		80.1	30-130						6/4/19 12:42	
2-Fluorobiphenyl (SIM)		48.3	30-130						6/4/19 12:42	
p-Terphenyl-d14 (SIM)		53.9	30-130						6/4/19 12:42	

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Sample Flags: DL-03

**Organochloride Pesticides by GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aldrin [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
alpha-BHC [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
beta-BHC [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
delta-BHC [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
gamma-BHC (Lindane) [1]	ND	0.015	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Chlordane [1]	ND	0.15	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
4,4'-DDD [1]	ND	0.030	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
4,4'-DDE [1]	ND	0.030	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
4,4'-DDT [1]	ND	0.030	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Dieldrin [1]	ND	0.030	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endosulfan I [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endosulfan II [1]	ND	0.059	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endosulfan sulfate [1]	ND	0.059	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endrin [1]	ND	0.059	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endrin ketone [1]	ND	0.059	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Heptachlor [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Heptachlor epoxide [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Hexachlorobenzene [1]	ND	0.045	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Methoxychlor [1]	ND	0.37	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG

Surrogates	% Recovery	Recovery Limits	Flag/Qual
Decachlorobiphenyl [1]	80.1	30-150	6/5/19 1:59
Decachlorobiphenyl [2]	77.1	30-150	6/5/19 1:59
Tetrachloro-m-xylene [1]	85.4	30-150	6/5/19 1:59
Tetrachloro-m-xylene [2]	81.3	30-150	6/5/19 1:59

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	2.7	0.24	0.040	mg/Kg dry	5		SW-846 6020B	5/31/19	6/3/19 12:35	MJH
Cadmium	0.19	0.24	0.15	mg/Kg dry	1	J	SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Chromium	5.6	0.49	0.30	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Copper	2.8	0.49	0.42	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Lead	11	0.73	0.43	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Mercury	0.012	0.040	0.012	mg/Kg dry	1	J	SW-846 7471B	6/3/19	6/4/19 10:01	AJL
Nickel	3.2	0.49	0.39	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Zinc	14	0.97	0.67	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	65.7		% Wt	1		SM 2540G	6/2/19	6/3/19 11:48	VLH
Total Organic Carbon	7200	100	mg/Kg	1		SW 846 9060A	5/30/19	5/31/19 11:25	KMV

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/PHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Miscellaneous Test

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
%Moisture	27.27	0.1	%	1		%Moisture		5/28/19 0:00	SAL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	ND	0.11	0.11	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Acenaphthylene (SIM)	0.22	0.11	0.11	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Anthracene (SIM)	0.32	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(a)anthracene (SIM)	0.91	0.022	0.022	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(a)pyrene (SIM)	0.89	0.034	0.034	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(b)fluoranthene (SIM)	1.0	0.022	0.022	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(g,h,i)perylene (SIM)	0.48	0.19	0.19	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(k)fluoranthene (SIM)	0.37	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Chrysene (SIM)	1.1	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Dibenz(a,h)anthracene (SIM)	0.15	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Fluoranthene (SIM)	1.2	0.19	0.19	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Fluorene (SIM)	0.079	0.34	0.034	mg/Kg dry	1	J	SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Indeno(1,2,3-cd)pyrene (SIM)	0.57	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
2-Methylnaphthalene (SIM)	ND	0.34	0.34	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Naphthalene (SIM)	ND	0.34	0.34	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Phenanthrene (SIM)	0.32	0.022	0.022	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Pyrene (SIM)	1.7	0.34	0.34	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Surrogates		% Recovery	Recovery Limits			Flag/Qual				
Nitrobenzene-d5 (SIM)		68.6	30-130						6/4/19 13:40	
2-Fluorobiphenyl (SIM)		42.4	30-130						6/4/19 13:40	
p-Terphenyl-d14 (SIM)		48.0	30-130						6/4/19 13:40	

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Sample Flags: DL-03

**Organochloride Pesticides by GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aldrin [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
alpha-BHC [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
beta-BHC [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
delta-BHC [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
gamma-BHC (Lindane) [1]	ND	0.051	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Chlordane [1]	ND	0.51	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
4,4'-DDD [1]	ND	0.10	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
4,4'-DDE [1]	ND	0.10	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
4,4'-DDT [1]	ND	0.10	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Dieldrin [1]	ND	0.10	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endosulfan I [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endosulfan II [1]	ND	0.20	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endosulfan sulfate [1]	ND	0.20	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endrin [1]	ND	0.20	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endrin ketone [1]	ND	0.20	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Heptachlor [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Heptachlor epoxide [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Hexachlorobenzene [1]	ND	0.15	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Methoxychlor [1]	ND	1.3	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		68.2	30-150					6/5/19 2:26	
Decachlorobiphenyl [2]		64.6	30-150					6/5/19 2:26	
Tetrachloro-m-xylene [1]		73.5	30-150					6/5/19 2:26	
Tetrachloro-m-xylene [2]		71.6	30-150					6/5/19 2:26	

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	2.6	0.42	0.069	mg/Kg dry	5		SW-846 6020B	5/31/19	6/3/19 12:38	MJH
Cadmium	0.34	0.42	0.25	mg/Kg dry	1	J	SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Chromium	7.0	0.84	0.52	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Copper	3.7	0.84	0.72	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Lead	11	1.3	0.74	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Mercury	0.024	0.063	0.019	mg/Kg dry	1	J	SW-846 7471B	6/3/19	6/4/19 10:02	AJL
Nickel	2.7	0.84	0.67	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Zinc	17	1.7	1.2	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	39.2		% Wt	1		SM 2540G	6/2/19	6/3/19 11:48	VLH
Total Organic Carbon	28000	100	mg/Kg	1		SW 846 9060A	5/30/19	5/31/19 11:42	KMV

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/PHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Miscellaneous Test

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
%Moisture	65.21	0.1	%	1		%Moisture		5/28/19 0:00	SAL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	ND	0.062	0.062	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Acenaphthylene (SIM)	0.46	0.062	0.062	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Anthracene (SIM)	0.43	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(a)anthracene (SIM)	1.4	0.012	0.012	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(a)pyrene (SIM)	1.4	0.019	0.019	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(b)fluoranthene (SIM)	1.7	0.012	0.012	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(g,h,i)perylene (SIM)	0.81	0.11	0.11	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(k)fluoranthene (SIM)	0.63	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Chrysene (SIM)	1.7	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Dibenz(a,h)anthracene (SIM)	0.25	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Fluoranthene (SIM)	2.6	0.42	0.42	mg/Kg dry	4		SW-846 8270D	6/3/19	6/4/19 15:17	CLA
Fluorene (SIM)	0.21	0.19	0.019	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Indeno(1,2,3-cd)pyrene (SIM)	0.95	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
2-Methylnaphthalene (SIM)	ND	0.19	0.19	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Naphthalene (SIM)	ND	0.19	0.19	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Phenanthrene (SIM)	1.6	0.012	0.012	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Pyrene (SIM)	2.7	0.75	0.75	mg/Kg dry	4		SW-846 8270D	6/3/19	6/4/19 15:17	CLA
Surrogates		% Recovery	Recovery Limits			Flag/Qual				
Nitrobenzene-d5 (SIM)		71.9	30-130						6/4/19 13:11	
Nitrobenzene-d5 (SIM)		69.9	30-130						6/4/19 15:17	
2-Fluorobiphenyl (SIM)		41.9	30-130						6/4/19 13:11	
2-Fluorobiphenyl (SIM)		49.4	30-130						6/4/19 15:17	
p-Terphenyl-d14 (SIM)		45.7	30-130						6/4/19 13:11	
p-Terphenyl-d14 (SIM)		55.8	30-130						6/4/19 15:17	

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Sample Flags: DL-03

**Organochloride Pesticides by GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aldrin [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
alpha-BHC [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
beta-BHC [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
delta-BHC [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
gamma-BHC (Lindane) [1]	ND	0.027	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Chlordane [1]	ND	0.27	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
4,4'-DDD [2]	0.13	0.053	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
4,4'-DDE [1]	ND	0.053	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
4,4'-DDT [1]	ND	0.053	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Dieldrin [1]	ND	0.053	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endosulfan I [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endosulfan II [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endosulfan sulfate [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endrin [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endrin ketone [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Heptachlor [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Heptachlor epoxide [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Hexachlorobenzene [1]	ND	0.080	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Methoxychlor [1]	ND	0.66	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG

Surrogates	% Recovery	Recovery Limits	Flag/Qual
Decachlorobiphenyl [1]	90.1	30-150	6/5/19 2:53
Decachlorobiphenyl [2]	84.5	30-150	6/5/19 2:53
Tetrachloro-m-xylene [1]	89.9	30-150	6/5/19 2:53
Tetrachloro-m-xylene [2]	83.1	30-150	6/5/19 2:53

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	2.2	0.22	0.037	mg/Kg dry	5		SW-846 6020B	5/31/19	6/3/19 12:41	MJH
Cadmium	0.35	0.22	0.14	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Chromium	7.9	0.45	0.28	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Copper	10	0.45	0.38	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Lead	180	0.67	0.39	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Mercury	0.017	0.033	0.0098	mg/Kg dry	1	J	SW-846 7471B	6/3/19	6/4/19 10:04	AJL
Nickel	6.7	0.45	0.35	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Zinc	81	0.89	0.61	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	73.1		% Wt	1		SM 2540G	6/2/19	6/3/19 11:48	VLH
Total Organic Carbon	4300	100	mg/Kg	1		SW 846 9060A	5/30/19	5/31/19 12:02	KMV

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/PHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Miscellaneous Test

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
%Moisture	28.61	0.1	%	1		%Moisture		5/28/19 0:00	SAL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-05

Sample ID: 19E1341-05

Start Date/Time: 5/22/2019 11:27:00AM

Sample Matrix: Sediment

Stop Date/Time: 5/22/2019 2:50:00PM

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-06

Sample ID: 19E1341-06

Start Date/Time: 5/22/2019 11:27:00AM

Sample Matrix: Sediment

Stop Date/Time: 5/22/2019 2:50:00PM

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

**Sample Extraction Data**

**Prep Method: % Solids-SM 2540G**

Lab Number [Field ID]	Batch	Date
19E1341-01 [01564190522-01]	B232251	06/02/19
19E1341-02 [01564190522-02]	B232251	06/02/19
19E1341-03 [01564190522-03]	B232251	06/02/19
19E1341-04 [01564190522-04]	B232251	06/02/19

**SW 846 9060A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232199	1.00	1.00	05/30/19
19E1341-02 [01564190522-02]	B232199	1.00	1.00	05/30/19
19E1341-03 [01564190522-03]	B232199	1.00	1.00	05/30/19
19E1341-04 [01564190522-04]	B232199	1.00	1.00	05/30/19

**Prep Method: SW-846 3050B-SW-846 6010D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232171	1.50	50.0	05/31/19
19E1341-02 [01564190522-02]	B232171	1.56	50.0	05/31/19
19E1341-03 [01564190522-03]	B232171	1.51	50.0	05/31/19
19E1341-04 [01564190522-04]	B232171	1.53	50.0	05/31/19

**Prep Method: SW-846 3050B-SW-846 6020B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232198	1.50	50.0	05/31/19
19E1341-02 [01564190522-02]	B232198	1.56	50.0	05/31/19
19E1341-03 [01564190522-03]	B232198	1.51	50.0	05/31/19
19E1341-04 [01564190522-04]	B232198	1.53	50.0	05/31/19

**Prep Method: SW-846 7471-SW-846 7471B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232308	0.623	50.0	06/03/19
19E1341-02 [01564190522-02]	B232308	0.575	50.0	06/03/19
19E1341-03 [01564190522-03]	B232308	0.605	50.0	06/03/19
19E1341-04 [01564190522-04]	B232308	0.626	50.0	06/03/19

**Prep Method: SW-846 3546-SW-846 8081B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232144	10.4	10.0	05/31/19
19E1341-02 [01564190522-02]	B232144	10.2	10.0	05/31/19
19E1341-03 [01564190522-03]	B232144	10.0	10.0	05/31/19
19E1341-04 [01564190522-04]	B232144	10.3	10.0	05/31/19

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### Sample Extraction Data

Prep Method: SW-846 3546-SW-846 8270D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232260	6.60	1.00	06/03/19
19E1341-02 [01564190522-02]	B232260	6.60	1.00	06/03/19
19E1341-03 [01564190522-03]	B232260	6.80	1.00	06/03/19
19E1341-04 [01564190522-04]	B232260	6.60	1.00	06/03/19
19E1341-04RE1 [01564190522-04]	B232260	6.60	1.00	06/03/19

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**QUALITY CONTROL**

**Semivolatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232260 - SW-846 3546</b>										
<b>Blank (B232260-BLK1)</b>										
Prepared: 06/03/19 Analyzed: 06/04/19										
Acenaphthene (SIM)	ND	0.050	mg/Kg wet							
Acenaphthylene (SIM)	ND	0.050	mg/Kg wet							
Anthracene (SIM)	ND	0.035	mg/Kg wet							
Benzo(a)anthracene (SIM)	ND	0.010	mg/Kg wet							
Benzo(a)pyrene (SIM)	ND	0.015	mg/Kg wet							
Benzo(b)fluoranthene (SIM)	ND	0.010	mg/Kg wet							
Benzo(g,h,i)perylene (SIM)	ND	0.085	mg/Kg wet							
Benzo(k)fluoranthene (SIM)	ND	0.035	mg/Kg wet							
Chrysene (SIM)	ND	0.035	mg/Kg wet							
Dibenz(a,h)anthracene (SIM)	ND	0.035	mg/Kg wet							
Fluoranthene (SIM)	ND	0.085	mg/Kg wet							
Fluorene (SIM)	ND	0.15	mg/Kg wet							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.035	mg/Kg wet							
2-Methylnaphthalene (SIM)	ND	0.15	mg/Kg wet							
Naphthalene (SIM)	ND	0.15	mg/Kg wet							
Phenanthrene (SIM)	ND	0.010	mg/Kg wet							
Pyrene (SIM)	ND	0.15	mg/Kg wet							
Surrogate: Nitrobenzene-d5 (SIM)	13.7		mg/Kg wet	16.7		82.3	30-130			
Surrogate: 2-Fluorobiphenyl (SIM)	8.39		mg/Kg wet	16.7		50.4	30-130			
Surrogate: p-Terphenyl-d14 (SIM)	9.10		mg/Kg wet	16.7		54.6	30-130			
<b>LCS (B232260-BS1)</b>										
Prepared: 06/03/19 Analyzed: 06/04/19										
Acenaphthene (SIM)	6.96	1.0	mg/Kg wet	8.33		83.6	40-140			
Acenaphthylene (SIM)	7.41	1.0	mg/Kg wet	8.33		88.9	40-140			
Anthracene (SIM)	7.77	0.70	mg/Kg wet	8.33		93.3	40-140			
Benzo(a)anthracene (SIM)	7.20	0.20	mg/Kg wet	8.33		86.4	40-140			
Benzo(a)pyrene (SIM)	8.22	0.30	mg/Kg wet	8.33		98.7	40-140			
Benzo(b)fluoranthene (SIM)	8.14	0.20	mg/Kg wet	8.33		97.7	40-140			
Benzo(g,h,i)perylene (SIM)	8.03	1.7	mg/Kg wet	8.33		96.4	40-140			
Benzo(k)fluoranthene (SIM)	8.19	0.70	mg/Kg wet	8.33		98.2	40-140			
Chrysene (SIM)	7.09	0.70	mg/Kg wet	8.33		85.0	40-140			
Dibenz(a,h)anthracene (SIM)	8.78	0.70	mg/Kg wet	8.33		105	40-140			
Fluoranthene (SIM)	7.08	1.7	mg/Kg wet	8.33		85.0	40-140			
Fluorene (SIM)	7.32	3.0	mg/Kg wet	8.33		87.8	40-140			
Indeno(1,2,3-cd)pyrene (SIM)	9.03	0.70	mg/Kg wet	8.33		108	40-140			
2-Methylnaphthalene (SIM)	6.81	3.0	mg/Kg wet	8.33		81.7	40-140			
Naphthalene (SIM)	6.31	3.0	mg/Kg wet	8.33		75.7	40-140			
Phenanthrene (SIM)	7.07	0.20	mg/Kg wet	8.33		84.8	40-140			
Pyrene (SIM)	6.89	3.0	mg/Kg wet	8.33		82.7	40-140			
Surrogate: Nitrobenzene-d5 (SIM)	13.1		mg/Kg wet	16.7		78.7	30-130			
Surrogate: 2-Fluorobiphenyl (SIM)	9.95		mg/Kg wet	16.7		59.7	30-130			
Surrogate: p-Terphenyl-d14 (SIM)	11.0		mg/Kg wet	16.7		65.8	30-130			

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**QUALITY CONTROL**

**Semivolatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232260 - SW-846 3546</b>										
<b>LCS Dup (B232260-BSD1)</b>										
					Prepared: 06/03/19 Analyzed: 06/04/19					
Acenaphthene (SIM)	6.14	1.0	mg/Kg wet	8.33		73.7	40-140	12.6	20	
Acenaphthylene (SIM)	6.52	1.0	mg/Kg wet	8.33		78.2	40-140	12.7	20	
Anthracene (SIM)	6.70	0.70	mg/Kg wet	8.33		80.4	40-140	14.9	20	
Benzo(a)anthracene (SIM)	6.16	0.20	mg/Kg wet	8.33		73.9	40-140	15.6	20	
Benzo(a)pyrene (SIM)	7.04	0.30	mg/Kg wet	8.33		84.5	40-140	15.5	20	
Benzo(b)fluoranthene (SIM)	7.04	0.20	mg/Kg wet	8.33		84.4	40-140	14.5	20	
Benzo(g,h,i)perylene (SIM)	6.87	1.7	mg/Kg wet	8.33		82.4	40-140	15.7	20	
Benzo(k)fluoranthene (SIM)	7.17	0.70	mg/Kg wet	8.33		86.0	40-140	13.2	20	
Chrysene (SIM)	6.10	0.70	mg/Kg wet	8.33		73.2	40-140	15.0	20	
Dibenz(a,h)anthracene (SIM)	7.55	0.70	mg/Kg wet	8.33		90.6	40-140	15.1	20	
Fluoranthene (SIM)	6.04	1.7	mg/Kg wet	8.33		72.4	40-140	15.9	20	
Fluorene (SIM)	6.37	3.0	mg/Kg wet	8.33		76.4	40-140	13.9	20	
Indeno(1,2,3-cd)pyrene (SIM)	7.72	0.70	mg/Kg wet	8.33		92.7	40-140	15.6	20	‡
2-Methylnaphthalene (SIM)	6.15	3.0	mg/Kg wet	8.33		73.8	40-140	10.2	20	
Naphthalene (SIM)	5.78	3.0	mg/Kg wet	8.33		69.4	40-140	8.71	20	
Phenanthrene (SIM)	6.13	0.20	mg/Kg wet	8.33		73.6	40-140	14.2	20	
Pyrene (SIM)	5.97	3.0	mg/Kg wet	8.33		71.6	40-140	14.3	20	
Surrogate: Nitrobenzene-d5 (SIM)	11.7		mg/Kg wet	16.7		70.1	30-130			
Surrogate: 2-Fluorobiphenyl (SIM)	8.62		mg/Kg wet	16.7		51.7	30-130			
Surrogate: p-Terphenyl-d14 (SIM)	9.34		mg/Kg wet	16.7		56.1	30-130			



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**QUALITY CONTROL**

**Organochloride Pesticides by GC/ECD - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B232144 - SW-846 3546**

**Blank (B232144-BLK1)**

Prepared: 05/31/19 Analyzed: 06/01/19

Aldrin	ND	0.0050	mg/Kg wet							
Aldrin [2C]	ND	0.0050	mg/Kg wet							
alpha-BHC	ND	0.0050	mg/Kg wet							
alpha-BHC [2C]	ND	0.0050	mg/Kg wet							
beta-BHC	ND	0.0050	mg/Kg wet							
beta-BHC [2C]	ND	0.0050	mg/Kg wet							
delta-BHC	ND	0.0050	mg/Kg wet							
delta-BHC [2C]	ND	0.0050	mg/Kg wet							
gamma-BHC (Lindane)	ND	0.0020	mg/Kg wet							
gamma-BHC (Lindane) [2C]	ND	0.0020	mg/Kg wet							
Chlordane	ND	0.020	mg/Kg wet							
Chlordane [2C]	ND	0.020	mg/Kg wet							
4,4'-DDD	ND	0.0040	mg/Kg wet							
4,4'-DDD [2C]	ND	0.0040	mg/Kg wet							
4,4'-DDE	ND	0.0040	mg/Kg wet							
4,4'-DDE [2C]	ND	0.0040	mg/Kg wet							
4,4'-DDT	ND	0.0040	mg/Kg wet							
4,4'-DDT [2C]	ND	0.0040	mg/Kg wet							
Dieldrin	ND	0.0040	mg/Kg wet							
Dieldrin [2C]	ND	0.0040	mg/Kg wet							
Endosulfan I	ND	0.0050	mg/Kg wet							
Endosulfan I [2C]	ND	0.0050	mg/Kg wet							
Endosulfan II	ND	0.0080	mg/Kg wet							
Endosulfan II [2C]	ND	0.0080	mg/Kg wet							
Endosulfan Sulfate	ND	0.0080	mg/Kg wet							
Endosulfan Sulfate [2C]	ND	0.0080	mg/Kg wet							
Endrin	ND	0.0080	mg/Kg wet							
Endrin [2C]	ND	0.0080	mg/Kg wet							
Endrin Aldehyde	ND	0.0080	mg/Kg wet							
Endrin Aldehyde [2C]	ND	0.0080	mg/Kg wet							
Endrin Ketone	ND	0.0080	mg/Kg wet							
Endrin Ketone [2C]	ND	0.0080	mg/Kg wet							
Heptachlor	ND	0.0050	mg/Kg wet							
Heptachlor [2C]	ND	0.0050	mg/Kg wet							
Heptachlor Epoxide	ND	0.0050	mg/Kg wet							
Heptachlor Epoxide [2C]	ND	0.0050	mg/Kg wet							
Hexachlorobenzene	ND	0.0060	mg/Kg wet							
Hexachlorobenzene [2C]	ND	0.0060	mg/Kg wet							
Methoxychlor	ND	0.050	mg/Kg wet							
Methoxychlor [2C]	ND	0.050	mg/Kg wet							
Toxaphene	ND	0.10	mg/Kg wet							
Toxaphene [2C]	ND	0.10	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.200		mg/Kg wet	0.200		100	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.224		mg/Kg wet	0.200		112	30-150			
Surrogate: Tetrachloro-m-xylene	0.182		mg/Kg wet	0.200		91.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.193		mg/Kg wet	0.200		96.6	30-150			

QUALITY CONTROL

Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B232144 - SW-846 3546

LCS (B232144-BS1)

Prepared: 05/31/19 Analyzed: 06/01/19

Aldrin	0.11	0.0050	mg/Kg wet	0.100		107	40-140			
Aldrin [2C]	0.10	0.0050	mg/Kg wet	0.100		101	40-140			
alpha-BHC	0.096	0.0050	mg/Kg wet	0.100		96.4	40-140			
alpha-BHC [2C]	0.097	0.0050	mg/Kg wet	0.100		97.0	40-140			
beta-BHC	0.10	0.0050	mg/Kg wet	0.100		100	40-140			
beta-BHC [2C]	0.11	0.0050	mg/Kg wet	0.100		113	40-140			
delta-BHC	0.10	0.0050	mg/Kg wet	0.100		102	40-140			
delta-BHC [2C]	0.099	0.0050	mg/Kg wet	0.100		99.0	40-140			
gamma-BHC (Lindane)	0.10	0.0020	mg/Kg wet	0.100		102	40-140			
gamma-BHC (Lindane) [2C]	0.10	0.0020	mg/Kg wet	0.100		101	40-140			
4,4'-DDD	0.11	0.0040	mg/Kg wet	0.100		112	40-140			
4,4'-DDD [2C]	0.11	0.0040	mg/Kg wet	0.100		111	40-140			
4,4'-DDE	0.12	0.0040	mg/Kg wet	0.100		116	40-140			
4,4'-DDE [2C]	0.11	0.0040	mg/Kg wet	0.100		110	40-140			
4,4'-DDT	0.11	0.0040	mg/Kg wet	0.100		108	40-140			
4,4'-DDT [2C]	0.10	0.0040	mg/Kg wet	0.100		103	40-140			
Dieldrin	0.11	0.0040	mg/Kg wet	0.100		108	40-140			
Dieldrin [2C]	0.11	0.0040	mg/Kg wet	0.100		107	40-140			
Endosulfan I	0.095	0.0050	mg/Kg wet	0.100		95.1	40-140			
Endosulfan I [2C]	0.10	0.0050	mg/Kg wet	0.100		102	40-140			
Endosulfan II	0.10	0.0080	mg/Kg wet	0.100		103	40-140			
Endosulfan II [2C]	0.11	0.0080	mg/Kg wet	0.100		108	40-140			
Endosulfan Sulfate	0.10	0.0080	mg/Kg wet	0.100		105	40-140			
Endosulfan Sulfate [2C]	0.11	0.0080	mg/Kg wet	0.100		110	40-140			
Endrin	0.11	0.0080	mg/Kg wet	0.100		105	40-140			
Endrin [2C]	0.11	0.0080	mg/Kg wet	0.100		108	40-140			
Endrin Ketone	0.11	0.0080	mg/Kg wet	0.100		108	40-140			
Endrin Ketone [2C]	0.11	0.0080	mg/Kg wet	0.100		113	40-140			
Heptachlor	0.099	0.0050	mg/Kg wet	0.100		98.8	40-140			
Heptachlor [2C]	0.10	0.0050	mg/Kg wet	0.100		103	40-140			
Heptachlor Epoxide	0.10	0.0050	mg/Kg wet	0.100		103	40-140			
Heptachlor Epoxide [2C]	0.11	0.0050	mg/Kg wet	0.100		106	40-140			
Hexachlorobenzene	0.13	0.0060	mg/Kg wet	0.100		133	40-140			V-20
Hexachlorobenzene [2C]	0.12	0.0060	mg/Kg wet	0.100		119	40-140			
Methoxychlor	0.099	0.050	mg/Kg wet	0.100		98.9	40-140			
Methoxychlor [2C]	0.11	0.050	mg/Kg wet	0.100		105	40-140			
Surrogate: Decachlorobiphenyl	0.195		mg/Kg wet	0.200		97.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.218		mg/Kg wet	0.200		109	30-150			
Surrogate: Tetrachloro-m-xylene	0.190		mg/Kg wet	0.200		95.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.199		mg/Kg wet	0.200		99.5	30-150			

LCS Dup (B232144-BS1)

Prepared: 05/31/19 Analyzed: 06/01/19

Aldrin	0.11	0.0050	mg/Kg wet	0.100		110	40-140	2.28	30	
Aldrin [2C]	0.10	0.0050	mg/Kg wet	0.100		105	40-140	3.52	30	
alpha-BHC	0.10	0.0050	mg/Kg wet	0.100		103	40-140	6.63	30	
alpha-BHC [2C]	0.10	0.0050	mg/Kg wet	0.100		104	40-140	6.48	30	
beta-BHC	0.11	0.0050	mg/Kg wet	0.100		105	40-140	4.48	30	
beta-BHC [2C]	0.11	0.0050	mg/Kg wet	0.100		114	40-140	0.205	30	
delta-BHC	0.11	0.0050	mg/Kg wet	0.100		107	40-140	4.83	30	
delta-BHC [2C]	0.11	0.0050	mg/Kg wet	0.100		105	40-140	5.95	30	
gamma-BHC (Lindane)	0.11	0.0020	mg/Kg wet	0.100		107	40-140	5.36	30	
gamma-BHC (Lindane) [2C]	0.11	0.0020	mg/Kg wet	0.100		106	40-140	5.22	30	

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QUALITY CONTROL

Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232144 - SW-846 3546</b>										
<b>LCS Dup (B232144-BSD1)</b>										
					Prepared: 05/31/19 Analyzed: 06/01/19					
4,4'-DDD	0.11	0.0040	mg/Kg wet	0.100		114	40-140	2.12	30	
4,4'-DDD [2C]	0.11	0.0040	mg/Kg wet	0.100		114	40-140	2.12	30	
4,4'-DDE	0.12	0.0040	mg/Kg wet	0.100		117	40-140	0.716	30	
4,4'-DDE [2C]	0.11	0.0040	mg/Kg wet	0.100		113	40-140	2.29	30	
4,4'-DDT	0.11	0.0040	mg/Kg wet	0.100		110	40-140	1.82	30	
4,4'-DDT [2C]	0.11	0.0040	mg/Kg wet	0.100		106	40-140	2.86	30	
Dieldrin	0.11	0.0040	mg/Kg wet	0.100		110	40-140	1.55	30	
Dieldrin [2C]	0.11	0.0040	mg/Kg wet	0.100		109	40-140	1.24	30	
Endosulfan I	0.097	0.0050	mg/Kg wet	0.100		97.5	40-140	2.52	30	
Endosulfan I [2C]	0.10	0.0050	mg/Kg wet	0.100		104	40-140	1.76	30	
Endosulfan II	0.10	0.0080	mg/Kg wet	0.100		105	40-140	1.72	30	
Endosulfan II [2C]	0.11	0.0080	mg/Kg wet	0.100		109	40-140	1.39	30	
Endosulfan Sulfate	0.11	0.0080	mg/Kg wet	0.100		107	40-140	2.29	30	
Endosulfan Sulfate [2C]	0.11	0.0080	mg/Kg wet	0.100		113	40-140	2.12	30	
Endrin	0.11	0.0080	mg/Kg wet	0.100		107	40-140	1.24	30	
Endrin [2C]	0.11	0.0080	mg/Kg wet	0.100		110	40-140	1.17	30	
Endrin Ketone	0.11	0.0080	mg/Kg wet	0.100		110	40-140	1.89	30	
Endrin Ketone [2C]	0.12	0.0080	mg/Kg wet	0.100		116	40-140	2.21	30	
Heptachlor	0.10	0.0050	mg/Kg wet	0.100		102	40-140	3.65	30	
Heptachlor [2C]	0.11	0.0050	mg/Kg wet	0.100		107	40-140	3.41	30	
Heptachlor Epoxide	0.11	0.0050	mg/Kg wet	0.100		105	40-140	1.90	30	V-20
Heptachlor Epoxide [2C]	0.11	0.0050	mg/Kg wet	0.100		108	40-140	2.25	30	
Hexachlorobenzene	0.13	0.0060	mg/Kg wet	0.100		134	40-140	0.288	30	
Hexachlorobenzene [2C]	0.12	0.0060	mg/Kg wet	0.100		121	40-140	1.57	30	
Methoxychlor	0.10	0.050	mg/Kg wet	0.100		101	40-140	2.06	30	
Methoxychlor [2C]	0.11	0.050	mg/Kg wet	0.100		107	40-140	2.10	30	
Surrogate: Decachlorobiphenyl	0.198		mg/Kg wet	0.200		99.0	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.221		mg/Kg wet	0.200		111	30-150			
Surrogate: Tetrachloro-m-xylene	0.193		mg/Kg wet	0.200		96.6	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.201		mg/Kg wet	0.200		100	30-150			

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**QUALITY CONTROL**

**Metals Analyses (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232171 - SW-846 3050B</b>										
<b>Blank (B232171-BLK1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Cadmium	ND	0.17	mg/Kg wet							
Chromium	ND	0.33	mg/Kg wet							
Copper	ND	0.33	mg/Kg wet							
Lead	ND	0.50	mg/Kg wet							
Nickel	ND	0.33	mg/Kg wet							
Zinc	ND	0.67	mg/Kg wet							
<b>LCS (B232171-BS1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Cadmium	155	0.49	mg/Kg wet	182		85.0	83.1-117.5			
Chromium	259	0.98	mg/Kg wet	272		95.2	81.5-118.5			
Copper	293	0.98	mg/Kg wet	301		97.2	83.2-116.4			
Lead	237	1.5	mg/Kg wet	241		98.5	81.8-118.2			
Nickel	118	0.98	mg/Kg wet	125		94.5	82.4-117.5			
Zinc	124	2.0	mg/Kg wet	127		97.8	80.8-118.9			
<b>LCS Dup (B232171-BSD1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Cadmium	153	0.47	mg/Kg wet	182		84.2	83.1-117.5	0.860	20	
Chromium	254	0.94	mg/Kg wet	272		93.3	81.5-118.5	2.00	30	
Copper	291	0.94	mg/Kg wet	301		96.6	83.2-116.4	0.655	30	
Lead	230	1.4	mg/Kg wet	241		95.6	81.8-118.2	2.92	30	
Nickel	116	0.94	mg/Kg wet	125		93.1	82.4-117.5	1.46	30	
Zinc	123	1.9	mg/Kg wet	127		96.7	80.8-118.9	1.22	30	
<b>MRL Check (B232171-MRL1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Lead	0.498	0.48	mg/Kg wet	0.477		105	80-120			
<b>Batch B232198 - SW-846 3050B</b>										
<b>Blank (B232198-BLK1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Arsenic	ND	0.17	mg/Kg wet							
<b>LCS (B232198-BS1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Arsenic	77.8	2.0	mg/Kg wet	77.2		101	82.4-117.4			
<b>LCS Dup (B232198-BSD1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Arsenic	74.8	1.9	mg/Kg wet	77.2		96.9	82.4-117.4	4.01	30	
<b>Batch B232308 - SW-846 7471</b>										
<b>Blank (B232308-BLK1)</b>										
Prepared: 06/03/19 Analyzed: 06/04/19										
Mercury	ND	0.025	mg/Kg wet							

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**QUALITY CONTROL**

**Metals Analyses (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232308 - SW-846 7471</b>										
<b>LCS (B232308-BS1)</b>					Prepared: 06/03/19 Analyzed: 06/04/19					
Mercury	21.6	1.9	mg/Kg wet	27.3		79.1	64-136.5			
<b>LCS Dup (B232308-BSD1)</b>					Prepared: 06/03/19 Analyzed: 06/04/19					
Mercury	20.5	1.9	mg/Kg wet	27.3		75.0	64-136.5	5.32	20	

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**QUALITY CONTROL**

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232199 - SW 846 9060A</b>										
<b>Blank (B232199-BLK1)</b>				Prepared: 05/30/19 Analyzed: 05/31/19						
Total Organic Carbon	ND	100	mg/Kg							
<b>LCS (B232199-BS1)</b>				Prepared: 05/30/19 Analyzed: 05/31/19						
Total Organic Carbon	579	100	mg/Kg	750		77.2	69.7-125			
<b>LCS Dup (B232199-BSD1)</b>				Prepared: 05/30/19 Analyzed: 05/31/19						
Total Organic Carbon	568	100	mg/Kg	750		75.8	69.7-125	1.87	19.5	
<b>Duplicate (B232199-DUP1)</b>				<b>Source: 19E1341-01</b>			Prepared: 05/30/19 Analyzed: 05/31/19			
Total Organic Carbon	27300	100	mg/Kg		42100			42.8	53.1	
<b>Matrix Spike (B232199-MS1)</b>				<b>Source: 19E1341-01</b>			Prepared: 05/30/19 Analyzed: 05/31/19			
Total Organic Carbon	63300	100	mg/Kg	750	42100	<b>2830</b>	* 85-115			MS-11



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## BREAKDOWN REPORT

---

**Lab Sample ID:** S036564-PEM1 **Analyzed:** 06/01/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 2.00  
Endrin [1] 2.83

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 2.43  
Endrin [2] 3.32

## BREAKDOWN REPORT

---

**Lab Sample ID:** S036564-PEM2 **Analyzed:** 06/01/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 2.01  
Endrin [1] 3.13

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 2.26  
Endrin [2] 3.71

## BREAKDOWN REPORT

---

**Lab Sample ID:** S036798-PEM1 **Analyzed:** 06/04/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 0.77  
Endrin [1] 2.49

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## BREAKDOWN REPORT

---

**Lab Sample ID:** S036798-PEM1 **Analyzed:** 06/04/2019

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 0.81  
Endrin [2] 2.48

---

## BREAKDOWN REPORT

---

**Lab Sample ID:** S036798-PEM2 **Analyzed:** 06/04/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 1.07  
Endrin [1] 2.35

---

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 1.07  
Endrin [2] 2.39

---

## BREAKDOWN REPORT

---

**Lab Sample ID:** S036798-PEM3 **Analyzed:** 06/05/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 1.83  
Endrin [1] 2.04

---

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 1.84  
Endrin [2] 2.10

---

## BREAKDOWN REPORT

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## BREAKDOWN REPORT

---

**Lab Sample ID:** S036798-PEM4 **Analyzed:** 06/05/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 2.16  
Endrin [1] 2.03

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 2.17  
Endrin [2] 2.06

---

## BREAKDOWN REPORT

---

**Lab Sample ID:** S036798-PEM5 **Analyzed:** 06/06/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 2.48  
Endrin [1] 2.26

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 2.50  
Endrin [2] 2.38

---

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

01564190522-04

*SW-846 8081B*

Lab Sample ID: 19E1341-04 Date(s) Analyzed: 06/05/2019 06/05/2019

Instrument ID (1): ECD6 Instrument ID (2): ECD6

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	7.383	0.000	0.000	0.12	
	2	7.393	0.000	0.000	0.13	8.0

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
*SW-846 8081B*

<b>LCS</b>
------------

Lab Sample ID:                     B232144-BS1                                          Date(s) Analyzed:           06/01/2019                     06/01/2019          

Instrument ID (1):                     ECD2                                          Instrument ID (2):                     ECD2                    

GC Column (1):                      ID:                      (mm)                      GC Column (2):                      ID:                      (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.721	0.000	0.000	0.11	
	2	6.604	0.000	0.000	0.11	0.0
4,4'-DDE	1	6.309	0.000	0.000	0.12	
	2	6.213	0.000	0.000	0.11	8.7
4,4'-DDT	1	6.921	0.000	0.000	0.11	
	2	6.824	0.000	0.000	0.10	9.5
Aldrin	1	5.690	0.000	0.000	0.11	
	2	5.535	0.000	0.000	0.10	9.5
alpha-BHC	1	5.069	0.000	0.000	0.096	
	2	4.958	0.000	0.000	0.097	1.0
beta-BHC	1	5.294	0.000	0.000	0.10	
	2	5.184	0.000	0.000	0.11	9.5
delta-BHC	1	5.392	0.000	0.000	0.10	
	2	5.334	0.000	0.000	0.099	1.0
Dieldrin	1	6.492	0.000	0.000	0.11	
	2	6.288	0.000	0.000	0.11	0.0
Endosulfan I	1	6.327	0.000	0.000	0.095	
	2	6.110	0.000	0.000	0.10	5.1
Endosulfan II	1	6.808	0.000	0.000	0.10	
	2	6.635	0.000	0.000	0.11	9.5
Endosulfan Sulfate	1	7.437	0.000	0.000	0.10	
	2	7.082	0.000	0.000	0.11	0.0
Endrin	1	6.649	0.000	0.000	0.11	
	2	6.484	0.000	0.000	0.11	0.0
Endrin Ketone	1	7.643	0.000	0.000	0.11	
	2	7.460	0.000	0.000	0.11	0.0
gamma-BHC (Lindane)	1	5.241	0.000	0.000	0.10	
	2	5.134	0.000	0.000	0.10	0.0
Heptachlor	1	5.512	0.000	0.000	0.099	
	2	5.362	0.000	0.000	0.10	1.0
Heptachlor Epoxide	1	6.071	0.000	0.000	0.10	

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

LCS

*SW-846 8081B*

Lab Sample ID:                     B232144-BS1                                          Date(s) Analyzed:           06/01/2019                     06/01/2019          

Instrument ID (1):                     ECD2                                          Instrument ID (2):                     ECD2                    

GC Column (1):                      ID:                      (mm)                      GC Column (2):                      ID:                      (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
	2	5.871	0.000	0.000	0.11	9.5
Hexachlorobenzene	1	4.976	0.000	0.000	0.13	
	2	4.888	0.000	0.000	0.12	8.0
Methoxychlor	1	7.305	0.000	0.000	0.099	
	2	7.355	0.000	0.000	0.11	10.5



**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

**LCS Dup**

*SW-846 8081B*

Lab Sample ID:                     B232144-BSD1                          Date(s) Analyzed:           06/01/2019                     06/01/2019          

Instrument ID (1):                     ECD2                          Instrument ID (2):                     ECD2                    

GC Column (1):                                    ID:                                    (mm)      GC Column (2):                                    ID:                                    (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.720	0.000	0.000	0.11	
	2	6.604	0.000	0.000	0.11	0.0
4,4'-DDE	1	6.308	0.000	0.000	0.12	
	2	6.212	0.000	0.000	0.11	8.7
4,4'-DDT	1	6.921	0.000	0.000	0.11	
	2	6.824	0.000	0.000	0.11	0.0
Aldrin	1	5.689	0.000	0.000	0.11	
	2	5.534	0.000	0.000	0.10	9.5
alpha-BHC	1	5.068	0.000	0.000	0.10	
	2	4.958	0.000	0.000	0.10	0.0
beta-BHC	1	5.293	0.000	0.000	0.11	
	2	5.184	0.000	0.000	0.11	0.0
delta-BHC	1	5.391	0.000	0.000	0.11	
	2	5.333	0.000	0.000	0.11	0.0
Dieldrin	1	6.490	0.000	0.000	0.11	
	2	6.288	0.000	0.000	0.11	0.0
Endosulfan I	1	6.326	0.000	0.000	0.097	
	2	6.109	0.000	0.000	0.10	2.0
Endosulfan II	1	6.807	0.000	0.000	0.10	
	2	6.635	0.000	0.000	0.11	0.0
Endosulfan Sulfate	1	7.437	0.000	0.000	0.11	
	2	7.082	0.000	0.000	0.11	0.0
Endrin	1	6.647	0.000	0.000	0.11	
	2	6.483	0.000	0.000	0.11	0.0
Endrin Ketone	1	7.642	0.000	0.000	0.11	
	2	7.460	0.000	0.000	0.12	8.7
gamma-BHC (Lindane)	1	5.240	0.000	0.000	0.11	
	2	5.134	0.000	0.000	0.11	0.0
Heptachlor	1	5.512	0.000	0.000	0.10	
	2	5.361	0.000	0.000	0.11	9.5
Heptachlor Epoxide	1	6.070	0.000	0.000	0.11	

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

LCS Dup

*SW-846 8081B*

Lab Sample ID:                     B232144-BSD1                                          Date(s) Analyzed:           06/01/2019                     06/01/2019          

Instrument ID (1):                     ECD2                                          Instrument ID (2):                     ECD2                    

GC Column (1):                      ID:                      (mm)                      GC Column (2):                      ID:                      (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
	2	5.871	0.000	0.000	0.11	0.0
Hexachlorobenzene	1	4.975	0.000	0.000	0.13	
	2	4.887	0.000	0.000	0.12	8.0
Methoxychlor	1	7.303	0.000	0.000	0.10	
	2	7.355	0.000	0.000	0.11	9.5

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**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
DL-03	Elevated reporting limit due to matrix interference.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
MS-11	Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

**CERTIFICATIONS**

**Certified Analyses included in this Report**

Analyte	Certifications
<b>SW 846 9060A in Soil</b>	
Total Organic Carbon	NY,CT,ME,VA,NH
<b>SW-846 6010D in Soil</b>	
Cadmium	CT,NH,NY,ME,VA,NC
Chromium	CT,NH,NY,ME,VA,NC
Copper	CT,NH,NY,ME,VA,NC
Lead	CT,NH,NY,AIHA,ME,VA,NC
Nickel	CT,NH,NY,ME,VA,NC
Zinc	CT,NH,NY,ME,VA,NC
<b>SW-846 6020B in Soil</b>	
Arsenic	NY,VA,NH,NC,ME
<b>SW-846 7471B in Soil</b>	
Mercury	CT,NH,NY,NC,ME,VA
<b>SW-846 8081B in Soil</b>	
Aldrin	CT,NC,NH,NY,ME,VA
Aldrin [2C]	CT,NC,NH,NY,ME,VA
alpha-BHC	CT,NC,NH,NY,ME,VA
alpha-BHC [2C]	CT,NC,NH,NY,ME,VA
beta-BHC	CT,NC,NH,NY,ME,VA
beta-BHC [2C]	CT,NC,NH,NY,ME,VA
delta-BHC	CT,NC,NH,NY,ME,VA
delta-BHC [2C]	CT,NC,NH,NY,ME,VA
gamma-BHC (Lindane)	CT,NC,NH,NY,ME,VA
gamma-BHC (Lindane) [2C]	CT,NC,NH,NY,ME,VA
Chlordane	CT,NC,NH,NY,ME,VA
Chlordane [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDD	CT,NC,NH,NY,ME,VA
4,4'-DDD [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDE	CT,NC,NH,NY,ME,VA
4,4'-DDE [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDT	CT,NC,NH,NY,ME,VA
4,4'-DDT [2C]	CT,NC,NH,NY,ME,VA
Dieldrin	CT,NC,NH,NY,ME,VA
Dieldrin [2C]	CT,NC,NH,NY,ME,VA
Endosulfan I	CT,NC,NH,NY,ME,VA
Endosulfan I [2C]	CT,NC,NH,NY,ME,VA
Endosulfan II	CT,NC,NH,NY,ME,VA
Endosulfan II [2C]	CT,NC,NH,NY,ME,VA
Endosulfan Sulfate	CT,NC,NH,NY,ME,VA
Endosulfan Sulfate [2C]	CT,NC,NH,NY,ME,VA
Endrin	CT,NC,NH,NY,ME,VA
Endrin [2C]	CT,NC,NH,NY,ME,VA
Endrin Ketone	NC
Endrin Ketone [2C]	NC
Heptachlor	CT,NC,NH,NY,ME,VA
Heptachlor [2C]	CT,NC,NH,NY,ME,VA

**CERTIFICATIONS**

**Certified Analyses included in this Report**

Analyte	Certifications
<b>SW-846 8081B in Soil</b>	
Heptachlor Epoxide	CT,NC,NH,NY,ME,VA
Heptachlor Epoxide [2C]	CT,NC,NH,NY,ME,VA
Hexachlorobenzene	NC
Hexachlorobenzene [2C]	NC
Methoxychlor	CT,NC,NH,NY,ME,VA
Methoxychlor [2C]	CT,NC,NH,NY,ME,VA
<b>SW-846 8081B in Water</b>	
Aldrin	CT,NC,NH,NY,ME,VA
Aldrin [2C]	CT,NC,NH,NY,ME,VA
alpha-BHC	CT,NC,NH,NY,ME,VA
alpha-BHC [2C]	CT,NC,NH,NY,ME,VA
beta-BHC	CT,NC,NH,NY,ME,VA
beta-BHC [2C]	CT,NC,NH,NY,ME,VA
delta-BHC	CT,NC,NH,NY,ME,VA
delta-BHC [2C]	CT,NC,NH,NY,ME,VA
gamma-BHC (Lindane)	CT,NC,NH,NY,ME,VA
gamma-BHC (Lindane) [2C]	CT,NC,NH,NY,ME,VA
Chlordane	CT,NC,NH,NY,ME,VA
Chlordane [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDD	CT,NC,NH,NY,ME,VA
4,4'-DDD [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDE	CT,NC,NH,NY,ME,VA
4,4'-DDE [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDT	CT,NC,NH,NY,ME,VA
4,4'-DDT [2C]	CT,NC,NH,NY,ME,VA
Dieldrin	CT,NC,NH,NY,ME,VA
Dieldrin [2C]	CT,NC,NH,NY,ME,VA
Endosulfan I	CT,NC,NH,NY,ME,VA
Endosulfan I [2C]	CT,NC,NH,NY,ME,VA
Endosulfan II	CT,NC,NH,NY,ME,VA
Endosulfan II [2C]	CT,NC,NH,NY,ME,VA
Endosulfan Sulfate	CT,NC,NH,NY,ME,VA
Endosulfan Sulfate [2C]	CT,NC,NH,NY,ME,VA
Endrin	CT,NC,NH,NY,ME,VA
Endrin [2C]	CT,NC,NH,NY,ME,VA
Endrin Ketone	NC
Endrin Ketone [2C]	NC
Heptachlor	CT,NC,NH,NY,ME,VA
Heptachlor [2C]	CT,NC,NH,NY,ME,VA
Heptachlor Epoxide	CT,NC,NH,NY,ME,VA
Heptachlor Epoxide [2C]	CT,NC,NH,NY,ME,VA
Hexachlorobenzene	NC
Hexachlorobenzene [2C]	NC
Methoxychlor	CT,NC,NH,NY,ME,VA
Methoxychlor [2C]	CT,NC,NH,NY,ME,VA

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332


The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2019
CT	Connecticut Department of Public Health	PH-0567	09/30/2019
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2019
NJ	New Jersey DEP	MA007 NELAP	06/30/2019
FL	Florida Department of Health	E871027 NELAP	06/30/2019
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2019
ME	State of Maine	2011028	06/9/2019
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2019
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2019





# Analytical Parameter Request

Project #: 20180319.A20	Date Sampled: 5/22/19	 <b>FUSS &amp; O'NEILL</b>
Project Name: Veterans MemPK Dam Removal	Date Submitted: 5/23/19	
Laboratory: Con-Test	Submitter: Fuss & O'Neill, Inc.	

Report To: Nils Wiberg nw.wiberg@fuss.com	Attention:
---	------------

Invoice to: Nils Wiberg Mailing Address: 317 Iron Horseway, Suite 204 City, State, Zip: Providence, RI 02908 Special Instructions: For questions call Nils at (401) 787-1709	Attention: Phone #:
---	------------------------

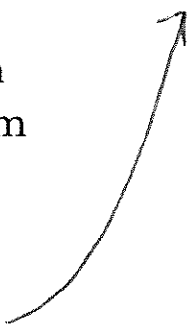
COC #	Sample ID	COC #	Sample ID	COC #	Sample ID
38368	01564190522-01				
38368	01564190522-02				
38368	01564190522-03				
38368	01564190522-04				

Comments: N/A	
	Blank(s) included in sample
	Duplicate(s) included in sample

## Requested Parameters

Metals  
 Arsenic  
 Cadmium  
 Chromium  
 Copper  
 Lead  
 Mercury  
 Nickel

Zinc



I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples \_\_\_\_\_



**con-test**<sup>®</sup>  
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

**Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False**

Client EO

Received By SL Date 5/23/14 Time 1610

How were the samples received? In Cooler T No Cooler \_\_\_\_\_ On Ice T No Ice \_\_\_\_\_  
Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ Melted Ice \_\_\_\_\_

Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp - 5.3, 2.8  
By Blank # \_\_\_\_\_ Actual Temp - \_\_\_\_\_

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A  
Was COC Relinquished? N/A TSC Does Chain Agree With Samples? N/A TSC

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T  
Did COC include all Client T Analysis T Sampler Name T  
pertinent Information? Project F ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T  
Are there Lab to Filters? F Who was notified? \_\_\_\_\_  
Are there Rushes? F Who was notified? \_\_\_\_\_  
Are there Short Holds? F Who was notified? \_\_\_\_\_

Is there enough Volume? T  
Is there Headspace where applicable? N/A MS/MSD? F  
Proper Media/Containers Used? T Is splitting samples required? F  
Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid \_\_\_\_\_ Base \_\_\_\_\_

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.	<u>4</u>	1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-	<u>4</u>	250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-	<u>3</u>	Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

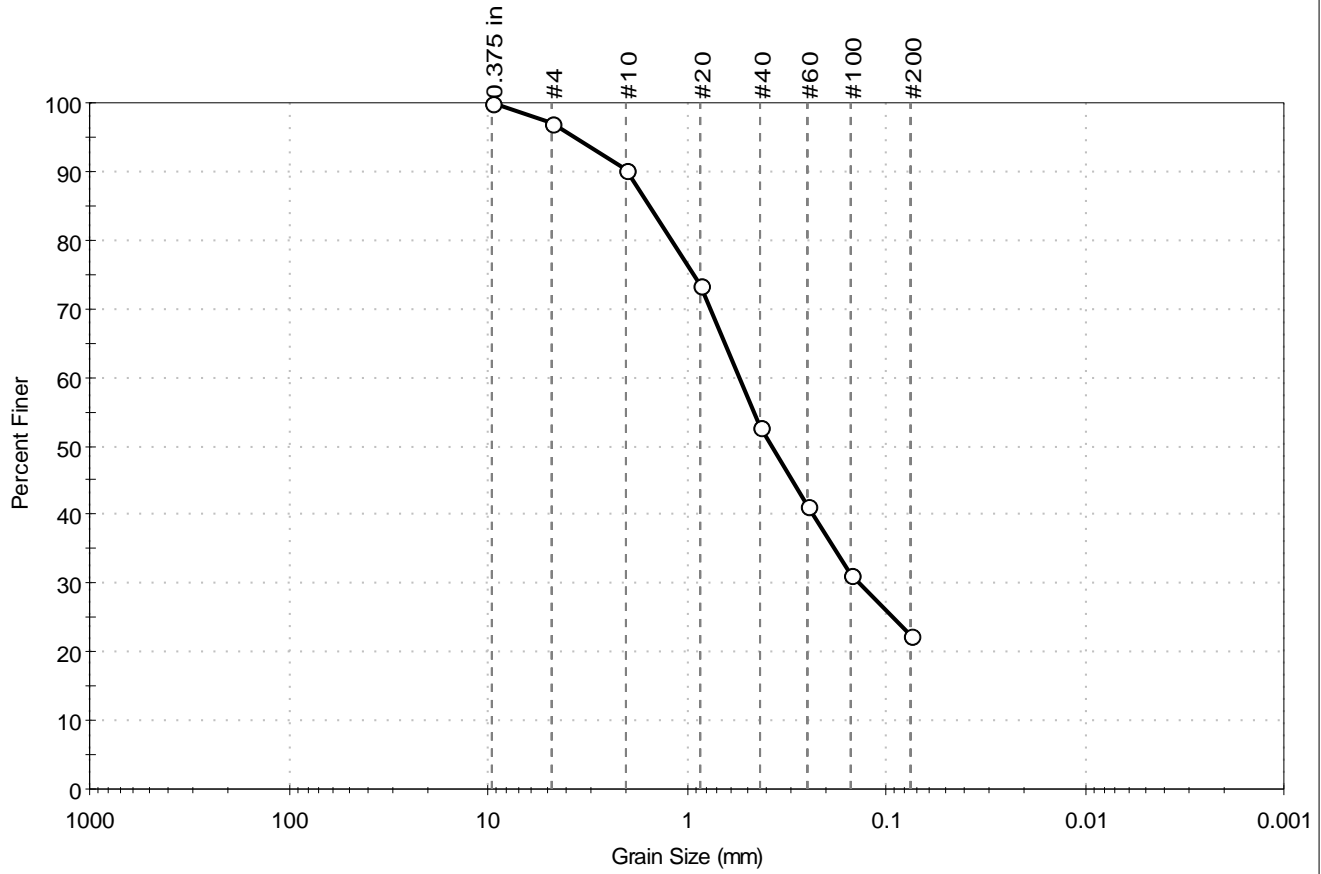
**Unused Media**

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

Client: Con-Test Analytical Lab	Project No: GTX-310060
Project: 19E1341	
Location: ---	Tested By: ckg
Boring ID: ---	Checked By: emm
Sample ID: 19E1341-01	Test Date: 05/31/19
Depth: ---	Test Id: 506128
Test Comment: ---	
Visual Description: Moist, very dark grayish brown silty sand	
Sample Comment: ---	

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	2.9	74.7	22.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	97		
#10	2.00	90		
#20	0.85	73		
#40	0.42	53		
#60	0.25	41		
#100	0.15	31		
#200	0.075	22		

Coefficients	
D <sub>85</sub> = 1.5341 mm	D <sub>30</sub> = 0.1353 mm
D <sub>60</sub> = 0.5403 mm	D <sub>15</sub> = N/A
D <sub>50</sub> = 0.3717 mm	D <sub>10</sub> = N/A
C <sub>u</sub> = N/A	C <sub>c</sub> = N/A

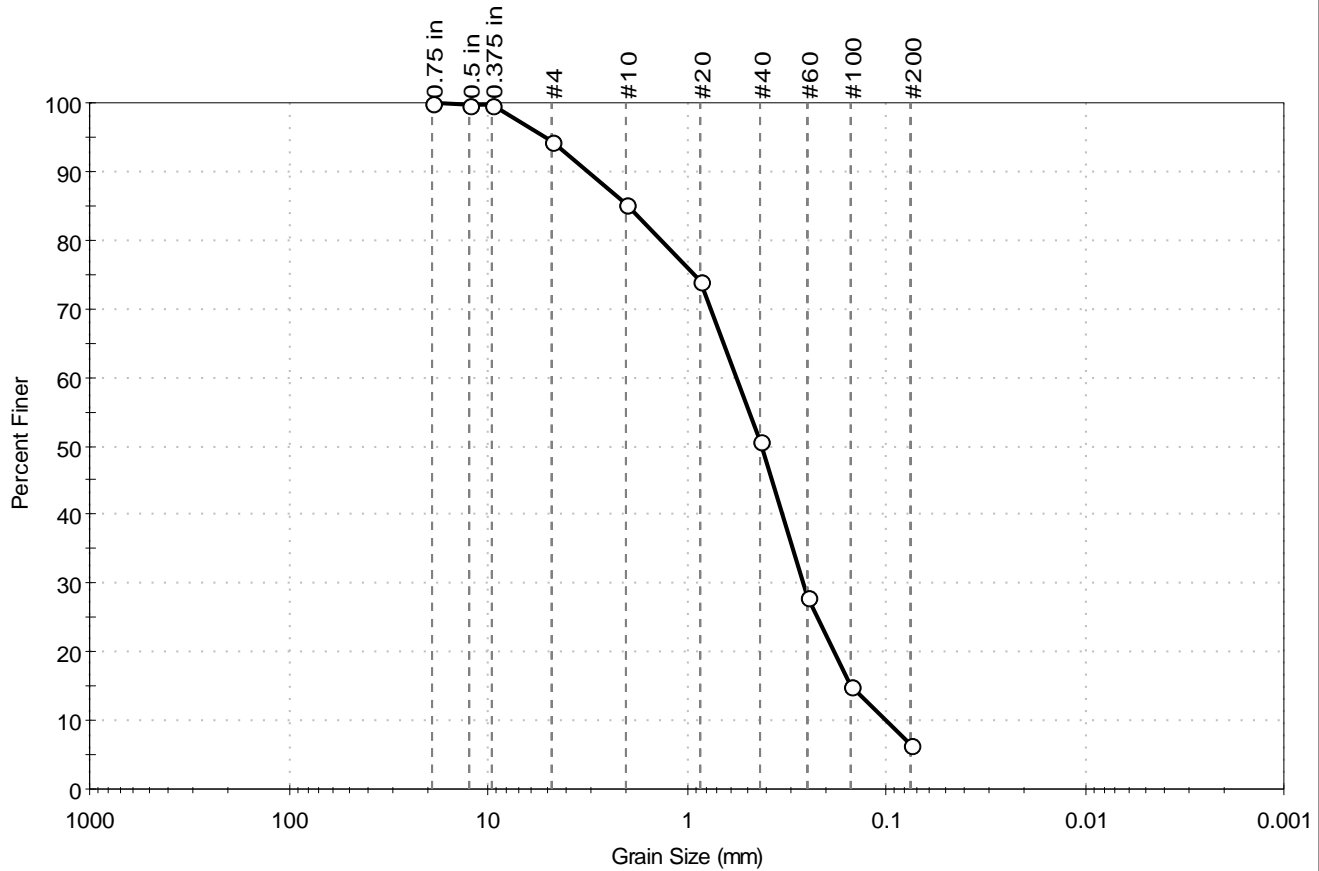
Classification	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client: Con-Test Analytical Lab	Project No: GTX-310060	
Project: 19E1341	Tested By: ckg	
Location: ---	Sample Type: jar	Checked By: emm
Boring ID: ---	Test Date: 05/31/19	Test Id: 506129
Sample ID: 19E1341-02	Test Comment: ---	
Depth: ---	Visual Description: Moist, very dark gray sand with silt	
Sample Comment: ---		

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	5.7	87.9	6.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	100		
0.375 in	9.50	100		
#4	4.75	94		
#10	2.00	85		
#20	0.85	74		
#40	0.42	51		
#60	0.25	28		
#100	0.15	15		
#200	0.075	6.4		

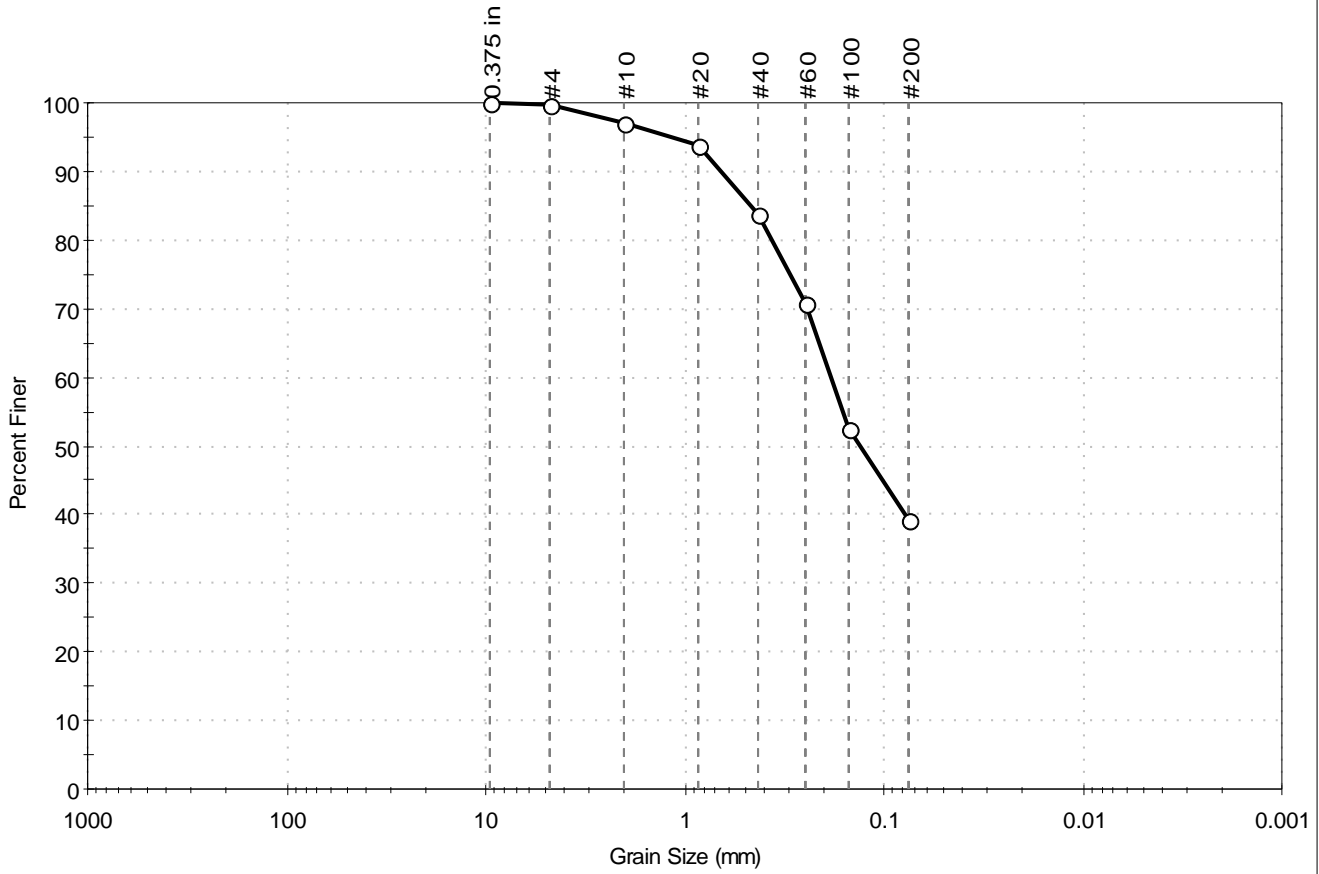
Coefficients	
D <sub>85</sub> = 1.9641 mm	D <sub>30</sub> = 0.2614 mm
D <sub>60</sub> = 0.5607 mm	D <sub>15</sub> = 0.1491 mm
D <sub>50</sub> = 0.4185 mm	D <sub>10</sub> = 0.1002 mm
C <sub>u</sub> = 5.596	C <sub>c</sub> = 1.216

Classification	
ASTM	N/A
AASHTO	Fine Sand (A-3 (1))

Sample/Test Description
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD

Client: Con-Test Analytical Lab	Project No: GTX-310060	
Project: 19E1341	Tested By: ckg	
Location: ---	Sample Type: jar	Checked By: emm
Boring ID: ---	Test Date: 05/31/19	Test Id: 506130
Sample ID: 19E1341-03	Visual Description: Moist, very dark grayish brown silty sand	
Depth: ---	Sample Comment: ---	

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.4	60.5	39.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	97		
#20	0.85	94		
#40	0.42	84		
#60	0.25	71		
#100	0.15	53		
#200	0.075	39		

Coefficients

D <sub>85</sub> = 0.4661 mm	D <sub>30</sub> = N/A
D <sub>60</sub> = 0.1844 mm	D <sub>15</sub> = N/A
D <sub>50</sub> = 0.1312 mm	D <sub>10</sub> = N/A
C <sub>u</sub> = N/A	C <sub>c</sub> = N/A

Classification

**ASTM**    N/A

**AASHTO**    Silty Soils (A-4 (0))

Sample/Test Description

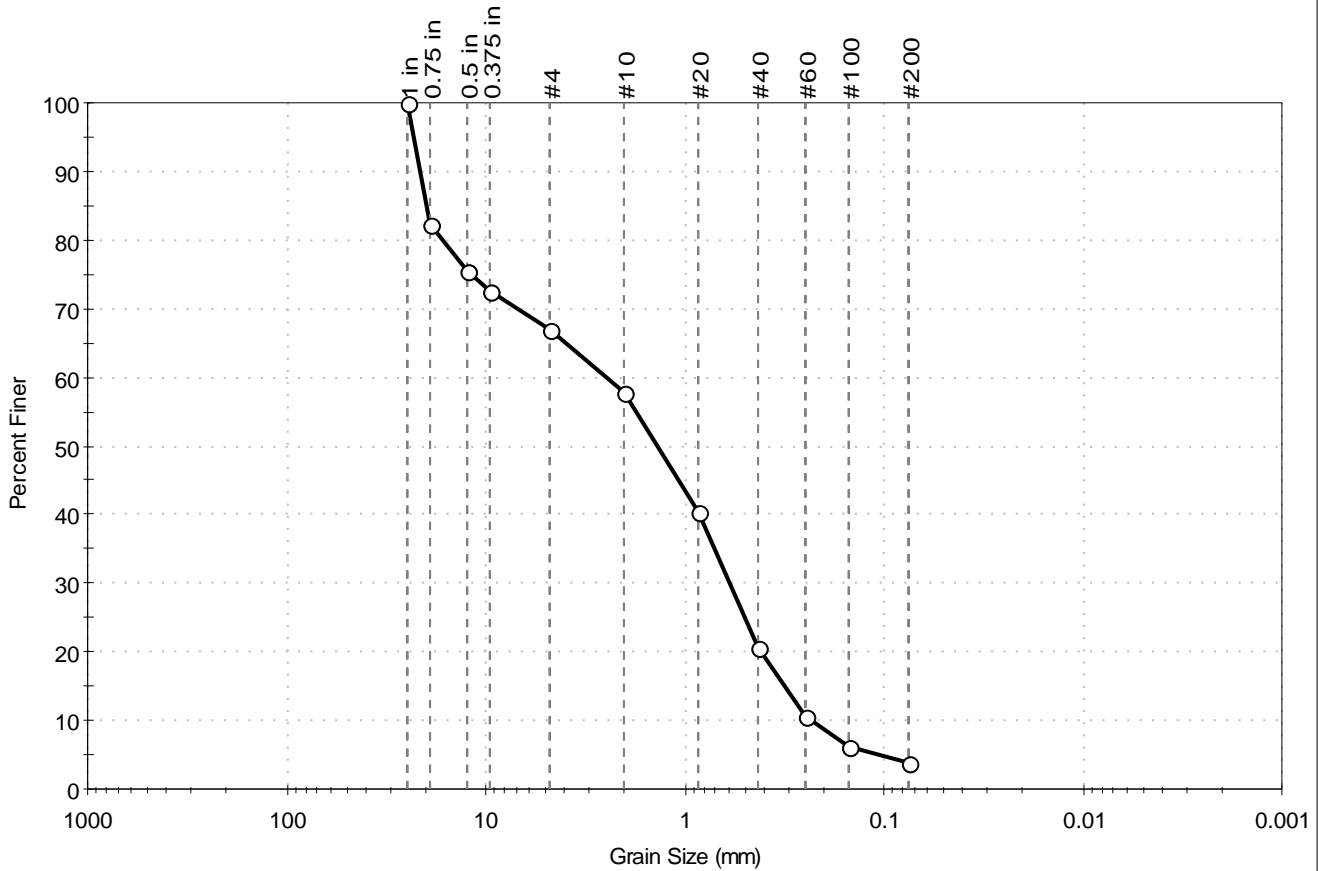
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



Client: Con-Test Analytical Lab	Project No: GTX-310060	
Project: 19E1341	Tested By: ckg	
Location: ---	Sample Type: jar	Checked By: emm
Boring ID: ---	Test Date: 05/31/19	Test Id: 506131
Sample ID: 19E1341-04	Visual Description: Moist, dark grayish brown sand with gravel	
Depth: ---	Sample Comment: ---	

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	33.1	63.2	3.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	82		
0.5 in	12.50	76		
0.375 in	9.50	73		
#4	4.75	67		
#10	2.00	58		
#20	0.85	40		
#40	0.42	21		
#60	0.25	10		
#100	0.15	6		
#200	0.075	3.7		

<u>Coefficients</u>	
D <sub>85</sub> = 19.8157 mm	D <sub>30</sub> = 0.5883 mm
D <sub>60</sub> = 2.4675 mm	D <sub>15</sub> = 0.3159 mm
D <sub>50</sub> = 1.3609 mm	D <sub>10</sub> = 0.2360 mm
C <sub>u</sub> = 10.456	C <sub>c</sub> = 0.594

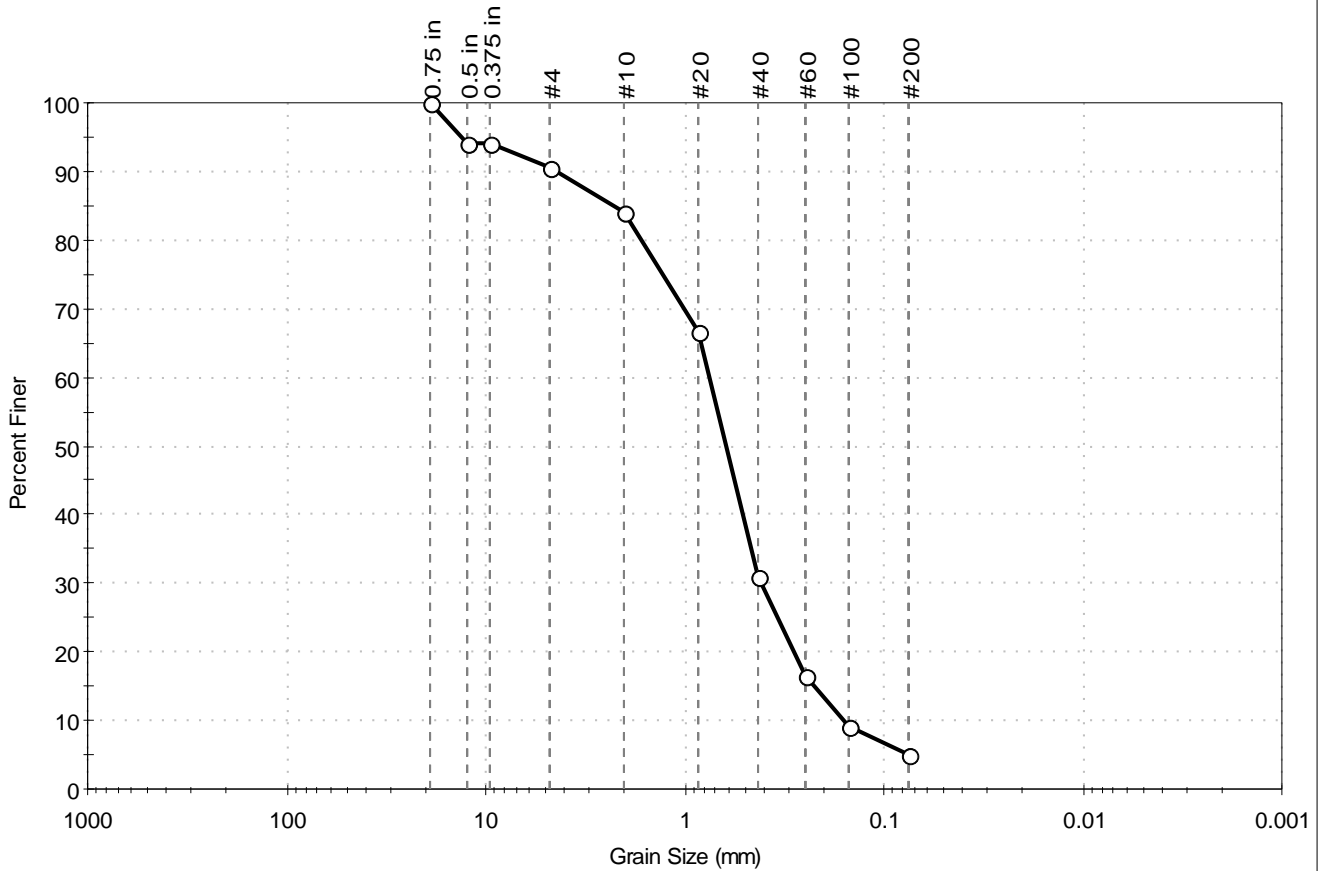
<u>Classification</u>	
<u>ASTM</u>	Poorly graded SAND with Gravel (SP)
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-b (1))

<u>Sample/Test Description</u>	
Sand/Gravel Particle Shape : ANGULAR	
Sand/Gravel Hardness : HARD	



Client: Con-Test Analytical Lab	Project No: GTX-310060
Project: 19E1341	
Location: ---	Sample Type: jar
Boring ID: ---	Tested By: ckg
Sample ID: 19E1341-05	Test Date: 05/31/19
Depth: ---	Checked By: emm
Test Comment: ---	Test Id: 506132
Visual Description: Moist, very dark gray sand with silt	
Sample Comment: ---	

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	9.4	85.5	5.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	94		
0.375 in	9.50	94		
#4	4.75	91		
#10	2.00	84		
#20	0.85	67		
#40	0.42	31		
#60	0.25	16		
#100	0.15	9		
#200	0.075	5.1		

Coefficients

D <sub>85</sub> = 2.2654 mm	D <sub>30</sub> = 0.4107 mm
D <sub>60</sub> = 0.7480 mm	D <sub>15</sub> = 0.2268 mm
D <sub>50</sub> = 0.6158 mm	D <sub>10</sub> = 0.1605 mm
C <sub>u</sub> = 4.660	C <sub>c</sub> = 1.405

Classification

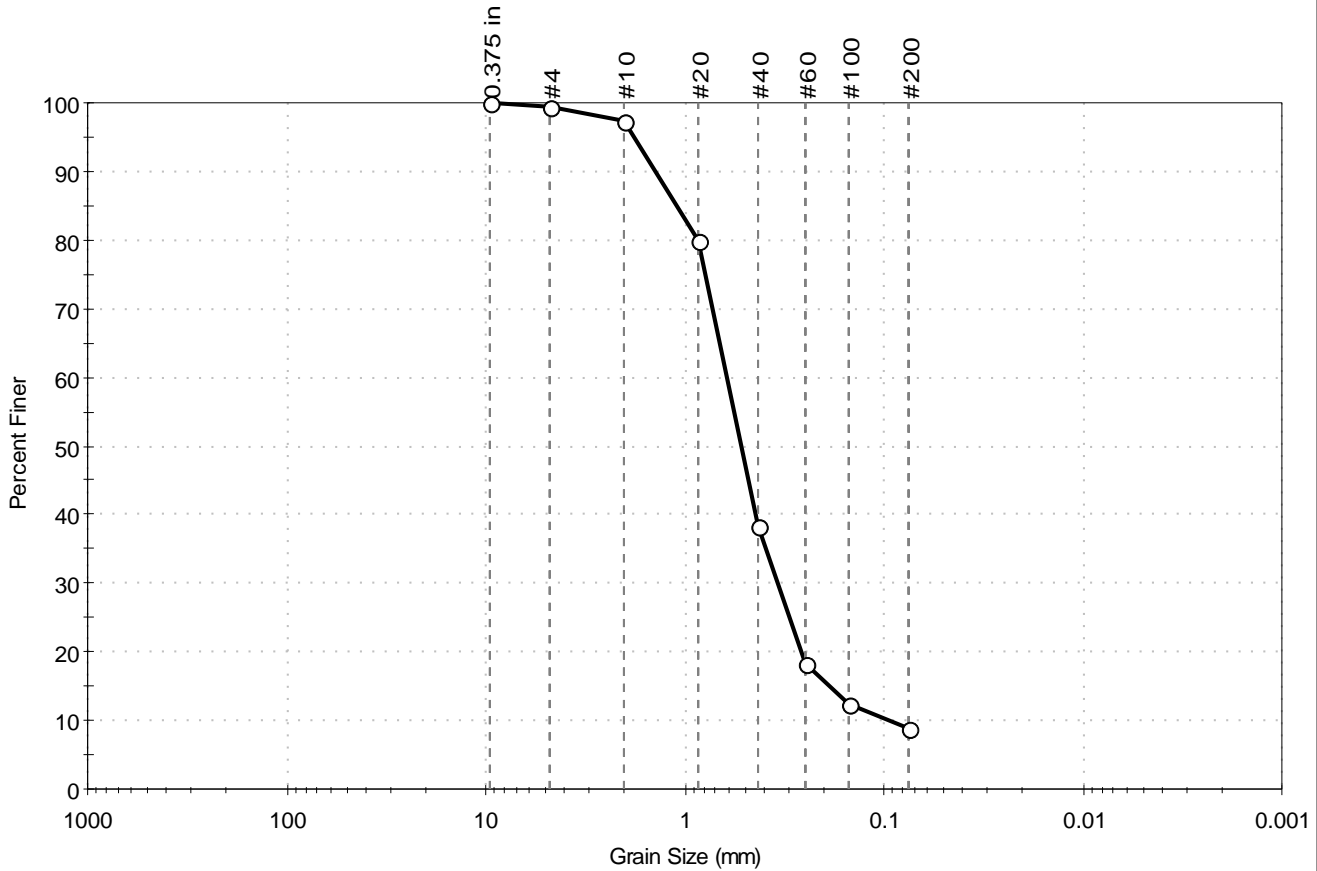
<u>ASTM</u>	N/A
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR  
 Sand/Gravel Hardness : HARD

Client: Con-Test Analytical Lab	Project No: GTX-310060	
Project: 19E1341	Tested By: ckg	
Location: ---	Sample Type: jar	Checked By: emm
Boring ID: ---	Test Date: 05/31/19	Test Id: 506133
Sample ID: 19E1341-06	Visual Description: Moist, very dark brown sand with silt	
Depth: ---	Sample Comment: ---	

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.5	90.8	8.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	97		
#20	0.85	80		
#40	0.42	38		
#60	0.25	18		
#100	0.15	12		
#200	0.075	8.7		

Coefficients

D <sub>85</sub> = 1.0939 mm	D <sub>30</sub> = 0.3415 mm
D <sub>60</sub> = 0.6104 mm	D <sub>15</sub> = 0.1886 mm
D <sub>50</sub> = 0.5166 mm	D <sub>10</sub> = 0.0955 mm
C <sub>u</sub> = 6.392	C <sub>c</sub> = 2.001

Classification

<u>ASTM</u>	N/A
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



**Appendix B. 2023 Sample Locations, Core Logs, Photographs and Laboratory Results**

May 26, 2023

Job No. 2020-0182

Alice Smith  
Wetlands and Waterways Program  
100 Cambridge Street Suite 900  
Boston, MA 02114

Sent via email: [Alice.Smith@state.ma.us](mailto:Alice.Smith@state.ma.us); [David.W.Wong@mass.gov](mailto:David.W.Wong@mass.gov)

**Re: Town of Marshfield – Results from Additional Sediment Sampling**  
Veterans Memorial Park and South River Improvement Project  
Town of Marshfield, Proponent  
Marshfield, MA  
**401 WQC Application 23-WW26-0003-APP**

Dear Alice,

On behalf of our client, the Town of Marshfield, we are submitting field notes and laboratory results for the four (4) additional sediment cores collected for the above referenced project following the protocols in the April 25, 2023 Sampling and Analysis Plan approved by Mass DEP. The cores were collected on April 27, 2023 in the locations shown on Figure 1. The cores were stored vertically and packed with ice for transport back to Woods Hole Group. Sediment sub-sampling consisted of splitting the cores, photographing and logging each core, and then sub-sampling per the approved Sampling and Analysis Plan. Attached to this letter are the core logs with photos and the sediment chemistry data for PCBs and VOCs from the laboratory.

The data shows total PCB concentrations and VOC concentrations below the thresholds for upland placement listed in the MCP for S-1 & GW-1 human exposure, and for disposal at lined or unlined landfills listed in DEP Policy #COMM-97-001.



**Figure 1. Supplemental sediment cores collected for the Veterans Memorial Park project.**

If you have any questions regarding these data, I can be reached at 508-495-6225 or via email at [lfields@woodsholegroup.com](mailto:lfields@woodsholegroup.com).

Sincerely,

*Leslie Fields*

Leslie Fields  
Coastal Geologist/Project Manger

Attachments: as stated

cc: Nils Wiberg  
William Finn

**Woods Hole Group CORE LOG DATA SHEET**

PROJECT NAME: 20-0182 Veteran's Park DATE: 4/27/23  
 PROJECT LOCATION: Marshfield, MA SEA STATE: N/A  
 VESSEL: N/A POSITIONING EQUIPMENT: RTK GPS  
 SAMPLING EQUIPMENT: pushcore / hand auger  
 SAMPLING PERSONNEL: D. Stuart, K. Lavallee LOGGED BY: D. Stuart  
 NAVD88 MLLW ELEVATION - TOP OF CORE: 7.175 BOTTOM OF CORE: 5.675  
 CORE ID: L-1 ATTEMPT NO.: 2 TIME: 1115  
 LATITUDE: 42.0947039 LONGITUDE: ~~70.7187188~~ POSITION ACCURACY: RTK fix  
 MEASURED WATER DEPTH (FT): 0.7 CORRECTED WATER DEPTH (FT MLLW): N/A non-tidal  
 TARGET PENETRATION (FT): \_\_\_\_\_ ACTUAL PENETRATION (FT): 1.6 RECOVERY (FT): 1.5  
 COMMENTS: \_\_\_\_\_ ATTEMPTS: 3  
 SAMPLE INTERVAL(S): VOC = 0.2 ft, PCB = 0-1.5

CORE PHOTO:	CORE DESCRIPTION:
	<p>0-0.1, fluid mud lost prior to sampling</p> <p>0.1-0.75, loosely consolidated mud with abundant organics (stems, leaves, sticks), slight sulfur odor, no sheen, color 2.5Y <del>3/1</del> 3/1</p> <p>0.75-1.1, poorly-sorted sand (fine to very coarse) with <del>trace</del> gravel, no odor/sheen, consolidated, color 5Y 3/2</p> <p>1.1-1.2, mud, consolidated, no odor/sheen color 2.5Y 3/1</p> <p>1.2-1.5, very poorly sorted sand (fine to very coarse) with muddy matrix and single large wood fragment, no odor/sheen, consolidated color 5Y 3/1</p>



L-1  
← TOP

2 3 4 5 6 7 8 9 1 2 3





## Woods Hole Group CORE LOG DATA SHEET

PROJECT NAME: 20-0182 Veteran's Park DATE: 4/27/23  
 PROJECT LOCATION: Marshfield, MA SEA STATE: N/A  
 VESSEL: N/A POSITIONING EQUIPMENT: RTK GPS  
 SAMPLING EQUIPMENT: (pushcore) hand auger  
 SAMPLING PERSONNEL: D. Stuart, K. Lavallee LOGGED BY: D. Stuart  
 NAVD88 MLLW ELEVATION - TOP OF CORE: 6.408 BOTTOM OF CORE:  
 CORE ID: SR-1 ATTEMPT NO.: 3 TIME: 1225  
 LATITUDE: 42.094832439 LONGITUDE: -70.71883505 POSITION ACCURACY: RTK fix  
 MEASURED WATER DEPTH (FT): 2.2 CORRECTED WATER DEPTH (FT MLLW): N/A non-tidal  
 TARGET PENETRATION (FT): \_\_\_\_\_ ACTUAL PENETRATION (FT): 1.9 RECOVERY (FT): 1.6  
 COMMENTS: \_\_\_\_\_ ATTEMPTS: 3  
 SAMPLE INTERVAL(S): VOC = 0.2 ft, PCB = 0-1.6

CORE PHOTO:	CORE DESCRIPTION:
	<p>0 - 0.5, sandy mud with abundant organics (stems, leaves, sticks) with trace small gravel, sand is medium to <del>very</del> coarse, no odor/sheen, loosely consolidated, color <del>10YR 2/2</del> 10YR 2/2</p> <p>0.5 - 0.9, mud with trace organics, no odor/sheen, consolidated, color 10YR 2/2</p> <p>0.9 - 1.3, alternating lenses of mud (above layer) and poorly-sorted (fine to coarse) sand, each lens is ~ 0.1 ft, no odor/sheen, color 10YR 3/1 (mud) 2.5Y 3/2 (sand)</p> <p>1.3 - 1.6, mud with decayed organics and trace large gravel, largest gravel is 0.1 ft diam, no odor/sheen, consolidated color 10YR 3/1</p>

SR-1  
← TOP

SR-1  
Pen ~~1A~~ 1A  
Rec: 16

1 2 3 4 5 6 7 8 9 10 11 12 13 14



Woods Hole Group CORE LOG DATA SHEET

PROJECT NAME: 20-0182 Veteran's Park DATE: 4/27/23  
 PROJECT LOCATION: Marshfield, MA SEA STATE: N/A  
 VESSEL: N/A POSITIONING EQUIPMENT: RTK GPS  
 SAMPLING EQUIPMENT: ~~push core~~ hand auger  
 SAMPLING PERSONNEL: D. Stuart, K. Lavallee LOGGED BY: D. Stuart  
~~NAVD88~~/ MLLW ELEVATION - TOP OF CORE: 10.119 BOTTOM OF CORE: 9.219  
 CORE ID: SR-2 ATTEMPT NO.: 5 TIME: ~~1345~~ 1430  
 LATITUDE: 42.09485374 LONGITUDE: -70.71854266 POSITION ACCURACY: RTK float  
 MEASURED WATER DEPTH (FT): 0.7 CORRECTED WATER DEPTH (FT MLLW): NA nontidal  
 TARGET PENETRATION (FT): \_\_\_\_\_ ACTUAL PENETRATION (FT): 0.9 RECOVERY (FT): 0.9  
 COMMENTS: Stratigraphy noted in the field, photo too ATTEMPTS: 6  
 SAMPLE INTERVAL(S): VOC = 0-~~0.5~~, PCB, 0-0.7  
0.7

CORE PHOTO:	CORE DESCRIPTION:
	<p>0-0.1, fluid mud, lost</p> <p>0.1-0.5, loosely consolidated mud/silt, abundant roots and organic debris (sticks, twigs, leaves), slight sulfur odor, color 10 YR 3/2</p> <p>0.5-0.7, mud and sand, sand is very poorly-sorted with occasional small gravel, sand is fine to very coarse, abrupt transition with above layer 10 YR 3/2</p> <p>0.7-0.9, <u>collected with shovel</u>, <sup>ver</sup> poorly-sorted sand and gravel, largest grains are 0.1 ft diameter, <u>not included in chemistry samples</u></p>





Woods Hole Group CORE LOG DATA SHEET

PROJECT NAME: 20-0182 Veteran's Park DATE: 4/27/23  
 PROJECT LOCATION: Marshfield, MA SEA STATE: N/A  
 VESSEL: N/A POSITIONING EQUIPMENT: RTK GPS  
 SAMPLING EQUIPMENT: ~~pushcore / hand auger~~ Shovel  
 SAMPLING PERSONNEL: D. Stuart, K. Lavalley LOGGED BY: D. Stuart  
 NAVD88 MLLW ELEVATION - TOP OF CORE: 0.331 BOTTOM OF CORE:  
 CORE ID: SR-3 ATTEMPT NO.: 3 TIME: 1530  
 LATITUDE: +2,09299628 LONGITUDE: -70.71198487 POSITION ACCURACY: RTK fix  
 MEASURED WATER DEPTH (FT): N/A CORRECTED WATER DEPTH (FT MLLW): N/A  
 TARGET PENETRATION (FT): \_\_\_\_\_ ACTUAL PENETRATION (FT): 0.7 RECOVERY (FT): 0.7  
 COMMENTS: photographed in field ATTEMPTS: 3  
 SAMPLE INTERVAL(S): 0-0.7, VOC samples targeted muddiest parts

CORE PHOTO:	CORE DESCRIPTION:
	<p>0-0.7, very-poorly sorted sand and gravel with trace fines in matrix and trace cobbles, sand is very fine to very coarse, largest cobble is 0.2 ft diam., no odor/sheen, but sheen was observed in footprints nearby (within 10 ft of sample), sheen was iridescent, consolidated, color 2.5 y 3/1</p>









## ANALYTICAL REPORT

Lab Number:	L2323294
Client:	Woods Hole Group 107 Waterhouse Road Bourne, MA 02532
ATTN:	Leslie Fields
Phone:	(508) 495-6225
Project Name:	VETRANS PARK
Project Number:	20-0182
Report Date:	05/23/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2323294-01	L-1	SEDIMENT	MARSHFIELD, MA	04/27/23 11:15	04/28/23
L2323294-02	SR-1	SEDIMENT	MARSHFIELD, MA	04/27/23 12:25	04/28/23
L2323294-03	SR-2	SEDIMENT	MARSHFIELD, MA	04/27/23 14:30	04/28/23
L2323294-04	SR-3	SEDIMENT	MARSHFIELD, MA	04/27/23 15:30	04/28/23

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2323294-04: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Elizabeth Porta

Title: Technical Director/Representative

Date: 05/23/23

# ORGANICS

# VOLATILES

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-01  
 Client ID: L-1  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 11:15  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sediment  
 Analytical Method: 1,8260D  
 Analytical Date: 05/09/23 15:49  
 Analyst: LAC  
 Percent Solids: 50%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	34	16.	1
1,1-Dichloroethane	ND		ug/kg	6.9	1.0	1
Chloroform	ND		ug/kg	10	0.96	1
Carbon tetrachloride	ND		ug/kg	6.9	1.6	1
1,2-Dichloropropane	ND		ug/kg	6.9	0.86	1
Dibromochloromethane	ND		ug/kg	6.9	0.96	1
1,1,2-Trichloroethane	ND		ug/kg	6.9	1.8	1
Tetrachloroethene	ND		ug/kg	3.4	1.3	1
Chlorobenzene	ND		ug/kg	3.4	0.87	1
Trichlorofluoromethane	ND		ug/kg	27	4.8	1
1,2-Dichloroethane	ND		ug/kg	6.9	1.8	1
1,1,1-Trichloroethane	ND		ug/kg	3.4	1.1	1
Bromodichloromethane	ND		ug/kg	3.4	0.75	1
trans-1,3-Dichloropropene	ND		ug/kg	6.9	1.9	1
cis-1,3-Dichloropropene	ND		ug/kg	3.4	1.1	1
1,3-Dichloropropene, Total	ND		ug/kg	3.4	1.1	1
1,1-Dichloropropene	ND		ug/kg	3.4	1.1	1
Bromoform	ND		ug/kg	27	1.7	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	3.4	1.1	1
Benzene	ND		ug/kg	3.4	1.1	1
Toluene	ND		ug/kg	6.9	3.7	1
Ethylbenzene	ND		ug/kg	6.9	0.97	1
Chloromethane	ND		ug/kg	27	6.4	1
Bromomethane	ND		ug/kg	14	4.0	1
Vinyl chloride	ND		ug/kg	6.9	2.3	1
Chloroethane	ND		ug/kg	14	3.1	1
1,1-Dichloroethene	ND		ug/kg	6.9	1.6	1
trans-1,2-Dichloroethene	ND		ug/kg	10	0.94	1



Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-01  
 Client ID: L-1  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 11:15  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	3.4	0.94	1
1,2-Dichlorobenzene	ND		ug/kg	14	0.99	1
1,3-Dichlorobenzene	ND		ug/kg	14	1.0	1
1,4-Dichlorobenzene	ND		ug/kg	14	1.2	1
Methyl tert butyl ether	ND		ug/kg	14	1.4	1
p/m-Xylene	ND		ug/kg	14	3.8	1
o-Xylene	ND		ug/kg	6.9	2.0	1
Xylenes, Total	ND		ug/kg	6.9	2.0	1
cis-1,2-Dichloroethene	ND		ug/kg	6.9	1.2	1
1,2-Dichloroethene, Total	ND		ug/kg	6.9	0.94	1
Dibromomethane	ND		ug/kg	14	1.6	1
1,4-Dichlorobutane	ND		ug/kg	69	1.6	1
1,2,3-Trichloropropane	ND		ug/kg	14	0.87	1
Styrene	ND		ug/kg	6.9	1.3	1
Dichlorodifluoromethane	ND		ug/kg	69	6.3	1
Acetone	420		ug/kg	170	69.	1
Carbon disulfide	ND		ug/kg	69	31.	1
2-Butanone	89		ug/kg	69	15.	1
Vinyl acetate	ND		ug/kg	69	15.	1
4-Methyl-2-pentanone	ND		ug/kg	69	8.8	1
2-Hexanone	ND		ug/kg	69	8.1	1
Ethyl methacrylate	ND		ug/kg	69	11.	1
Acrylonitrile	ND		ug/kg	27	7.9	1
Bromochloromethane	ND		ug/kg	14	1.4	1
Tetrahydrofuran	ND		ug/kg	27	11.	1
2,2-Dichloropropane	ND		ug/kg	14	1.4	1
1,2-Dibromoethane	ND		ug/kg	6.9	1.9	1
1,3-Dichloropropane	ND		ug/kg	14	1.1	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	3.4	0.90	1
Bromobenzene	ND		ug/kg	14	1.0	1
n-Butylbenzene	ND		ug/kg	6.9	1.1	1
sec-Butylbenzene	ND		ug/kg	6.9	1.0	1
tert-Butylbenzene	ND		ug/kg	14	0.81	1
o-Chlorotoluene	ND		ug/kg	14	1.3	1
p-Chlorotoluene	ND		ug/kg	14	0.74	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	20	6.8	1
Hexachlorobutadiene	ND		ug/kg	27	1.2	1

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-01  
 Client ID: L-1  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 11:15  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	6.9	0.75	1
p-Isopropyltoluene	ND		ug/kg	6.9	0.75	1
Naphthalene	ND		ug/kg	27	4.5	1
n-Propylbenzene	ND		ug/kg	6.9	1.2	1
1,2,3-Trichlorobenzene	ND		ug/kg	14	2.2	1
1,2,4-Trichlorobenzene	ND		ug/kg	14	1.9	1
1,3,5-Trimethylbenzene	ND		ug/kg	14	1.3	1
1,2,4-Trimethylbenzene	ND		ug/kg	14	2.3	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	34	9.7	1
Ethyl ether	ND		ug/kg	14	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	108		70-130

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-02  
 Client ID: SR-1  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 12:25  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sediment  
 Analytical Method: 1,8260D  
 Analytical Date: 05/09/23 16:14  
 Analyst: LAC  
 Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	33	15.	1
1,1-Dichloroethane	ND		ug/kg	6.7	0.97	1
Chloroform	ND		ug/kg	10	0.93	1
Carbon tetrachloride	ND		ug/kg	6.7	1.5	1
1,2-Dichloropropane	ND		ug/kg	6.7	0.83	1
Dibromochloromethane	ND		ug/kg	6.7	0.93	1
1,1,2-Trichloroethane	ND		ug/kg	6.7	1.8	1
Tetrachloroethene	ND		ug/kg	3.3	1.3	1
Chlorobenzene	ND		ug/kg	3.3	0.85	1
Trichlorofluoromethane	ND		ug/kg	27	4.6	1
1,2-Dichloroethane	ND		ug/kg	6.7	1.7	1
1,1,1-Trichloroethane	ND		ug/kg	3.3	1.1	1
Bromodichloromethane	ND		ug/kg	3.3	0.73	1
trans-1,3-Dichloropropene	ND		ug/kg	6.7	1.8	1
cis-1,3-Dichloropropene	ND		ug/kg	3.3	1.0	1
1,3-Dichloropropene, Total	ND		ug/kg	3.3	1.0	1
1,1-Dichloropropene	ND		ug/kg	3.3	1.1	1
Bromoform	ND		ug/kg	27	1.6	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	3.3	1.1	1
Benzene	ND		ug/kg	3.3	1.1	1
Toluene	ND		ug/kg	6.7	3.6	1
Ethylbenzene	ND		ug/kg	6.7	0.94	1
Chloromethane	ND		ug/kg	27	6.2	1
Bromomethane	ND		ug/kg	13	3.9	1
Vinyl chloride	ND		ug/kg	6.7	2.2	1
Chloroethane	ND		ug/kg	13	3.0	1
1,1-Dichloroethene	ND		ug/kg	6.7	1.6	1
trans-1,2-Dichloroethene	ND		ug/kg	10	0.91	1

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-02  
 Client ID: SR-1  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 12:25  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	3.3	0.91	1
1,2-Dichlorobenzene	ND		ug/kg	13	0.96	1
1,3-Dichlorobenzene	ND		ug/kg	13	0.99	1
1,4-Dichlorobenzene	ND		ug/kg	13	1.1	1
Methyl tert butyl ether	ND		ug/kg	13	1.3	1
p/m-Xylene	ND		ug/kg	13	3.7	1
o-Xylene	ND		ug/kg	6.7	1.9	1
Xylenes, Total	ND		ug/kg	6.7	1.9	1
cis-1,2-Dichloroethene	ND		ug/kg	6.7	1.2	1
1,2-Dichloroethene, Total	ND		ug/kg	6.7	0.91	1
Dibromomethane	ND		ug/kg	13	1.6	1
1,4-Dichlorobutane	ND		ug/kg	67	1.5	1
1,2,3-Trichloropropane	ND		ug/kg	13	0.85	1
Styrene	ND		ug/kg	6.7	1.3	1
Dichlorodifluoromethane	ND		ug/kg	67	6.1	1
Acetone	450		ug/kg	170	67.	1
Carbon disulfide	ND		ug/kg	67	30.	1
2-Butanone	98		ug/kg	67	15.	1
Vinyl acetate	ND		ug/kg	67	14.	1
4-Methyl-2-pentanone	ND		ug/kg	67	8.5	1
2-Hexanone	ND		ug/kg	67	7.9	1
Ethyl methacrylate	ND		ug/kg	67	10.	1
Acrylonitrile	ND		ug/kg	27	7.7	1
Bromochloromethane	ND		ug/kg	13	1.4	1
Tetrahydrofuran	ND		ug/kg	27	11.	1
2,2-Dichloropropane	ND		ug/kg	13	1.3	1
1,2-Dibromoethane	ND		ug/kg	6.7	1.9	1
1,3-Dichloropropane	ND		ug/kg	13	1.1	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	3.3	0.88	1
Bromobenzene	ND		ug/kg	13	0.97	1
n-Butylbenzene	ND		ug/kg	6.7	1.1	1
sec-Butylbenzene	ND		ug/kg	6.7	0.97	1
tert-Butylbenzene	ND		ug/kg	13	0.79	1
o-Chlorotoluene	ND		ug/kg	13	1.3	1
p-Chlorotoluene	ND		ug/kg	13	0.72	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	20	6.6	1
Hexachlorobutadiene	ND		ug/kg	27	1.1	1

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-02  
 Client ID: SR-1  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 12:25  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	6.7	0.73	1
p-Isopropyltoluene	ND		ug/kg	6.7	0.73	1
Naphthalene	ND		ug/kg	27	4.3	1
n-Propylbenzene	ND		ug/kg	6.7	1.1	1
1,2,3-Trichlorobenzene	ND		ug/kg	13	2.1	1
1,2,4-Trichlorobenzene	ND		ug/kg	13	1.8	1
1,3,5-Trimethylbenzene	ND		ug/kg	13	1.3	1
1,2,4-Trimethylbenzene	ND		ug/kg	13	2.2	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	33	9.5	1
Ethyl ether	ND		ug/kg	13	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	105		70-130

**Project Name:** VETRANS PARK**Lab Number:** L2323294**Project Number:** 20-0182**Report Date:** 05/23/23**SAMPLE RESULTS**

Lab ID: L2323294-03  
 Client ID: SR-2  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 14:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sediment  
 Analytical Method: 1,8260D  
 Analytical Date: 05/09/23 16:41  
 Analyst: LAC  
 Percent Solids: 28%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	86	40.	1
1,1-Dichloroethane	ND		ug/kg	17	2.5	1
Chloroform	ND		ug/kg	26	2.4	1
Carbon tetrachloride	ND		ug/kg	17	4.0	1
1,2-Dichloropropane	ND		ug/kg	17	2.2	1
Dibromochloromethane	ND		ug/kg	17	2.4	1
1,1,2-Trichloroethane	ND		ug/kg	17	4.6	1
Tetrachloroethene	ND		ug/kg	8.6	3.4	1
Chlorobenzene	ND		ug/kg	8.6	2.2	1
Trichlorofluoromethane	ND		ug/kg	69	12.	1
1,2-Dichloroethane	ND		ug/kg	17	4.4	1
1,1,1-Trichloroethane	ND		ug/kg	8.6	2.9	1
Bromodichloromethane	ND		ug/kg	8.6	1.9	1
trans-1,3-Dichloropropene	ND		ug/kg	17	4.7	1
cis-1,3-Dichloropropene	ND		ug/kg	8.6	2.7	1
1,3-Dichloropropene, Total	ND		ug/kg	8.6	2.7	1
1,1-Dichloropropene	ND		ug/kg	8.6	2.7	1
Bromoform	ND		ug/kg	69	4.2	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	8.6	2.9	1
Benzene	ND		ug/kg	8.6	2.9	1
Toluene	ND		ug/kg	17	9.4	1
Ethylbenzene	ND		ug/kg	17	2.4	1
Chloromethane	ND		ug/kg	69	16.	1
Bromomethane	ND		ug/kg	34	10.	1
Vinyl chloride	ND		ug/kg	17	5.8	1
Chloroethane	ND		ug/kg	34	7.8	1
1,1-Dichloroethene	ND		ug/kg	17	4.1	1
trans-1,2-Dichloroethene	ND		ug/kg	26	2.4	1



Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-03  
 Client ID: SR-2  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 14:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	8.6	2.4	1
1,2-Dichlorobenzene	ND		ug/kg	34	2.5	1
1,3-Dichlorobenzene	ND		ug/kg	34	2.6	1
1,4-Dichlorobenzene	ND		ug/kg	34	3.0	1
Methyl tert butyl ether	ND		ug/kg	34	3.5	1
p/m-Xylene	ND		ug/kg	34	9.7	1
o-Xylene	ND		ug/kg	17	5.0	1
Xylenes, Total	ND		ug/kg	17	5.0	1
cis-1,2-Dichloroethene	ND		ug/kg	17	3.0	1
1,2-Dichloroethene, Total	ND		ug/kg	17	2.4	1
Dibromomethane	ND		ug/kg	34	4.1	1
1,4-Dichlorobutane	ND		ug/kg	170	3.9	1
1,2,3-Trichloropropane	ND		ug/kg	34	2.2	1
Styrene	ND		ug/kg	17	3.4	1
Dichlorodifluoromethane	ND		ug/kg	170	16.	1
Acetone	1200		ug/kg	430	170	1
Carbon disulfide	ND		ug/kg	170	78.	1
2-Butanone	160	J	ug/kg	170	38.	1
Vinyl acetate	ND		ug/kg	170	37.	1
4-Methyl-2-pentanone	ND		ug/kg	170	22.	1
2-Hexanone	ND		ug/kg	170	20.	1
Ethyl methacrylate	ND		ug/kg	170	27.	1
Acrylonitrile	ND		ug/kg	69	20.	1
Bromochloromethane	ND		ug/kg	34	3.5	1
Tetrahydrofuran	ND		ug/kg	69	27.	1
2,2-Dichloropropane	ND		ug/kg	34	3.5	1
1,2-Dibromoethane	ND		ug/kg	17	4.8	1
1,3-Dichloropropane	ND		ug/kg	34	2.9	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	8.6	2.3	1
Bromobenzene	ND		ug/kg	34	2.5	1
n-Butylbenzene	ND		ug/kg	17	2.9	1
sec-Butylbenzene	ND		ug/kg	17	2.5	1
tert-Butylbenzene	ND		ug/kg	34	2.0	1
o-Chlorotoluene	ND		ug/kg	34	3.3	1
p-Chlorotoluene	ND		ug/kg	34	1.9	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	52	17.	1
Hexachlorobutadiene	ND		ug/kg	69	2.9	1

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-03  
 Client ID: SR-2  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 14:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	17	1.9	1
p-Isopropyltoluene	ND		ug/kg	17	1.9	1
Naphthalene	ND		ug/kg	69	11.	1
n-Propylbenzene	ND		ug/kg	17	3.0	1
1,2,3-Trichlorobenzene	ND		ug/kg	34	5.6	1
1,2,4-Trichlorobenzene	ND		ug/kg	34	4.7	1
1,3,5-Trimethylbenzene	ND		ug/kg	34	3.3	1
1,2,4-Trimethylbenzene	ND		ug/kg	34	5.8	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	86	24.	1
Ethyl ether	ND		ug/kg	34	5.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	103		70-130

**Project Name:** VETRANS PARK**Lab Number:** L2323294**Project Number:** 20-0182**Report Date:** 05/23/23**SAMPLE RESULTS**

Lab ID: L2323294-04  
 Client ID: SR-3  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 15:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sediment  
 Analytical Method: 1,8260D  
 Analytical Date: 05/09/23 17:06  
 Analyst: LAC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	13	6.0	1
1,1-Dichloroethane	ND		ug/kg	2.6	0.38	1
Chloroform	ND		ug/kg	3.9	0.37	1
Carbon tetrachloride	ND		ug/kg	2.6	0.60	1
1,2-Dichloropropane	ND		ug/kg	2.6	0.33	1
Dibromochloromethane	ND		ug/kg	2.6	0.37	1
1,1,2-Trichloroethane	ND		ug/kg	2.6	0.70	1
Tetrachloroethene	ND		ug/kg	1.3	0.51	1
Chlorobenzene	ND		ug/kg	1.3	0.33	1
Trichlorofluoromethane	ND		ug/kg	10	1.8	1
1,2-Dichloroethane	ND		ug/kg	2.6	0.67	1
1,1,1-Trichloroethane	ND		ug/kg	1.3	0.44	1
Bromodichloromethane	ND		ug/kg	1.3	0.28	1
trans-1,3-Dichloropropene	ND		ug/kg	2.6	0.71	1
cis-1,3-Dichloropropene	ND		ug/kg	1.3	0.41	1
1,3-Dichloropropene, Total	ND		ug/kg	1.3	0.41	1
1,1-Dichloropropene	ND		ug/kg	1.3	0.42	1
Bromoform	ND		ug/kg	10	0.64	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.3	0.43	1
Benzene	ND		ug/kg	1.3	0.43	1
Toluene	ND		ug/kg	2.6	1.4	1
Ethylbenzene	ND		ug/kg	2.6	0.37	1
Chloromethane	ND		ug/kg	10	2.4	1
Bromomethane	ND		ug/kg	5.2	1.5	1
Vinyl chloride	ND		ug/kg	2.6	0.88	1
Chloroethane	ND		ug/kg	5.2	1.2	1
1,1-Dichloroethene	ND		ug/kg	2.6	0.62	1
trans-1,2-Dichloroethene	ND		ug/kg	3.9	0.36	1

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-04  
 Client ID: SR-3  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 15:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	1.3	0.36	1
1,2-Dichlorobenzene	ND		ug/kg	5.2	0.38	1
1,3-Dichlorobenzene	ND		ug/kg	5.2	0.39	1
1,4-Dichlorobenzene	ND		ug/kg	5.2	0.45	1
Methyl tert butyl ether	ND		ug/kg	5.2	0.53	1
p/m-Xylene	ND		ug/kg	5.2	1.5	1
o-Xylene	ND		ug/kg	2.6	0.76	1
Xylenes, Total	ND		ug/kg	2.6	0.76	1
cis-1,2-Dichloroethene	ND		ug/kg	2.6	0.46	1
1,2-Dichloroethene, Total	ND		ug/kg	2.6	0.36	1
Dibromomethane	ND		ug/kg	5.2	0.62	1
1,4-Dichlorobutane	ND		ug/kg	26	0.59	1
1,2,3-Trichloropropane	ND		ug/kg	5.2	0.33	1
Styrene	ND		ug/kg	2.6	0.51	1
Dichlorodifluoromethane	ND		ug/kg	26	2.4	1
Acetone	2100	E	ug/kg	65	26.	1
Carbon disulfide	ND		ug/kg	26	12.	1
2-Butanone	ND		ug/kg	26	5.8	1
Vinyl acetate	ND		ug/kg	26	5.6	1
4-Methyl-2-pentanone	ND		ug/kg	26	3.4	1
2-Hexanone	ND		ug/kg	26	3.1	1
Ethyl methacrylate	ND		ug/kg	26	4.1	1
Acrylonitrile	ND		ug/kg	10	3.0	1
Bromochloromethane	ND		ug/kg	5.2	0.54	1
Tetrahydrofuran	ND		ug/kg	10	4.2	1
2,2-Dichloropropane	ND		ug/kg	5.2	0.53	1
1,2-Dibromoethane	ND		ug/kg	2.6	0.73	1
1,3-Dichloropropane	ND		ug/kg	5.2	0.44	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.3	0.34	1
Bromobenzene	ND		ug/kg	5.2	0.38	1
n-Butylbenzene	ND		ug/kg	2.6	0.44	1
sec-Butylbenzene	ND		ug/kg	2.6	0.38	1
tert-Butylbenzene	ND		ug/kg	5.2	0.31	1
o-Chlorotoluene	ND		ug/kg	5.2	0.50	1
p-Chlorotoluene	ND		ug/kg	5.2	0.28	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	7.8	2.6	1
Hexachlorobutadiene	ND		ug/kg	10	0.44	1

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-04  
 Client ID: SR-3  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 15:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	2.6	0.28	1
p-Isopropyltoluene	ND		ug/kg	2.6	0.28	1
Naphthalene	ND		ug/kg	10	1.7	1
n-Propylbenzene	ND		ug/kg	2.6	0.45	1
1,2,3-Trichlorobenzene	ND		ug/kg	5.2	0.84	1
1,2,4-Trichlorobenzene	ND		ug/kg	5.2	0.71	1
1,3,5-Trimethylbenzene	ND		ug/kg	5.2	0.50	1
1,2,4-Trimethylbenzene	ND		ug/kg	5.2	0.87	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	13	3.7	1
Ethyl ether	ND		ug/kg	5.2	0.89	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	104		70-130

**Project Name:** VETRANS PARK**Lab Number:** L2323294**Project Number:** 20-0182**Report Date:** 05/23/23**SAMPLE RESULTS**

Lab ID: L2323294-04  
 Client ID: SR-3  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 15:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sediment  
 Analytical Method: 1,8260D  
 Analytical Date: 05/10/23 18:00  
 Analyst: LAC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	810	370	1
1,1-Dichloroethane	ND		ug/kg	160	24.	1
Chloroform	ND		ug/kg	240	23.	1
Carbon tetrachloride	ND		ug/kg	160	37.	1
1,2-Dichloropropane	ND		ug/kg	160	20.	1
Dibromochloromethane	ND		ug/kg	160	23.	1
1,1,2-Trichloroethane	ND		ug/kg	160	43.	1
Tetrachloroethene	ND		ug/kg	81	32.	1
Chlorobenzene	ND		ug/kg	81	20.	1
Trichlorofluoromethane	ND		ug/kg	650	110	1
1,2-Dichloroethane	ND		ug/kg	160	42.	1
1,1,1-Trichloroethane	ND		ug/kg	81	27.	1
Bromodichloromethane	ND		ug/kg	81	18.	1
trans-1,3-Dichloropropene	ND		ug/kg	160	44.	1
cis-1,3-Dichloropropene	ND		ug/kg	81	26.	1
1,3-Dichloropropene, Total	ND		ug/kg	81	26.	1
1,1-Dichloropropene	ND		ug/kg	81	26.	1
Bromoform	ND		ug/kg	650	40.	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	81	27.	1
Benzene	ND		ug/kg	81	27.	1
Toluene	ND		ug/kg	160	88.	1
Ethylbenzene	ND		ug/kg	160	23.	1
Chloromethane	ND		ug/kg	650	150	1
Bromomethane	ND		ug/kg	320	94.	1
Vinyl chloride	ND		ug/kg	160	54.	1
Chloroethane	ND		ug/kg	320	73.	1
1,1-Dichloroethene	ND		ug/kg	160	38.	1
trans-1,2-Dichloroethene	ND		ug/kg	240	22.	1



Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-04  
 Client ID: SR-3  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 15:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Trichloroethene	ND		ug/kg	81	22.	1
1,2-Dichlorobenzene	ND		ug/kg	320	23.	1
1,3-Dichlorobenzene	ND		ug/kg	320	24.	1
1,4-Dichlorobenzene	ND		ug/kg	320	28.	1
Methyl tert butyl ether	ND		ug/kg	320	32.	1
p/m-Xylene	ND		ug/kg	320	91.	1
o-Xylene	ND		ug/kg	160	47.	1
Xylenes, Total	ND		ug/kg	160	47.	1
cis-1,2-Dichloroethene	ND		ug/kg	160	28.	1
1,2-Dichloroethene, Total	ND		ug/kg	160	22.	1
Dibromomethane	ND		ug/kg	320	38.	1
1,4-Dichlorobutane	ND		ug/kg	1600	37.	1
1,2,3-Trichloropropane	ND		ug/kg	320	20.	1
Styrene	ND		ug/kg	160	32.	1
Dichlorodifluoromethane	ND		ug/kg	1600	150	1
Acetone	ND		ug/kg	1600	780	1
Carbon disulfide	ND		ug/kg	1600	740	1
2-Butanone	ND		ug/kg	1600	360	1
Vinyl acetate	ND		ug/kg	1600	350	1
4-Methyl-2-pentanone	ND		ug/kg	1600	210	1
2-Hexanone	ND		ug/kg	1600	190	1
Ethyl methacrylate	ND		ug/kg	1600	260	1
Acrylonitrile	ND		ug/kg	650	190	1
Bromochloromethane	ND		ug/kg	320	33.	1
Tetrahydrofuran	ND		ug/kg	650	260	1
2,2-Dichloropropane	ND		ug/kg	320	33.	1
1,2-Dibromoethane	ND		ug/kg	160	45.	1
1,3-Dichloropropane	ND		ug/kg	320	27.	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	81	21.	1
Bromobenzene	ND		ug/kg	320	24.	1
n-Butylbenzene	ND		ug/kg	160	27.	1
sec-Butylbenzene	ND		ug/kg	160	24.	1
tert-Butylbenzene	ND		ug/kg	320	19.	1
o-Chlorotoluene	ND		ug/kg	320	31.	1
p-Chlorotoluene	ND		ug/kg	320	18.	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	490	160	1
Hexachlorobutadiene	ND		ug/kg	650	27.	1

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-04  
 Client ID: SR-3  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 15:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	ND		ug/kg	160	18.	1
p-Isopropyltoluene	ND		ug/kg	160	18.	1
Naphthalene	ND		ug/kg	650	100	1
n-Propylbenzene	ND		ug/kg	160	28.	1
1,2,3-Trichlorobenzene	ND		ug/kg	320	52.	1
1,2,4-Trichlorobenzene	ND		ug/kg	320	44.	1
1,3,5-Trimethylbenzene	ND		ug/kg	320	31.	1
1,2,4-Trimethylbenzene	ND		ug/kg	320	54.	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	810	230	1
Ethyl ether	ND		ug/kg	320	55.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	99		70-130

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 05/09/23 08:55  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-04 Batch: WG1776903-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
2-Chloroethylvinyl ether	ND		ug/kg	20	1.6
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16
1,1-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 05/09/23 08:55  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-04 Batch: WG1776903-5					
Trichloroethene	ND		ug/kg	0.50	0.14
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15
1,4-Dichlorobenzene	ND		ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	2.0	0.24
1,4-Dichlorobutane	ND		ug/kg	10	0.23
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13
Styrene	ND		ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	25	10.
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	ND		ug/kg	10	2.2
Vinyl acetate	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
2-Hexanone	ND		ug/kg	10	1.2
Ethyl methacrylate	ND		ug/kg	10	1.6
Acrolein	ND		ug/kg	25	5.6
Acrylonitrile	ND		ug/kg	4.0	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
Tetrahydrofuran	ND		ug/kg	4.0	1.6
2,2-Dichloropropane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,3-Dichloropropane	ND		ug/kg	2.0	0.17

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 05/09/23 08:55  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-04 Batch: WG1776903-5					
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13
Bromobenzene	ND		ug/kg	2.0	0.14
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
1,3,5-Trichlorobenzene	ND		ug/kg	2.0	0.17
o-Chlorotoluene	ND		ug/kg	2.0	0.19
p-Chlorotoluene	ND		ug/kg	2.0	0.11
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Hexachlorobutadiene	ND		ug/kg	4.0	0.17
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	ND		ug/kg	1.0	0.11
Naphthalene	ND		ug/kg	4.0	0.65
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4
Ethyl ether	ND		ug/kg	2.0	0.34
Methyl Acetate	ND		ug/kg	4.0	0.95
Ethyl Acetate	ND		ug/kg	10	1.2
Isopropyl Ether	ND		ug/kg	2.0	0.21
Cyclohexane	ND		ug/kg	10	0.54
Tert-Butyl Alcohol	ND		ug/kg	20	5.1
Ethyl-Tert-Butyl-Ether	ND		ug/kg	2.0	0.13
Tertiary-Amyl Methyl Ether	ND		ug/kg	2.0	0.18
1,4-Dioxane	ND		ug/kg	80	35.
Methyl cyclohexane	ND		ug/kg	4.0	0.60

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 05/09/23 08:55  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-04 Batch: WG1776903-5					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	4.0	0.69

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	105		70-130



**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 05/10/23 09:10  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 04 Batch: WG1777610-5					
Methylene chloride	ND		ug/kg	250	110
1,1-Dichloroethane	ND		ug/kg	50	7.2
Chloroform	ND		ug/kg	75	7.0
Carbon tetrachloride	ND		ug/kg	50	12.
1,2-Dichloropropane	ND		ug/kg	50	6.2
Dibromochloromethane	ND		ug/kg	50	7.0
1,1,2-Trichloroethane	ND		ug/kg	50	13.
2-Chloroethylvinyl ether	ND		ug/kg	1000	82.
Tetrachloroethene	ND		ug/kg	25	9.8
Chlorobenzene	ND		ug/kg	25	6.4
Trichlorofluoromethane	ND		ug/kg	200	35.
1,2-Dichloroethane	ND		ug/kg	50	13.
1,1,1-Trichloroethane	ND		ug/kg	25	8.4
Bromodichloromethane	ND		ug/kg	25	5.4
trans-1,3-Dichloropropene	ND		ug/kg	50	14.
cis-1,3-Dichloropropene	ND		ug/kg	25	7.9
1,3-Dichloropropene, Total	ND		ug/kg	25	7.9
1,1-Dichloropropene	ND		ug/kg	25	8.0
Bromoform	ND		ug/kg	200	12.
1,1,2,2-Tetrachloroethane	ND		ug/kg	25	8.3
Benzene	ND		ug/kg	25	8.3
Toluene	ND		ug/kg	50	27.
Ethylbenzene	ND		ug/kg	50	7.0
Chloromethane	ND		ug/kg	200	47.
Bromomethane	ND		ug/kg	100	29.
Vinyl chloride	ND		ug/kg	50	17.
Chloroethane	ND		ug/kg	100	23.
1,1-Dichloroethene	ND		ug/kg	50	12.
trans-1,2-Dichloroethene	ND		ug/kg	75	6.8

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 05/10/23 09:10  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 04 Batch: WG1777610-5					
Trichloroethene	ND		ug/kg	25	6.8
1,2-Dichlorobenzene	ND		ug/kg	100	7.2
1,3-Dichlorobenzene	ND		ug/kg	100	7.4
1,4-Dichlorobenzene	ND		ug/kg	100	8.6
Methyl tert butyl ether	ND		ug/kg	100	10.
p/m-Xylene	ND		ug/kg	100	28.
o-Xylene	ND		ug/kg	50	14.
Xylenes, Total	ND		ug/kg	50	14.
cis-1,2-Dichloroethene	ND		ug/kg	50	8.8
1,2-Dichloroethene, Total	ND		ug/kg	50	6.8
Dibromomethane	ND		ug/kg	100	12.
1,4-Dichlorobutane	ND		ug/kg	500	11.
1,2,3-Trichloropropane	ND		ug/kg	100	6.4
Styrene	ND		ug/kg	50	9.8
Dichlorodifluoromethane	ND		ug/kg	500	46.
Acetone	ND		ug/kg	500	240
Carbon disulfide	ND		ug/kg	500	230
2-Butanone	ND		ug/kg	500	110
Vinyl acetate	ND		ug/kg	500	110
4-Methyl-2-pentanone	ND		ug/kg	500	64.
2-Hexanone	ND		ug/kg	500	59.
Ethyl methacrylate	ND		ug/kg	500	79.
Acrolein	ND		ug/kg	1200	280
Acrylonitrile	ND		ug/kg	200	58.
Bromochloromethane	ND		ug/kg	100	10.
Tetrahydrofuran	ND		ug/kg	200	80.
2,2-Dichloropropane	ND		ug/kg	100	10.
1,2-Dibromoethane	ND		ug/kg	50	14.
1,3-Dichloropropane	ND		ug/kg	100	8.4

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260D  
Analytical Date: 05/10/23 09:10  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 04 Batch: WG1777610-5					
1,1,1,2-Tetrachloroethane	ND		ug/kg	25	6.6
Bromobenzene	ND		ug/kg	100	7.2
n-Butylbenzene	ND		ug/kg	50	8.4
sec-Butylbenzene	ND		ug/kg	50	7.3
tert-Butylbenzene	ND		ug/kg	100	5.9
1,3,5-Trichlorobenzene	ND		ug/kg	100	8.6
o-Chlorotoluene	ND		ug/kg	100	9.6
p-Chlorotoluene	ND		ug/kg	100	5.4
1,2-Dibromo-3-chloropropane	ND		ug/kg	150	50.
Hexachlorobutadiene	ND		ug/kg	200	8.4
Isopropylbenzene	ND		ug/kg	50	5.4
p-Isopropyltoluene	ND		ug/kg	50	5.4
Naphthalene	ND		ug/kg	200	32.
n-Propylbenzene	ND		ug/kg	50	8.6
1,2,3-Trichlorobenzene	ND		ug/kg	100	16.
1,2,4-Trichlorobenzene	ND		ug/kg	100	14.
1,3,5-Trimethylbenzene	ND		ug/kg	100	9.6
1,2,4-Trimethylbenzene	ND		ug/kg	100	17.
trans-1,4-Dichloro-2-butene	ND		ug/kg	250	71.
Halothane	ND		ug/kg	500	9.0
Ethyl ether	ND		ug/kg	100	17.
Methyl Acetate	ND		ug/kg	200	48.
Ethyl Acetate	ND		ug/kg	500	60.
Isopropyl Ether	ND		ug/kg	100	11.
Cyclohexane	ND		ug/kg	500	27.
Tert-Butyl Alcohol	ND		ug/kg	1000	260
Ethyl-Tert-Butyl-Ether	ND		ug/kg	100	6.4
Tertiary-Amyl Methyl Ether	ND		ug/kg	100	8.8
1,4-Dioxane	ND		ug/kg	4000	1800

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 05/10/23 09:10  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 04 Batch: WG1777610-5					
Methyl cyclohexane	ND		ug/kg	200	30.
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	200	35.
p-Diethylbenzene	ND		ug/kg	100	8.8
4-Ethyltoluene	ND		ug/kg	100	19.
1,2,4,5-Tetramethylbenzene	ND		ug/kg	100	9.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	99		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-04 Batch: WG1776903-3 WG1776903-4								
Methylene chloride	94		90		70-130	4		30
1,1-Dichloroethane	100		97		70-130	3		30
Chloroform	100		98		70-130	2		30
Carbon tetrachloride	97		95		70-130	2		30
1,2-Dichloropropane	98		98		70-130	0		30
Dibromochloromethane	94		95		70-130	1		30
1,1,2-Trichloroethane	93		92		70-130	1		30
2-Chloroethylvinyl ether	78		78		70-130	0		30
Tetrachloroethene	100		101		70-130	1		30
Chlorobenzene	98		98		70-130	0		30
Trichlorofluoromethane	92		88		70-139	4		30
1,2-Dichloroethane	94		94		70-130	0		30
1,1,1-Trichloroethane	101		100		70-130	1		30
Bromodichloromethane	96		98		70-130	2		30
trans-1,3-Dichloropropene	96		97		70-130	1		30
cis-1,3-Dichloropropene	101		101		70-130	0		30
1,1-Dichloropropene	101		100		70-130	1		30
Bromoform	88		89		70-130	1		30
1,1,2,2-Tetrachloroethane	86		87		70-130	1		30
Benzene	98		98		70-130	0		30
Toluene	97		97		70-130	0		30
Ethylbenzene	99		100		70-130	1		30
Chloromethane	82		75		52-130	9		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-04 Batch: WG1776903-3 WG1776903-4								
Bromomethane	96		91		57-147	5		30
Vinyl chloride	84		78		67-130	7		30
Chloroethane	92		88		50-151	4		30
1,1-Dichloroethene	98		93		65-135	5		30
trans-1,2-Dichloroethene	102		97		70-130	5		30
Trichloroethene	100		101		70-130	1		30
1,2-Dichlorobenzene	97		100		70-130	3		30
1,3-Dichlorobenzene	99		101		70-130	2		30
1,4-Dichlorobenzene	96		98		70-130	2		30
Methyl tert butyl ether	95		90		66-130	5		30
p/m-Xylene	99		100		70-130	1		30
o-Xylene	97		99		70-130	2		30
cis-1,2-Dichloroethene	98		97		70-130	1		30
Dibromomethane	93		93		70-130	0		30
1,4-Dichlorobutane	82		86		70-130	5		30
1,2,3-Trichloropropane	85		87		68-130	2		30
Styrene	100		101		70-130	1		30
Dichlorodifluoromethane	69		64		30-146	8		30
Acetone	88		81		54-140	8		30
Carbon disulfide	91		83		59-130	9		30
2-Butanone	75		72		70-130	4		30
Vinyl acetate	82		76		70-130	8		30
4-Methyl-2-pentanone	88		85		70-130	3		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-04 Batch: WG1776903-3 WG1776903-4								
2-Hexanone	82		76		70-130	8		30
Ethyl methacrylate	93		90		70-130	3		30
Acrolein	106		97		70-130	9		30
Acrylonitrile	80		74		70-130	8		30
Bromochloromethane	97		95		70-130	2		30
Tetrahydrofuran	96		88		66-130	9		30
2,2-Dichloropropane	102		99		70-130	3		30
1,2-Dibromoethane	96		95		70-130	1		30
1,3-Dichloropropane	94		94		69-130	0		30
1,1,1,2-Tetrachloroethane	96		98		70-130	2		30
Bromobenzene	92		97		70-130	5		30
n-Butylbenzene	99		102		70-130	3		30
sec-Butylbenzene	99		102		70-130	3		30
tert-Butylbenzene	99		102		70-130	3		30
1,3,5-Trichlorobenzene	104		107		70-139	3		30
o-Chlorotoluene	96		100		70-130	4		30
p-Chlorotoluene	96		100		70-130	4		30
1,2-Dibromo-3-chloropropane	86		87		68-130	1		30
Hexachlorobutadiene	108		112		67-130	4		30
Isopropylbenzene	100		102		70-130	2		30
p-Isopropyltoluene	100		103		70-130	3		30
Naphthalene	89		92		70-130	3		30
n-Propylbenzene	97		103		70-130	6		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Project Number: 20-0182

Lab Number: L2323294

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-04 Batch: WG1776903-3 WG1776903-4								
1,2,3-Trichlorobenzene	98		104		70-130	6		30
1,2,4-Trichlorobenzene	103		107		70-130	4		30
1,3,5-Trimethylbenzene	94		99		70-130	5		30
1,2,4-Trimethylbenzene	97		100		70-130	3		30
trans-1,4-Dichloro-2-butene	96		93		70-130	3		30
Ethyl ether	94		88		67-130	7		30
Methyl Acetate	73		67		65-130	9		30
Ethyl Acetate	80		75		70-130	6		30
Isopropyl Ether	96		91		66-130	5		30
Cyclohexane	94		91		70-130	3		30
Tert-Butyl Alcohol	87		80		70-130	8		30
Ethyl-Tert-Butyl-Ether	95		91		70-130	4		30
Tertiary-Amyl Methyl Ether	92		90		70-130	2		30
1,4-Dioxane	91		89		65-136	2		30
Methyl cyclohexane	94		94		70-130	0		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	97		94		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		91		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	93		100		70-130
Dibromofluoromethane	101		99		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04 Batch: WG1777610-3 WG1777610-4								
Methylene chloride	100		95		70-130	5		30
1,1-Dichloroethane	106		100		70-130	6		30
Chloroform	107		100		70-130	7		30
Carbon tetrachloride	100		94		70-130	6		30
1,2-Dichloropropane	108		105		70-130	3		30
Dibromochloromethane	97		96		70-130	1		30
1,1,2-Trichloroethane	111		109		70-130	2		30
2-Chloroethylvinyl ether	103		105		70-130	2		30
Tetrachloroethene	109		104		70-130	5		30
Chlorobenzene	103		100		70-130	3		30
Trichlorofluoromethane	96		88		70-139	9		30
1,2-Dichloroethane	96		90		70-130	6		30
1,1,1-Trichloroethane	106		98		70-130	8		30
Bromodichloromethane	101		97		70-130	4		30
trans-1,3-Dichloropropene	105		100		70-130	5		30
cis-1,3-Dichloropropene	108		105		70-130	3		30
1,1-Dichloropropene	111		105		70-130	6		30
Bromoform	95		96		70-130	1		30
1,1,1,2-Tetrachloroethane	107		107		70-130	0		30
Benzene	107		103		70-130	4		30
Toluene	106		100		70-130	6		30
Ethylbenzene	106		101		70-130	5		30
Chloromethane	86		79		52-130	8		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04 Batch: WG1777610-3 WG1777610-4								
Bromomethane	78		70		57-147	11		30
Vinyl chloride	90		80		67-130	12		30
Chloroethane	100		93		50-151	7		30
1,1-Dichloroethene	102		97		65-135	5		30
trans-1,2-Dichloroethene	104		99		70-130	5		30
Trichloroethene	110		105		70-130	5		30
1,2-Dichlorobenzene	102		100		70-130	2		30
1,3-Dichlorobenzene	103		100		70-130	3		30
1,4-Dichlorobenzene	103		100		70-130	3		30
Methyl tert butyl ether	103		100		66-130	3		30
p/m-Xylene	106		101		70-130	5		30
o-Xylene	103		99		70-130	4		30
cis-1,2-Dichloroethene	104		101		70-130	3		30
Dibromomethane	103		101		70-130	2		30
1,4-Dichlorobutane	99		97		70-130	2		30
1,2,3-Trichloropropane	104		102		68-130	2		30
Styrene	103		100		70-130	3		30
Dichlorodifluoromethane	70		64		30-146	9		30
Acetone	111		93		54-140	18		30
Carbon disulfide	97		88		59-130	10		30
2-Butanone	105		98		70-130	7		30
Vinyl acetate	95		88		70-130	8		30
4-Methyl-2-pentanone	105		101		70-130	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04 Batch: WG1777610-3 WG1777610-4								
2-Hexanone	96		94		70-130	2		30
Ethyl methacrylate	102		102		70-130	0		30
Acrolein	119		112		70-130	6		30
Acrylonitrile	106		104		70-130	2		30
Bromochloromethane	106		102		70-130	4		30
Tetrahydrofuran	108		102		66-130	6		30
2,2-Dichloropropane	107		99		70-130	8		30
1,2-Dibromoethane	103		102		70-130	1		30
1,3-Dichloropropane	106		104		69-130	2		30
1,1,1,2-Tetrachloroethane	102		99		70-130	3		30
Bromobenzene	98		97		70-130	1		30
n-Butylbenzene	110		103		70-130	7		30
sec-Butylbenzene	107		101		70-130	6		30
tert-Butylbenzene	103		99		70-130	4		30
1,3,5-Trichlorobenzene	106		101		70-139	5		30
o-Chlorotoluene	102		99		70-130	3		30
p-Chlorotoluene	104		100		70-130	4		30
1,2-Dibromo-3-chloropropane	86		87		68-130	1		30
Hexachlorobutadiene	102		99		67-130	3		30
Isopropylbenzene	105		100		70-130	5		30
p-Isopropyltoluene	105		100		70-130	5		30
Naphthalene	105		104		70-130	1		30
n-Propylbenzene	107		102		70-130	5		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04 Batch: WG1777610-3 WG1777610-4								
1,2,3-Trichlorobenzene	110		107		70-130	3		30
1,2,4-Trichlorobenzene	109		104		70-130	5		30
1,3,5-Trimethylbenzene	104		100		70-130	4		30
1,2,4-Trimethylbenzene	103		99		70-130	4		30
trans-1,4-Dichloro-2-butene	102		98		70-130	4		30
Halothane	110		104		70-130	6		20
Ethyl ether	105		102		67-130	3		30
Methyl Acetate	98		95		65-130	3		30
Ethyl Acetate	101		99		70-130	2		30
Isopropyl Ether	103		101		66-130	2		30
Cyclohexane	104		100		70-130	4		30
Tert-Butyl Alcohol	110		107		70-130	3		30
Ethyl-Tert-Butyl-Ether	101		99		70-130	2		30
Tertiary-Amyl Methyl Ether	104		102		70-130	2		30
1,4-Dioxane	92		92		65-136	0		30
Methyl cyclohexane	110		104		70-130	6		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	105		98		70-130	7		30
p-Diethylbenzene	105		100		70-130	5		30
4-Ethyltoluene	104		100		70-130	4		30
1,2,4,5-Tetramethylbenzene	102		97		70-130	5		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Project Number: 20-0182

Lab Number: L2323294

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04 Batch: WG1777610-3 WG1777610-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		92		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	96		96		70-130
Dibromofluoromethane	98		98		70-130

# PCBS



Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-01  
 Client ID: L-1  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 11:15  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sediment  
 Analytical Method: 105,8270E-SIM/680(M)  
 Analytical Date: 05/19/23 13:15  
 Analyst: DB  
 Percent Solids: 50%

Extraction Method: EPA 3570  
 Extraction Date: 05/08/23 21:30  
 Cleanup Method: EPA 3630  
 Cleanup Date: 05/10/23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Congeners (NOAA List) - Mansfield Lab						
CI2-BZ#8	ND		ug/kg	0.769	0.385	1
CI3-BZ#18	0.404	J	ug/kg	0.769	0.385	1
CI3-BZ#28	ND		ug/kg	0.769	0.385	1
CI4-BZ#44	0.842		ug/kg	0.769	0.385	1
CI4-BZ#49	ND		ug/kg	0.769	0.385	1
CI4-BZ#52	0.649	J	ug/kg	0.769	0.385	1
CI4-BZ#66	0.585	J	ug/kg	0.769	0.385	1
CI5-BZ#87	ND		ug/kg	0.769	0.385	1
CI5-BZ#101	1.02		ug/kg	0.769	0.385	1
CI5-BZ#105	ND		ug/kg	0.769	0.385	1
CI5-BZ#118	0.789		ug/kg	0.769	0.385	1
CI6-BZ#128	ND		ug/kg	0.769	0.385	1
CI6-BZ#138	2.54		ug/kg	0.769	0.385	1
CI6-BZ#153	2.39		ug/kg	0.769	0.385	1
CI7-BZ#170	1.49		ug/kg	0.769	0.385	1
CI7-BZ#180	3.52		ug/kg	0.769	0.385	1
CI7-BZ#183	0.944		ug/kg	0.769	0.385	1
CI7-BZ#184	ND		ug/kg	0.769	0.385	1
CI7-BZ#187	1.55		ug/kg	0.769	0.385	1
CI8-BZ#195	ND		ug/kg	0.769	0.385	1
CI9-BZ#206	0.674	J	ug/kg	0.769	0.385	1
CI10-BZ#209	ND		ug/kg	0.769	0.385	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
DBOB	84		50-125
BZ 198	70		50-125

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-02  
 Client ID: SR-1  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 12:25  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sediment  
 Analytical Method: 105,8270E-SIM/680(M)  
 Analytical Date: 05/19/23 13:47  
 Analyst: DB  
 Percent Solids: 45%

Extraction Method: EPA 3570  
 Extraction Date: 05/08/23 21:30  
 Cleanup Method: EPA 3630  
 Cleanup Date: 05/10/23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PCB Congeners (NOAA List) - Mansfield Lab</b>						
CI2-BZ#8	ND		ug/kg	0.845	0.423	1
CI3-BZ#18	ND		ug/kg	0.845	0.423	1
CI3-BZ#28	ND		ug/kg	0.845	0.423	1
CI4-BZ#44	ND		ug/kg	0.845	0.423	1
CI4-BZ#49	ND		ug/kg	0.845	0.423	1
CI4-BZ#52	ND		ug/kg	0.845	0.423	1
CI4-BZ#66	ND		ug/kg	0.845	0.423	1
CI5-BZ#87	ND		ug/kg	0.845	0.423	1
CI5-BZ#101	ND		ug/kg	0.845	0.423	1
CI5-BZ#105	ND		ug/kg	0.845	0.423	1
CI5-BZ#118	ND		ug/kg	0.845	0.423	1
CI6-BZ#128	ND		ug/kg	0.845	0.423	1
CI6-BZ#138	ND		ug/kg	0.845	0.423	1
CI6-BZ#153	ND		ug/kg	0.845	0.423	1
CI7-BZ#170	ND		ug/kg	0.845	0.423	1
CI7-BZ#180	ND		ug/kg	0.845	0.423	1
CI7-BZ#183	ND		ug/kg	0.845	0.423	1
CI7-BZ#184	ND		ug/kg	0.845	0.423	1
CI7-BZ#187	ND		ug/kg	0.845	0.423	1
CI8-BZ#195	ND		ug/kg	0.845	0.423	1
CI9-BZ#206	ND		ug/kg	0.845	0.423	1
CI10-BZ#209	ND		ug/kg	0.845	0.423	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
DBOB	86		50-125
BZ 198	65		50-125

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-03  
 Client ID: SR-2  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 14:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sediment  
 Analytical Method: 105,8270E-SIM/680(M)  
 Analytical Date: 05/19/23 14:18  
 Analyst: DB  
 Percent Solids: 28%

Extraction Method: EPA 3570  
 Extraction Date: 05/08/23 21:30  
 Cleanup Method: EPA 3630  
 Cleanup Date: 05/10/23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PCB Congeners (NOAA List) - Mansfield Lab</b>						
CI2-BZ#8	ND		ug/kg	1.38	0.692	1
CI3-BZ#18	ND		ug/kg	1.38	0.692	1
CI3-BZ#28	ND		ug/kg	1.38	0.692	1
CI4-BZ#44	ND		ug/kg	1.38	0.692	1
CI4-BZ#49	ND		ug/kg	1.38	0.692	1
CI4-BZ#52	ND		ug/kg	1.38	0.692	1
CI4-BZ#66	ND		ug/kg	1.38	0.692	1
CI5-BZ#87	ND		ug/kg	1.38	0.692	1
CI5-BZ#101	0.836	J	ug/kg	1.38	0.692	1
CI5-BZ#105	ND		ug/kg	1.38	0.692	1
CI5-BZ#118	0.714	J	ug/kg	1.38	0.692	1
CI6-BZ#128	ND		ug/kg	1.38	0.692	1
CI6-BZ#138	2.28		ug/kg	1.38	0.692	1
CI6-BZ#153	1.56		ug/kg	1.38	0.692	1
CI7-BZ#170	ND		ug/kg	1.38	0.692	1
CI7-BZ#180	1.64		ug/kg	1.38	0.692	1
CI7-BZ#183	ND		ug/kg	1.38	0.692	1
CI7-BZ#184	ND		ug/kg	1.38	0.692	1
CI7-BZ#187	0.803	J	ug/kg	1.38	0.692	1
CI8-BZ#195	ND		ug/kg	1.38	0.692	1
CI9-BZ#206	ND		ug/kg	1.38	0.692	1
CI10-BZ#209	ND		ug/kg	1.38	0.692	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
DBOB	79		50-125
BZ 198	60		50-125

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-04  
 Client ID: SR-3  
 Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 15:30  
 Date Received: 04/28/23  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sediment  
 Analytical Method: 105,8270E-SIM/680(M)  
 Analytical Date: 05/19/23 14:50  
 Analyst: DB  
 Percent Solids: 82%

Extraction Method: EPA 3570  
 Extraction Date: 05/08/23 21:30  
 Cleanup Method: EPA 3630  
 Cleanup Date: 05/10/23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PCB Congeners (NOAA List) - Mansfield Lab</b>						
CI2-BZ#8	ND		ug/kg	0.479	0.240	1
CI3-BZ#18	ND		ug/kg	0.479	0.240	1
CI3-BZ#28	ND		ug/kg	0.479	0.240	1
CI4-BZ#44	ND		ug/kg	0.479	0.240	1
CI4-BZ#49	ND		ug/kg	0.479	0.240	1
CI4-BZ#52	ND		ug/kg	0.479	0.240	1
CI4-BZ#66	ND		ug/kg	0.479	0.240	1
CI5-BZ#87	ND		ug/kg	0.479	0.240	1
CI5-BZ#101	ND		ug/kg	0.479	0.240	1
CI5-BZ#105	ND		ug/kg	0.479	0.240	1
CI5-BZ#118	ND		ug/kg	0.479	0.240	1
CI6-BZ#128	ND		ug/kg	0.479	0.240	1
CI6-BZ#138	ND		ug/kg	0.479	0.240	1
CI6-BZ#153	0.267	J	ug/kg	0.479	0.240	1
CI7-BZ#170	ND		ug/kg	0.479	0.240	1
CI7-BZ#180	0.376	J	ug/kg	0.479	0.240	1
CI7-BZ#183	ND		ug/kg	0.479	0.240	1
CI7-BZ#184	ND		ug/kg	0.479	0.240	1
CI7-BZ#187	ND		ug/kg	0.479	0.240	1
CI8-BZ#195	ND		ug/kg	0.479	0.240	1
CI9-BZ#206	ND		ug/kg	0.479	0.240	1
CI10-BZ#209	ND		ug/kg	0.479	0.240	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
DBOB	68		50-125
BZ 198	57		50-125

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 105,8270E-SIM/680(M)  
Analytical Date: 05/19/23 11:40  
Analyst: DB

Extraction Method: EPA 3570  
Extraction Date: 05/08/23 21:30  
Cleanup Method: EPA 3630  
Cleanup Date: 05/10/23

Parameter	Result	Qualifier	Units	RL	MDL
PCB Congeners (NOAA List) - Mansfield Lab for sample(s): 01-04 Batch: WG1776318-1					
CI2-BZ#8	ND		ug/kg	0.400	0.200
CI3-BZ#18	ND		ug/kg	0.400	0.200
CI3-BZ#28	ND		ug/kg	0.400	0.200
CI4-BZ#44	ND		ug/kg	0.400	0.200
CI4-BZ#49	ND		ug/kg	0.400	0.200
CI4-BZ#52	ND		ug/kg	0.400	0.200
CI4-BZ#66	ND		ug/kg	0.400	0.200
CI5-BZ#87	ND		ug/kg	0.400	0.200
CI5-BZ#101	ND		ug/kg	0.400	0.200
CI5-BZ#105	ND		ug/kg	0.400	0.200
CI5-BZ#118	ND		ug/kg	0.400	0.200
CI6-BZ#128	ND		ug/kg	0.400	0.200
CI6-BZ#138	ND		ug/kg	0.400	0.200
CI6-BZ#153	ND		ug/kg	0.400	0.200
CI7-BZ#170	ND		ug/kg	0.400	0.200
CI7-BZ#180	ND		ug/kg	0.400	0.200
CI7-BZ#183	ND		ug/kg	0.400	0.200
CI7-BZ#184	ND		ug/kg	0.400	0.200
CI7-BZ#187	ND		ug/kg	0.400	0.200
CI8-BZ#195	ND		ug/kg	0.400	0.200
CI9-BZ#206	ND		ug/kg	0.400	0.200
CI10-BZ#209	ND		ug/kg	0.400	0.200

Surrogate	%Recovery	Qualifier	Acceptance Criteria
DBOB	115		50-125
BZ 198	97		50-125



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Congeners (NOAA List) - Mansfield Lab Associated sample(s): 01-04 Batch: WG1776318-2 WG1776318-3								
Cl2-BZ#8	74		71		40-140	4		30
Cl3-BZ#18	68		67		40-140	1		30
Cl3-BZ#28	73		71		40-140	3		30
Cl4-BZ#44	68		65		40-140	5		30
Cl4-BZ#49	69		67		40-140	3		30
Cl4-BZ#52	64		60		40-140	6		30
Cl4-BZ#66	68		64		40-140	6		30
Cl5-BZ#87	70		69		40-140	1		30
Cl5-BZ#101	68		64		40-140	6		30
Cl5-BZ#105	72		70		40-140	3		30
Cl5-BZ#118	64		61		40-140	5		30
Cl6-BZ#128	70		67		40-140	4		30
Cl6-BZ#138	68		65		40-140	5		30
Cl6-BZ#153	70		65		40-140	7		30
Cl7-BZ#170	62		60		40-140	3		30
Cl7-BZ#180	58		56		40-140	4		30
Cl7-BZ#183	56		53		40-140	6		30
Cl7-BZ#184	58		56		40-140	4		30
Cl7-BZ#187	56		54		40-140	4		30
Cl8-BZ#195	68		63		40-140	8		30
Cl9-BZ#206	72		71		40-140	1		30
Cl10-BZ#209	77		73		40-140	5		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
PCB Congeners (NOAA List) - Mansfield Lab Associated sample(s): 01-04 Batch: WG1776318-2 WG1776318-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
DBOB	90		90		50-125
BZ 198	71		66		50-125



# **INORGANICS & MISCELLANEOUS**

Project Name: VETRANS PARK

Project Number: 20-0182

Lab Number: L2323294

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-01

Client ID: L-1

Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 11:15

Date Received: 04/28/23

Field Prep: Not Specified

Sample Depth:

Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	49.9		%	0.100	NA	1	-	04/30/23 16:38	121,2540G	MNF



Project Name: VETRANS PARK

Project Number: 20-0182

Lab Number: L2323294

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-02

Client ID: SR-1

Sample Location: MARSHFIELD, MA

Date Collected: 04/27/23 12:25

Date Received: 04/28/23

Field Prep: Not Specified

Sample Depth:

Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	44.6		%	0.100	NA	1	-	04/30/23 16:38	121,2540G	MNF



Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-03

Date Collected: 04/27/23 14:30

Client ID: SR-2

Date Received: 04/28/23

Sample Location: MARSHFIELD, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	27.6		%	0.100	NA	1	-	04/30/23 16:38	121,2540G	MNF



Project Name: VETRANS PARK

Lab Number: L2323294

Project Number: 20-0182

Report Date: 05/23/23

## SAMPLE RESULTS

Lab ID: L2323294-04

Date Collected: 04/27/23 15:30

Client ID: SR-3

Date Received: 04/28/23

Sample Location: MARSHFIELD, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	04/30/23 16:38	121,2540G	MNF



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: VETRANS PARK

Project Number: 20-0182

Lab Number: L2323294

Report Date: 05/23/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG1773003-1 QC Sample: L2322473-01 Client ID: DUP Sample						
Solids, Total	87.6	87.5	%	0		20

**Project Name:** VETRANS PARK**Lab Number:** L2323294**Project Number:** 20-0182**Report Date:** 05/23/23**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2323294-01A	Vial MeOH preserved	A	NA		2.1	Y	Absent		8260HLW(14)
L2323294-01B	Vial water preserved	A	NA		2.1	Y	Absent	28-APR-23 09:50	8260HLW(14)
L2323294-01C	Vial water preserved	A	NA		2.1	Y	Absent	28-APR-23 09:50	8260HLW(14)
L2323294-01D	Glass 60ml unpreserved split	A	NA		2.1	Y	Absent		TS(7)
L2323294-01E	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		A2-PCBCONG-8270-NOAA(14)
L2323294-02A	Vial MeOH preserved	A	NA		2.1	Y	Absent		8260HLW(14)
L2323294-02B	Vial water preserved	A	NA		2.1	Y	Absent	28-APR-23 10:20	8260HLW(14)
L2323294-02C	Vial water preserved	A	NA		2.1	Y	Absent	28-APR-23 10:20	8260HLW(14)
L2323294-02D	Glass 60ml unpreserved split	A	NA		2.1	Y	Absent		TS(7)
L2323294-02E	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		A2-PCBCONG-8270-NOAA(14)
L2323294-03A	Vial MeOH preserved	A	NA		2.1	Y	Absent		8260HLW(14)
L2323294-03B	Vial water preserved	A	NA		2.1	Y	Absent	28-APR-23 10:50	8260HLW(14)
L2323294-03C	Vial water preserved	A	NA		2.1	Y	Absent	28-APR-23 10:50	8260HLW(14)
L2323294-03D	Glass 60ml unpreserved split	A	NA		2.1	Y	Absent		TS(7)
L2323294-03E	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		A2-PCBCONG-8270-NOAA(14)
L2323294-04A	Vial MeOH preserved	A	NA		2.1	Y	Absent		8260HLW(14),8260H(14)
L2323294-04B	Vial water preserved	A	NA		2.1	Y	Absent	28-APR-23 11:00	8260HLW(14),8260H(14)
L2323294-04C	Vial water preserved	A	NA		2.1	Y	Absent	28-APR-23 11:00	8260HLW(14),8260H(14)
L2323294-04D	Glass 60ml unpreserved split	A	NA		2.1	Y	Absent		TS(7)
L2323294-04E	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		A2-PCBCONG-8270-NOAA(14)



**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** VETRANS PARK  
**Project Number:** 20-0182

**Lab Number:** L2323294  
**Report Date:** 05/23/23

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.







November 22, 2023

Town of Marshfield  
c/o Woods Hole Group  
Beth Gurney  
107 Waterhouse Road  
Bourne, MA 02532

Re: CZM Federal Consistency Review of Proposed Veterans Memorial Park & South River  
Improvements Project; Marshfield

Dear Ms. Gurney:

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the proposed project to Veterans Memorial Park & South River Improvements Project in Marshfield, which includes dam removal, fish passage restoration, lagoon water conservation improvements, and park access, safety, and aesthetic improvements.

Based upon our review of applicable information, we concur with your certification and find that the activity as proposed is consistent with CZM enforceable program policies.

If the above-referenced activity is modified in any manner, including any changes resulting from permit, license, or certification revisions, including those ensuing from an appeal, or the activity is noted to be having effects on coastal resources or uses that are different than originally proposed, it is incumbent upon the proponent to notify CZM and submit any modified state permits, licenses, or certifications.

Thank you for your cooperation with CZM.

Sincerely,

Lisa Berry Engler  
Director

LBE/sd  
CZM # 4722

cc: Greg DeCesare, MassDEP  
Brendan Mullaney, MassDEP  
David Wong, MassDEP  
Alice Smith, MassDEP  
Christine Jacek, USACE  
John Logan, DMF  
Amanda Davis, DMF  
Brad Chase, DMF  
Sara Grady, MassBays Partnership  
Samantha Woods, North and South Rivers Watershed Association





Rod Procaccino, Marshfield Town Engineer  
Bill Grafton, Marshfield Conservation Agent  
Jason Burtner, CZM  
Rebecca Haney, CZM



# The Commonwealth of Massachusetts

## Division of Marine Fisheries

251 Causeway Street, Suite 400, Boston, MA 02114  
p: (617) 626-1520 | f: (617) 626-1509  
[www.mass.gov/marinefisheries](http://www.mass.gov/marinefisheries)



MAURA HEALEY  
Governor

KIMBERLEY DRISCOLL  
Lt. Governor

REBECCA TEPPER  
Secretary

RONALD S. AMIDON  
Commissioner

DANIEL J. MCKIERNAN  
Director

March 14, 2023

Marshfield Conservation Commission  
870 Moraine Street #205  
Marshfield, MA 02050

Dear Commissioners:

The Division of Marine Fisheries (MA DMF) has reviewed the Notice of Intent (NOI) by the Town of Marshfield to conduct the Veterans Memorial Park and South River Improvement Project at 870 Moraine Street as a potential Ecological Restoration Project. The project seeks to restore continuity within the South River and improve fish passage. Proposed construction includes removing the dam's spillway and fish ladder then constructing a nature-like riffle-pool fishway and altering the lagoon. The project was reviewed with respect to potential impacts to marine fisheries resources and habitat.

The South River has been identified by MA DMF as diadromous fish passage, migration, and/or spawning habitat for alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), American shad (*Alosa sapidissima*), rainbow smelt (*Osmerus mordax*), American eel (*Anguilla rostrata*), white perch (*Morone americana*), Atlantic tomcod (*Microgadus tomcod*), lamprey (*Petromyzon marinus*), and sea run brook trout (*Salvelinus fontinalis*).

MA DMF offers the following comments for your consideration:

- Much of the proposed work is in-water and will impact the substrate (e.g., demolition, dredging, stream re-channeling). A time-of-year (TOY) restriction on in-water work is recommended from **February 1 to July 15** to protect adult diadromous fish spawning periods and from **September 1 to November 15** to protect juvenile diadromous fish emigration.
- The EENF describes an in-water work schedule during the low flow period between July 1 and October 31. The start of the targeted work window would overlap with the end of the first TOY restriction period (July 1 to July 15) designed to protect American shad during the spring spawning migration, but would occur after the Spring TOY restriction periods for the other listed diadromous species in this system. The MA DMF Diadromous

Project has been conducting electrofishing monitoring studies of American Shad in this region of the South River since 2016. Data to date indicate that the spawning run terminates in this system prior to July 1, so a TOY incursion request to start work as soon as July 1 with the appropriate BMPs in place would be supported by MA DMF.

- If a gravity-fed bypass channel is installed to divert flow and provide uninterrupted low around the worksite prior to September 1, then MA DMF would not oppose in-water work during the Fall TOY period (September 1 to November 15). Pumps should only be used to further dry dewatered work areas behind cofferdams as needed (e.g., after rain events).
- This project will require a Fishway Permit from MA DMF and an approved Fishway Operation and Maintenance Plan.
- MA DMF requests a copy of the contractor's water control plan for review and approval during the permitting process.

Questions regarding this review may be directed to Amanda Davis in our New Bedford office at [Amanda.davis@mass.gov](mailto:Amanda.davis@mass.gov).

Sincerely,  
Amanda Davis  
Environmental Analyst  
MA Division of Marine Fisheries

cc:

Leslie Fields, Woods Hole Group, Inc.  
John Logan, Emma Gallagher, Brad Chase, John Sheppard, MA DMF  
Robert Boeri, CZM

AD/eg

**Reference:**

1. Evans, N.T., K.H. Ford, B.C. Chase, and J. Sheppard. 2011. Recommended Time of Year Restrictions (TOYs) for Coastal Alteration Projects to Protect Marine Fisheries Resources in Massachusetts. Massachusetts Division of Marine Fisheries Technical Report, TR-47. <https://www.mass.gov/doc/time-of-year-recommendations-tr-47/download>

**Veterans Memorial Park and  
South River Improvement Project**

**2200 Ocean Street  
Marshfield, MA 02050**

**Town of Marshfield**

**870 Moraine Street  
Marshfield, MA 02050**



**FUSS & O'NEILL**

317 Iron Horse Way  
Providence, RI 02908

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South River Improvement Project  
Town of Marshfield**

- K Endangered Species Documentation
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## 1 Contact Information/Responsible Parties

### Operator / Emergency 24-Hour Contact:

#### ***Contractor to be determined***

Company or Organization:

Name:

Address:

City, State, Zip Code:

Phone:

Fax/Email:

Insert area of control (if more than one operator at site)

#### **Subcontractor(s):**

Company or Organization:

Name:

Address:

City, State, Zip Code:

Phone:

Fax/Email:

Insert area of control (if more than one operator at site)

#### **SWPPP Preparer – Engineering Firm Contact**

Company or Organization: Fuss & O'Neill, Inc.

Name: Nils Wiberg, PE, CFM

Address: 317 Iron Horse Way #204

City, State, Zip Code: Providence, RI 02908

Phone: 401-861-3070

Fax/Email: nwiberg@fando.com

### SWPPP Implementation Team

Name and/or Position, and Contact	Responsibilities	I Have Completed Training Required by CGP Part 6.2	I Have Read the CGP and Understand the Applicable Requirements
Name: Title: Phone: Email:		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes Date: <i>Click here to enter a date.</i>
Name: Title: Phone: Email:		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes Date: <i>Click here to enter a date.</i>

**Table 2**  
**SWPPP Implementation Team Members Trained to Conduct Inspections**

Name and/or Position and Contact	Training(s) Received	Date Training(s) Completed	If Training is a Non-EPA Training, Confirm that it Satisfies the Minimum Elements of CGP Part 6.3.b
Name: Title: Phone: Email:	<i>Insert Title of Training Received</i>	Date: <i>Click here to enter a date.</i>	<input type="checkbox"/> Principles and practices of erosion and sediment control and pollution prevention practices at construction sites <input type="checkbox"/> Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites <input type="checkbox"/> Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4

Name and/or Position and Contact	Training(s) Received	Date Training(s) Completed	If Training is a Non-EPA Training, Confirm that it Satisfies the Minimum Elements of CGP Part 6.3.b
Name: Title: Phone: Email:	<i>Insert Title of Training Received</i>	Date: <i>Click here to enter a date.</i>	<input type="checkbox"/> Principles and practices of erosion and sediment control and pollution prevention practices at construction sites <input type="checkbox"/> Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites <input type="checkbox"/> Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4
Name: Title: Phone: Email:	<i>Insert Title of Training Received</i>	Date: <i>Click here to enter a date.</i>	<input type="checkbox"/> Principles and practices of erosion and sediment control and pollution prevention practices at construction sites <input type="checkbox"/> Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites <input type="checkbox"/> Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4

## 2 Site Evaluation, Assessment, and Planning

### 2.1 Project/Site Information

#### Project Name and Address

Project/Site Name: Veterans Memorial Park and South River Improvement Project  
 Project Street/Location: 2200 Ocean Street  
 City: Marshfield  
 State: MA  
 ZIP Code: 02050

County or Similar Subdivision: Plymouth

#### Project Latitude/Longitude

Latitude: 42.09496 Longitude: -70.71803

Method for determining latitude/longitude:

USGS topographic map (specify scale: \_\_\_\_\_ )

EPA Web site

GPS

Other (please specify): Google Maps

Horizontal Reference Datum:

NAD 27

NAD 83 or WGS 84

Unknown

If you used a U.S.G.S topographic map, what was the scale? \_\_\_\_\_

### Additional Project Information

Is the project/site located on Indian country lands, or located on a property of religious or cultural significance to an Indian tribe?  Yes  No

If yes, provide the name of the Indian tribe associated with the area of Indian country (including the name of Indian reservation if applicable), or if not in Indian country, provide the name of the Indian tribe associated with the property:

If you are conducting earth-disturbing activities in response to a public emergency, document the cause of the public emergency (*e.g., natural disaster, extreme flooding conditions*), information substantiating its occurrence (*e.g., state disaster declaration*), and a description of the construction necessary to reestablish effective public service: N/A

Are you requesting coverage as a "federal operator" or "federal facility" as defined in Appendix A of the 2022 CGP?  Yes  No

## 2.3 Discharge Information

Have stormwater discharges from your current construction site been covered previously under an NPDES permit?

Yes  No

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?  Yes  No

Are there any surface waters that are located within 50 feet of your project's earth disturbances?

Yes  No

For each point of discharge in Table 3, provide a point of discharge ID (a unique 3-digit ID, e.g., 001, 002), the name of the first receiving water that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to, and the following receiving water information, if applicable:

**Table 3  
Names of Receiving Waters**

Point of Discharge ID	Name of receiving water that receives stormwater discharge:	Is the receiving water impaired (on the CWA 303(d) list)?	If yes, list the pollutants that are causing the impairment:	Has a TMDL been completed for this receiving waterbody?	If yes, list TMDL Name and ID:	Pollutant(s) for which there is a TMDL:	Is this receiving water designated as a Tier 2, Tier 2.5, or Tier 3 water?	If yes, specify which Tier (2, 2.5, or 3)?
[001]	South River)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fish Passage Barrier, Flow Regime Modification, Aluminum, Estuarine Bioassessments, Fecal Coliform, pH (low)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Tier 2.5

**Describe the method(s) you used to determine whether or not your project/site discharges to an impaired water:**

The EPA MyWATERS Mapper and the Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle (November 2021) was used to determine that the surface water present on both sides of the project was impaired. The project's erosion and sedimentation control plan reflects that construction discharges will be treated by a temporary construction dewatering basin (and/or other treatment control devices meeting best management practice requirements).



### 3 Nature of the Construction Activity

#### 3.1 General Description of the Project

The Veterans Memorial Park and South River Improvement Project (Project) is located in and along the South River at the intersection of Main Street (Route 3A) and Plain Street (Route 139) in Marshfield, Massachusetts. The recreational park contains a dam, located in both Town-owned and private property, that maintains a small impoundment upstream separated from the main river channel by a small earthen peninsula. Integrated into the dam is a concrete pool-and-weir fish ladder that is owned by the Town and allows seasonal upstream passage of migratory fish.

The dam has been determined to have significant backwater effect on the South River upstream of the dam due to the relatively low gradient of this section of the river, and the existing pool-and-weir fish ladder installed at the site allows passage of migratory species with limited efficiency. The South River is home to multiple species with special status and significance, and based on a December 2019 memo from the Mass. Division of Marine Fisheries has been documented as spawning and nursery habitat for seven diadromous fish species: Alewife (*Alosa pseudoharengus*), Blueback herring (*Alosa aestivalis*), American shad (*Alosa sapidissima*), Rainbow smelt (*Osmerus mordax*), White perch (*Morone americana*), American eel (*Anguilla rostrata*) and Sea lamprey (*Petromyzon marinus*). The Atlantic tomcod (*Microgadus tomcod*) is another diadromous species that is expected to occur in the South River but has not been recently documented. American shad are the highest ranked priority (by Total Priority Index) in the Northeast Restoration Center's assessment of High Priority Watersheds and are a regionally important recreational species. River herring (a NOAA Species of Concern) are present in the South River downstream of Veterans Memorial Park Dam. Pocket populations of native brook trout have been seen in the cold-water tributaries both upstream and downstream of Veterans Memorial Park as well.

The park is a valued place for the community, where the service and sacrifices of veterans are memorialized, where people visit alone or with others to enjoy the sights and sounds of the South River and the park's heart-shaped lagoon and water fountain, and where the annual spring migration of river herring and other species is watched from the Main Street bridge and riverbanks adjacent to the fish ladder. The fountain is dedicated to the Town's women Veterans, the water wheel is dedicated to the Town's male Veterans and the lagoon, which is in the shape of a bleeding heart, is dedicated to the sacrifice of all Veterans. The Park is a National Natural Landmark rededicated at a public ceremony on September 23, 2018. A significant quantity of sediment has accumulated in the lagoon, preventing operation of the water fountain resulting in the deterioration of the aesthetic and ecological benefits of the lagoon.



### 3.4 Construction Support Activities

Construction materials, including all site and bridge nature-like fishway materials, will be stored/staged on-site during construction as needed, according to the sequence of construction indicated in the water control and construction phasing sequence on sheet CS-107 in the Project Drawing Set. Materials will generally be stored within the project's designated on-site temporary staging area. They will be transported to the site as needed and any unsuitable materials will be transported and legally disposed of off-site. The temporary staging area will be located within the limit of work.

Construction materials will be transported to the site as needed and any unsuitable materials will be transported and legally disposed of off-site. The Contractor will be responsible to maintain all staging/storage areas during construction and restoring these areas following completion of construction and before demobilizing from the site.

Contact information for construction support activities is provided below:

Company/Organization:

Name:

Phone:

Email:

Street Address:

### 3.5 Estimated Dates and Sequence of Construction Activities

Construction activities are anticipated to occur over approximately four months and are expected to begin in fall 2023 with completion by spring/winter 2024.

Expected duration of construction is 9 to 12 months. Anticipated construction phasing is as follows:

Phase I:

1. Complete site clearing, establish perimeter erosion controls, and establish construction access.
2. Remove all stoplogs and boards from the main spillway.
3. Construct temporary construction access cofferdam (with culverts) spanning across the South River near the upstream end of the limit of disturbance to provide access for the park lagoon improvements.
4. Construct upstream lagoon inlet cofferdam.
5. Dewater the lagoon by use of lagoon's existing outlet structure.
6. Remove water wheel and stockpile on site for re-installation following the completion of Phase II.
7. Complete lagoon improvements within the Phase I work area as shown on The Project Drawing Set.
8. Remove Phase I cofferdams and restore flow to the lagoon.

### Phase II:

1. Construct Phase II upstream river channel cofferdamming and divert flow into lagoon.
2. Remove temporary construction access (including temporary bypass culverts) installed during Phase I.
3. Construct Phase II separation cofferdam.
4. Remove existing dam and fishway structure as indicated on the Project Drawing Set.
5. Construct river improvements within the Phase II work area.
6. Extend downstream cofferdam to support construction of the roughed channel bed and low-flow channel.
7. Upon substantial completion of the proposed improvements, temporarily remove a section of the upstream and downstream river channel cofferdams to allow flow testing.
8. Remove Phase II temporary cofferdams upon confirmation of the river channel and fishway observations.
9. Install stoplogs/boards at the inlet to the lagoon's outlet structure and install the sluice gate at the water wheel's outlet weir.
10. Place seed and install plantings at restoration locations. Restore any remaining disturbed areas within the Phase I and Phase II work areas as indicated on the contract documents.
11. Re-install the water wheel.
12. Restore areas disturbed by temporary construction access.

This construction sequence is subject to change based on construction methods or due to other unforeseen circumstances.

## **3.6 Allowable Non-Stormwater Discharges**

Allowable non-stormwater discharges present at the site may include the following:

- Water used to wash vehicles and equipment where no detergent is used.
- Water used to control dust.
- Construction dewatering water that has been treated by an appropriate control.
- Uncontaminated construction dewatering.

None of the aforementioned water sources are anticipated to result in a discharge from the site aside from construction dewatering, which will be treated in a temporary dewatering basin with a filter bag before being discharged off-site in a non-erosive manner.

## **3.7 Site Maps**

Relevant items for this section are addressed below.

- A Site Location Map is provided as Figure 1.
- Proposed work and erosion control measures are shown on the Project Drawing Set and will occur within the LOD.
- Off-site wetlands and applicable buffers are indicated on the Project Drawing Set.

- Any staging/storage areas will be managed as described herein. No polymers, flocculants, or other treatment chemicals will be used on-site.
- A portion of the Project Site is located within an area of estimated habitat of rare wildlife. A NHESP Habitats Map showing the approximate project location is provided as Figure 2 at the end of this report.

## 4 Documentation of Compliance with Other Federal Requirements

### 4.1 Endangered Species Protection

Following the process outlined in Appendix D, indicate under which criterion are you eligible for coverage under this permit.

- Criterion C:** Discharges not likely to result in any short- or long-term adverse effects to ESA-listed species and/or designated critical habitat. ESA-listed species and/or designated critical habitat(s) under the jurisdiction of the USFWS and/or NMFS are likely to occur in or near your site's "action area," and you certify to EPA that your site's discharges and discharge-related activities are not likely to result in any short- or long-term adverse effects to ESA-listed threatened or endangered species and/or designated critical habitat. This certification may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to result in any short- or long-term adverse effects to ESA-listed species and/or designated critical habitat. To certify your eligibility under this criterion, indicate 1) the ESA-listed species and/or designated habitat located in your "action area" using the process outlined in Appendix D of this permit; 2) the distance between the site and the listed species and/or designated critical habitat in the action area (in miles); and 3) a rationale describing specifically how short- or long-term adverse effects to ESA-listed species will be avoided from the discharges and discharge-related activities. (Note: You must include a copy of your site map from your SWPPP showing the upland and in-water extent of your "action area" with your NOI.)
- Check to confirm you have provided documentation in your SWPPP as required by CGP Appendix D.

#### Documentation:

According to the US Fish & Wildlife Service Official Species List (Project Code 2023-0039225) generated on January 30, 2023, through the Information for Planning and Consultation (IPaC) process for Veterans Memorial Park and South River Improvement Project, three federal endangered or threatened species were identified within the action area. These include:

1. Northern Long-Eared Bat (*Myotis septentrionalis*; Endangered)
2. Monarch Butterfly (*Danaus Plexippus*, Candidate)

### 4.2 Historical Preservation

#### Step 1

Do you plan on installing any of the following stormwater controls at your site? Check all that apply below, and proceed to Appendix E, Step 2.

- Dike
- Berm
- Catch Basin
- Pond
- Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)
- Culvert
- Other type of ground-disturbing stormwater control: precast outlet control structures.

### Step 2

If you answered yes in Step 1, have prior professional cultural resource surveys or other evaluations determined that historic properties do not exist, or have prior disturbances at the site have precluded the existence of historic properties?

YES  NO

- If yes, no further documentation is required for Section 3.2 of the Template.
- If no, proceed to Step 3.

### Step 3

If you answered no in Step 2, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties?  YES  NO

If yes, provide documentation of the basis for your determination.

A Phase 1B Archeological Survey was performed by Public Archaeology Laboratory in May 2015 which did not identify any archeological resources within impact areas associated with the project.

## 4.3 Safe Drinking Water Act Underground Injection Control Requirements

Do you plan to install any of the following controls? Check all that apply below.

- Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)
- Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow
- Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

None of the previously stated controls will be installed on the Project Site.

## 5 Erosion and Sediment Controls

Erosion and sediment controls will be installed including dewatering basins, temporary cofferdams, a temporary construction entrance temporary stone armor, erosion control blanketing, hay bale erosion checks, and biodegradable fiber rolls. Additional erosion and sediment controls may include light spraying of water on exposed soil to reduce dust (if needed). The erosion and sediment controls proposed for the site are consistent with the Massachusetts Erosion and Sedimentation Control Guidelines for Urban and Suburban Areas dated May 2003 (hereafter referred to as the Guidelines).

The contractor will be responsible for the implementation of the erosion and sediment control measures and will be responsible for ensuring that designated subcontractors correctly implement the pollution control measures. Dates when major grading occurs, construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated will be recorded and maintained as part of the SWPPP. The actual location of erosion and sediment control along with details and operation and maintenance plans for during construction are depicted on the provided Project Drawing Set.

### 5.1 Natural Buffers or Equivalent Sediment Controls

#### Buffer Compliance Alternatives

Are there any surface waters within 50 feet of your project's earth disturbances?  YES  NO

Check the compliance alternative that you have chosen:

- I qualify for one of the exceptions in Part 2. 2.1.b. (If you have checked this box, provide information on the applicable buffer exception that applies, below.)

#### Buffer Exceptions

Which of the following exceptions to the buffer requirements applies to your site?

- Buffer disturbances are authorized under a CWA Section 404 permit.  
 Buffer disturbances will occur for the construction of a water-dependent structure or water access area (e.g., pier, boat ramp, and trail).

The buffer disturbance will occur for the construction of the riverbank stabilization, nature-like fishway, and lagoon/park improvements.

### 5.2 Perimeter Controls

General perimeter controls will include biodegradable fiber rolls and temporary cofferdams installed in areas downgradient from construction activities. Additional erosion controls will be installed as necessary to protect adjacent areas from construction activity.



Installation of the perimeter controls will occur prior to the start of the construction activities and will remain in place until all areas of disturbance have been stabilized. Perimeter control details, locations, and specifications, along with an operation and maintenance plan for during construction have been provided on the Project Site Plans and technical specifications, attached separately.

### **5.3 Sediment Track-Out**

Sediment track-out to the surrounding areas around the Project Site will be minimized through the use of a temporary construction entrance at the site access point and periodic or as needed street sweeping of the adjacent paved roadway. Access on- and off-site will only be through the location of this construction entrance. The construction entrance detail and location are depicted on the Project Drawing Set.

In compliance with the requirement in CGP 2.2.4.d where sediment has been tracked-out from the site onto paved roads, sidewalks, or other paved areas outside of the site, deposited sediment will be removed by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Sediment tracked-out shall be removed by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Hosing or sweeping tracked-out sediment into any constructed or natural site drainage feature, storm drain inlet, or receiving water is prohibited.

### **5.4 Stockpiled Sediment or Soil**

Stockpiled sediment shall be placed in the designated area called out on the Project Drawing Set as temporary staging area and shall be graded to a maximum 2:1 slope and shaped to promote drainage of surface water. Stockpiled sediment not to be used within 15 days shall be stabilized with temporary vegetation or mulch after formation of stockpile to prevent erosion. Stockpiled sediment shall be surrounded with biodegradable coir rolls around the perimeter. Any excess soil will be properly disposed of off-site. Sediment stockpile details, locations, and specifications, along with an operations and maintenance plan for during construction have been provided on the Project Drawing Set.

In compliance with the requirement in CGP Part 2.2.5.d, hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any constructed or natural site drainage feature, storm drain inlet, or receiving water is prohibited.

### **5.5 Minimize Dust**

The contractor shall be responsible for controlling dust and wind erosion throughout the life of the contract. Dust control will include, but not be limited to, light spraying of water on exposed soils. Contractor shall control dust to prevent a hazard to traffic on adjacent roadways. In addition, periodic/as-needed street sweeping will be performed to remove sediment tracked onto adjacent roadway segments.

## **5.6 Minimize Disturbance of Steep Slopes**

Disturbed areas will be protected by installation of erosion control blanketing and establishing stable vegetation as soon as possible.

## **5.7 Topsoil**

During construction at the site, excavated topsoil will be stored in the temporary staging area until being reused on-site. Perimeter controls will be employed to protect stockpiled topsoil from erosion/sedimentation.

## **5.8 Soil Compaction**

Where possible, access and travel to the site will be restricted to the temporary construction entrance and existing roads, and low earth pressure vehicles will be used during construction of the project to avoid/minimize excessive compaction of soils at the site. Disturbed areas will be restored with stone armor, permanent structures, or vegetation, as indicated on the Project Drawing Set.

## **5.9 Dewatering Practices**

During construction, all water pumped from excavations will be discharged through one or more temporary dewatering basins with filter bags prior to flowing back into surrounding areas in a non-erosive manner. Temporary dewatering basin and filter bag details and locations are depicted on the Project Drawing Set.

In compliance with the requirements in CGP Part 2.4, backwash water shall be either hauled away for disposal or returned to the beginning of the treatment process. Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.

## **5.10 Periodic Street Sweeping**

Street sweeping will occur periodically or as needed during construction to remove sediment tracked onto the adjacent paved roadway. After construction activities have been completed, the adjacent roadway will be swept as needed to remove any remaining debris or sediment.

## **5.11 Tree Protection**

The LOD will be clearly marked prior to site clearing. Trees to be removed shall be identified with tape for review by the owner and engineer prior to construction. The contractor shall not remove trees until reviewed and approved by the owner. Trees and other existing vegetation not within the LOD shall be protected from damage.

## **5.12 Site Stabilization**

### Total Amount of Land Disturbance Occurring at Any One Time

- Five Acres or less*  
 *More than Five Acres*

#### 5.12.1 Temporary Stabilization

Areas left exposed to erosion for more than fourteen days shall be stabilized with temporary vegetated cover unless construction activity is to resume within twenty-one days. If areas requiring permanent seeding cannot be seeded within the recommended seeding dates stated on the Project Drawing Set, provide temporary biodegradable erosion control blanketing over those areas until permanent seeding can be completed within recommended dates.

#### 5.12.2 Permanent Stabilization

Permanent stabilization measures shall be installed where indicated on the Project Drawing Set. Permanent stabilization shall be implemented immediately upon completion of construction activities or within the recommended seeding dates in that portion of the site. Revegetation procedures shall comply with Project Drawing Set and methods outlined in the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas. A seed mixture for each type of vegetation is provided on the Project Drawing Set.

#### 5.12.3 Permanent Stabilization

In compliance with CGP Part 2.2.14(c) final stabilization has been achieved once the following criteria are met for any areas not covered by permanent structures:

- a. Establish uniform, perennial vegetation (i.e., evenly distributed, without large bare areas) to provide 70 percent or more of the vegetative cover native to local undisturbed areas; and/or
- b. Implement permanent non-vegetative stabilization measures to provide effective cover of any area of exposed soils.

## 6 Pollution Prevention Standards

### 6.1 Potential Sources of Pollution

All materials will be temporarily stored within the designated temporary staging area and will be transported to the site as needed. Staging areas will be located within the limit of work, outside of the drip lines of any trees on-site.

#### 6.1.1 Waste Storage and Disposal

Waste materials that may be generated on-site include vegetation, miscellaneous construction wastes, and packaging. All waste will be transported to an approved off-site disposal facility.

### 6.1.2 Construction Pollutant Generating Activity

Potential activities that may result in generation of pollutants due to construction activities are identified below.

**Table 5  
Construction Pollutant Generating Activities**

<b>Pollutant-Generating Activity</b>	<b>Pollutants or Pollutant Constituents (that could be discharged if exposed to stormwater)</b>
Concrete Pouring	Cement Concrete
Solid Waste Storage and Disposal	Construction debris
Truck/Equipment Fueling	Volatile Organic Compounds Petroleum Hydrocarbons
Site Regrading	Sediment
Trucks Traveling On- and Off-Site	Dust, Sediment
Clearing/Grubbing and Excavation	Sediment
Soil Stockpiling	Sediment

### 6.2 Spill Prevention and Response

The following practices will be followed for spill response and reporting:

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept near material staging/storage areas on-site.
- All spills will be cleaned up immediately after discovery.
- Spills of toxic or hazardous material in excess of reportable quantities will be reported to the appropriate State or local government agency, regardless of the size. As required under the provisions of the Clean Water Act, any spill or discharge entering the waters of the United States will be properly reported. The site operator will prepare a written record of any such spill and will provide notice to the owner within 24-hours of the occurrence of the spill.
- Spill prevention measures will be adjusted to include measures to prevent spills from recurring. A description of the spill, cause, and cleanup measures will also be included.
- Personnel responsible for the day-to-day site operations will be the spill prevention and cleanup coordinators. The names of responsible spill personnel will be maintained at the site.

- Within seven (7) calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release. State, tribal, or local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

### **6.2.1 State Requirements**

In accordance with the Commonwealth of Massachusetts reporting requirements of 310 CMR 40.0000, a release or threat of release equal to or greater than 10 gallons of oil to the environment will be reported to the Massachusetts Department of Environmental Protection (DEP) within a 2-hour period. Pursuant to 310 CMR 40.0311 (“Releases Which Require Notification Within Two Hours”), persons shall notify the DEP as soon as possible but not more than two hours after obtaining knowledge of “a sudden, continuous or intermittent release to the environment of any hazardous material that is listed at 310 CMR 40.1600 or that exhibits one or more of the characteristics described in 310 CMR 40.0347, when: (a) the quantity of the release is equal to or greater than the applicable Reportable Quantity.” [Oil has a Reportable Quantity of 10 gallons.

Any other release should be evaluated under the reporting requirements of the Massachusetts Contingency Plan (MCP). A DEP “Release Notification” form (BWSC-103), may be appropriate. A copy of the DEP “Release Notification Form” is included in *Appendix H*. The forms shall be mailed to the DEP office at the following address:

Massachusetts Department of Environmental Protection  
Southeast Regional Office  
20 Riverside Drive  
Lakeville, MA 02347

Main Phone: 508-946-2700  
Service Center/Permitting Assistance: 508-946-2714

### **6.2.2 Federal Requirements**

Discharges of oil to waters of the United States that cause a film, sheen, or deposition or violate applicable water quality standards are reportable to the National Response Center (800-424-8802). Waters of the United States are defined in 40 CFR Part 110 and include wetlands, interstate waters, and tributaries that lead to navigable waterways. Groundwater and soils are not included in this definition, but are covered by state spill reporting regulations.

## **6.3 Fueling and Maintenance of Equipment or Vehicles**

On-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the potential for leakage. Vehicles will be fueled on-site, and spill protection equipment will be kept

on-site at all times. Fueling operations conducted during adverse weather conditions will be prohibited or done under cover. Drip pans and absorbents will be used under or around leaky vehicles. Oil and oily wastes will be disposed of or recycled in accordance with other federal, state, tribal, or local requirements. Clean up spills or contaminated surfaces immediately, using dry clean up measures where possible, and eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge and do not clean surfaces by hosing the area down.

## **6.4 Washing of Equipment or Vehicles**

On-site equipment and vehicle washing will be monitored and only performed as required to keep adjacent roadways clean from sediment. No soaps or chemicals will be used; only water will be used to remove any required sediment or dirt that has collected on the equipment or vehicles. Washing of equipment and vehicles will occur within the biodegradable coir rolls surrounding the Project Site.

## **6.5 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes**

The contractor will be responsible for the storage and handling of all materials required for construction and for the disposal of waste materials generated from construction.

### **6.5.1 Good Housekeeping**

The following good housekeeping practices will be followed on-site during the construction project:

- All materials will be brought on-site as required and stored in designated staging/ storage areas, in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure;
- Products will be kept in their original containers with the original manufacturer's label;
- Substances will not be mixed with one another unless recommended by the manufacturer;
- Manufacturers' recommendations for proper use and disposal will be followed; and
- Personnel responsible for the day-to-day site operations will inspect the site daily to ensure proper use and disposal of materials.

### **6.5.2 Hazardous Products**

These practices are used to reduce the risks associated with hazardous materials:

- Products will be kept in original containers unless they are not re-sealable;
- Original labels and material safety data sheets (MSDSs) will be retained on-site;
- If surplus product must be disposed of, manufacturers' or local and State disposal requirements will be followed;
- Separate hazardous or toxic waste from construction and domestic waste;

- Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, tribal, or local requirements;
- Store all containers that will be stored outside within appropriately sized secondary containment to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from the storage areas;
- Hazardous or toxic waste will be disposed of in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, tribal, and local requirements;
- Spills will be cleaned up immediately, using dry clean-up methods where possible and used materials will be disposed of properly. Surfaces or spills will not be cleaned by hosing the area down. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

### **6.5.3 Product Specific Practices**

The following product specific practices will be followed on-site:

- Petroleum Products: On-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the potential for leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used on-site will be applied according to the manufacturer's recommendations.
- Trucks: All trucks, including, but not limited to, concrete trucks, and on-road trucks, will not be allowed to wash out or discharge surplus concrete, soil, or drum wash water on the site.

### **6.5.4 Building Products**

All building materials will be temporarily stored within designated temporary staging/equipment storage areas and will be transported to the site as needed. Staging areas will be located within the limit of work, and outside of the drip lines of any trees on- or off-site. Products and materials must be handled as described above in *Section 6.5.1, 6.5.2, and 6.5.3.*

### **6.5.5 Construction and Domestic Waste**

Waste containers of suitable size and number shall be provided on-site to contain all construction and domestic waste produced on-site. Waste container lids will be kept closed when not in use and will be closed at the end of the business day for those containers that are actively used throughout the day. For waste containers that do not have lids, cover (e.g., a tarp, plastic sheeting, temporary roof) will be provided to minimize exposure of wastes to precipitation. If container overflows, overflow area will be cleaned immediately.

### **6.5.6 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape**



## **Materials**

For any pesticides, herbicides, insecticides, fertilizers, and landscape materials used on site temporarily store them in the designated temporary staging/equipment storage area covered to prevent these chemicals from coming into contact with rainwater, or a similarly effective method designed to prevent the discharge of pollutants from these areas. Follow all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label.

### **6.5.7 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals**

Diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals will be stored on-site within the staging/storage areas. Cover to prevent these containers from coming into contact with rainwater, or a similarly effective means designed to prevent the discharge of pollutants will be provided to prevent discharge from these areas. Spills will be cleaned up immediately, using dry clean-up methods where possible, and disposed of properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

### **6.5.8 Sanitary Waste**

Portable toilets will be positioned to ensure stabilization so that they cannot be tipped or knocked over. It will be the contractor's responsibility to maintain and ensure the portable toilets are emptied as required.

## **6.6 Washing of Applicators and Containers Used for Paint, Concrete or Other Materials**

Washing of applicators and containers used for concrete, and other materials used on site will not be allowed to wash out or discharge surplus concrete, soil, or drum wash water on the Project Site. Do not dump liquid wastes in storm sewers or waters of the U.S. Dispose of liquid wastes in accordance with applicable requirements. Remove and dispose of hardened concrete waste consistent with handling of other construction wastes.

## **6.7 Fertilizers**

The contractor shall conduct a soil nutrient analysis for existing and imported topsoil to be placed on the Project Site. The analysis shall be performed by an acceptable Soil-Testing Laboratory, like University of Massachusetts Amherst Soil Testing Laboratory or equivalent, to determine nutrients, pH, and other deficiencies by providing numerical test results and recommendations for the fertilizers to be added to the existing or imported topsoil. The testing laboratory shall be provided information on the surround environment of the Project Site. Fertilizers applied to the site shall conform to the requirements out lined in Section 2.3.5 of the 2017 CGP.

## **7 Inspection Procedures**

Inspections will include areas of the Project Site disturbed by construction activity, areas used for storage of materials that are exposed to precipitation, areas of stormwater flow within the site, all points of discharge from the site, and all location where stabilization measure have been implemented. Inspectors will look for evidence of, or the potential for, discharge of pollutants, proper operation of sedimentation and erosion control measures, stormwater discharge locations to ascertain whether erosion control measures are effective in preventing significant impacts to surface waters, and locations where vehicles enter or exit the site for evidence of off-site sediment tracking.

The inspector shall have the following responsibilities:

- Inspecting erosion and sediment controls and pollution prevention controls to ensure they are installed and working properly to minimize pollutant discharge, ensure that there is no sedimentation or siltation occurring, and determine if any erosion and sediment control needs to be repaired, replaced, or maintained;
- Check for conditions that could lead to spills, leaks, or other accumulations of pollutants on-site;
- Identify locations where additional, new or modified stormwater controls are necessary to meet the requirements of the 2022 CGP;
- Check for evidence of erosion and sediment deposits that have occurred at discharge points on-site (follow procedures laid out in Section 4.1 of the 2022 CGP if discharge occurs during inspection);
- Identify any incidents of noncompliance observed;
- If required, initiate corrective action under Part 5.2 of the 2022 CGP.

## **7.1 Personnel Responsible for Inspections**

Inspections will be performed by qualified personnel (a person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact stormwater).

## **7.2 Inspection Schedule**

### **7.2.1 Inspection Frequency**

Inspections will be conducted at least once every 7 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period in accordance with the CGP Part 4.3.1. Keep record of weather station readings appropriate for the Project Site location that triggered an inspection.

If applicable, dewatering inspections shall be conducted once per day on which the discharge of dewatering occurs. Refer to Section 7.2.3 of this SWPPP for applicability.

### **7.2.2 Reductions in Inspection Frequency – Linear Construction Site**

The inspection frequency may be reduced in accordance with the CGP Part 4.4.1.b as follows:

- Inspection may be reduced to twice per month for the first month, no more than 14 calendar days apart, if any area of the site stabilization has been completed as described above in Section 5.13.3. After the first month, inspect once more within 24 hours of the occurrence of a storm event that produces 0.25 inches of rain or more within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. If there are no issues or evidence of stabilization problems, you may suspend further inspections. If “wash-out” of stabilization materials and/or sediment is observed, following re-stabilization, inspections must resume at the inspection frequency required in Section 7.2.1. Inspections must continue until final stabilization is visually confirmed following a storm event that produces 0.25 inches of rain or more within a 24-hour period.
- If construction activities have been suspended due to frozen conditions, inspection may be temporarily suspended until thawing conditions begin to occur, if and only if:
  - a) Runoff is unlikely due to continuous frozen condition that will continue on-site for at least 3 months based on historic seasonal averages. If weather conditions make discharge likely, inspection must resume to every 7 calendar days.
  - b) Land disturbance has been suspended.
  - c) All disturbed areas of the site have been temporarily or permanently stabilized as described above in *Section 5.13*.

### **7.2.3 Turbidity Benchmark Monitoring for Dewatering Discharges**

Benchmark monitoring requirements specified in CGP Part 3.3 shall be followed, as outlined below.

- Dewatering inspections shall be conducted during the discharge once per day on which the discharge occurs.
- A minimum of one turbidity sample per day shall be collected from each discharge point, on any day there is a dewatering discharge.
- The turbidity sampling procedure in CGP Part 3.1.1 shall be followed. Compare the weekly average turbidity monitoring results to the 50 NTU benchmark (or alternate benchmark if approved by EPA).
- If the weekly average exceeds the benchmark, take follow-up corrective action in accordance with CGP Part 5.2.2.
- Report all weekly average turbidity monitoring results on a quarterly basis via NeT-CGP no later than 30 days following the end of each monitoring quarter.

The inspection frequency (*Section 7.2.1*) still applies to all other portions of the site, unless the site is affected the reduced frequency in *Section 7.2.2*.

### **7.3 Inspection Forms**

An inspection report will be completed within 24 hours of completing each inspection. An example copy of a blank Inspection and Maintenance Report Form is provided as *Appendix D*. Inspection reports must be signed in accordance with Part 4.7 of the 2022 CGP. A record of each inspection and of any remedial actions taken must be retained as part of the SWPPP for at least three years from the date that permit coverage expires or is terminated. Inspection reports must be signed in accordance with the 2022 CGP. A copy of inspection reports will be kept on the project site in an easily assessable location.

### **7.4 Delegation of Authority**

A signed copy of the Delegation of Authority and individual(s) who have been delegated authority to sign inspection reports can be found in *Appendix J*.

### **7.5 Inspection by EPA**

The EPA or an authorized representative of the EPA must be allowed on-site to conduct inspection at a reasonable time to conduct any of the activities as described within Section 4.8 of the 2022 CGP.

## **8 Corrective Actions**

Corrective actions are actions taken to:

- Repair, modify, or replace any stormwater controls used at the sit;
- Clean up and properly dispose of spills, releases, or other deposits
- Remedy a permit violation

It is the responsibility of the contractor to execute and insure the required corrective actions have been performed within the requirements of the 2022 CGP and this SWPPP.

•  
You must comply with any corrective actions required by EPA as a result of permit violations found during an inspection carried out under Part 5 of the 2022 GCP.

### **8.1 Requirements for Taking Corrective Action**

In all circumstances, reasonable steps must be taken to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events. When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day.

When the problem requires a new or replacement control or significant repair, install the new or modified control and make it operational, or complete the repair, by no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7-day timeframe and document your schedule for installing the stormwater control(s) and making it operational as soon as feasible after the 7-day timeframe.

Where these actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within seven (7) calendar days of completing this work.

You must take corrective action to address any of the following conditions identified at your site

- A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with CGP Part 2.1.4c, you find it necessary to repeatedly (i.e., three (3) or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under CGP Part 4.7.1c that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under CGP Part 2.1.4); or
- A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
- Your discharges are not meeting applicable water quality standards;
- A prohibited discharge has occurred (see CGP Part 1.3); or
- During discharge from site dewatering activities:
  - The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to CGP Part 3.3.2b); or
  - You observe or you are informed by EPA, State, or local authorities of the presence of the conditions specified in CGP Part 4.6.3e.

## 8.2 Corrective Action Report

For each corrective action taken in accordance with this CGP Part 5.4, the following must be recorded in a corrective action log:

- Within 24 hours of identifying the corrective action condition, document the specific condition and the date and time it was identified.
- Within 24 hours of completing the corrective action (in accordance with the deadlines in CGP Part 5.2), document the actions taken to address the condition, including whether any SWPPP modifications are required.
- Each entry into the corrective action log must be signed by the operator's signatory

The corrective action log must be maintained in the contractor's records, on-site or at an easily accessible location, and made available upon request from the EPA. They must be retained for at least 3 years from the date the permit coverage expires or is terminated. A sample copy of the corrective action log can be found in *Appendix E*.

## 9 Plan Updates

In accordance with CGP Part 7.4, the SWPPP, including the site map, must be amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants to the waters of the United States that has not been previously addressed in the SWPPP. The SWPPP must be amended if during inspections or investigations by site staff, or by local, state, or federal officials, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in storm water discharges from the construction site on the results of an inspection, the SWPPP must be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP must be completed within seven (7) calendar days following the occurrence of any conditions required for the amendment. Implementation of these additional or modified BMPs must be accomplished before the next storm event or whenever practicable.

Modification must be made by an authorized person. Records must be kept showing all dates of all SWPPP modifications. The records must include the name of the person authorizing each change and a brief summary of all changes. All operators who may be impacted by the changes must be notified. A copy of the SWPPP Amendment Log can be found in *Appendix F*.

## 10 Plan Review and Availability

In accordance with CGP Part 7.3, a current copy of the SWPPP must be retained at the construction site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by EPA or other tribal or regulatory agencies. The current copy of the SWPPP and pertinent information shall be available from the date of commencement of construction activities to the date of final stabilization.

### 10.1 Requirement to Post a Notice of Permit Coverage

A sign or other notice of permit coverage must be conspicuously posted at a safe, publicly accessible location in close proximity to the construction site generally near the main entrance of the construction site. If displaying near the main entrance is infeasible, the notice can be posted in a local public building such as the town hall or public library.

At a minimum, the notice must include:

- The NPDES ID (i.e., permit tracking number assigned to your NOI and the EPA webpage where a copy of the NOI can be found (<https://permitsearch.epa.gov/epermit-search/ui/search>));

- A contact name and phone number for obtaining additional construction site information;
- The Uniform Resource Locator (URL) for the SWPPP (if available), or the following statement: “If you would like to obtain a copy of the Stormwater Pollution Prevention Plan (SWPPP) for this site, contact the EPA Region 1 Office - Marian Spahn at [spahn.marian@epa.gov](mailto:spahn.marian@epa.gov) / 617-918-1038;” and 2
- The following statement “If you observe indicators of stormwater pollutants in the discharge or in the receiving water, contact the EPA through the following website: <https://www.epa.gov/enforcement/report-environmental-violations>.”

## 11 Training

### 11.1 General Training Requirements for Stormwater Team Members

Prior to the commencement of construction activities, all persons assigned to the stormwater team shall understand the requirements of this permit and their specific responsibilities with respect to those requirements, including the following related to the scope of their job duties:

- The permit requirements and deadlines associated with installation, maintenance, and removal of stormwater controls, as well as site stabilization;
- The location of all stormwater controls on the site required by this permit and how they are to be maintained;
- The proper procedures to follow with respect to the permit’s pollution prevention requirements; and
- When and how to conduct inspections, record applicable findings, and take corrective actions. Specific training requirements for persons conducting site inspections are included in CGP Part 6.3.

All activities on the site shall comply with the requirements of this permit. Documentation of formal training for subcontractors or other outside service providers is not required (unless the subcontractors or outside service providers are responsible for conducting the inspections required in CGP Part 4, in which case documentation shall be consistent with CGP Part 7.2.2). Personnel shall understand any requirements of this permit that may be affected by the work they are subcontracted to perform.

### 11.2 Training Requirements for Persons Conducting Inspections

For projects that receive coverage under this permit on or after February 17, 2023, to be considered a qualified person under CGP Part 4.1 for conducting inspections under CGP Part 4, you must, at a minimum, either:



1. Have completed the EPA construction inspection course developed for this permit and have passed the exam; or
2. Hold a current valid construction inspection certification or license from a program that, at a minimum, covers the following:
  - a. Principles and practices of erosion and sediment control and pollution prevention practices at construction sites;
  - b. Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites; and
  - c. Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of CGP Part 4.

For projects that receive coverage under this permit prior to February 17, 2023, any personnel conducting site inspections pursuant to CGP Part 4 on the site must, at a minimum, be a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of the CGP.

A sample form for documentation for the completion of training can be found in *Appendix I*. The contractor is responsible for filling out and maintaining the documentation for the completion of training.

## 12 Termination of Coverage

A Notice of Termination (NOT) must be submitted to the EPA after one or more of the following conditions have been met:

- Final stabilization has been achieved in accordance with Part 2.2.14.c of the CGP and construction support activities covered under the CGP have been met and the requirement outlined in Section 8.2.1 of the 2022 GCP have been met. Determination of when final stabilization has been achieved will be made in conjunction with the Engineer.
- Another operator has assumed control over and has submitted a NOI and obtained coverage under the CGP for all areas of the site that have not been finally stabilized.
- Coverage under an individual or alternative general NPDES permit has been obtained.

The NOT must be submitted within 30 days of one of the above conditions being met. Authorization to discharge terminates at midnight of the day the NOT is signed. Submission of the NOT must be done through the EPA's NPDES eReporting Tool (NeT). EPA may grant the use of the paper NOT if there is an issue with uploading the application through the eNOI system. A copy of the NOT can be found within 2022 CGP located in *Appendix B*.

### 13 Certification and Notification

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

Name: Nils S. Wiberg, P.E. Title: Associate

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

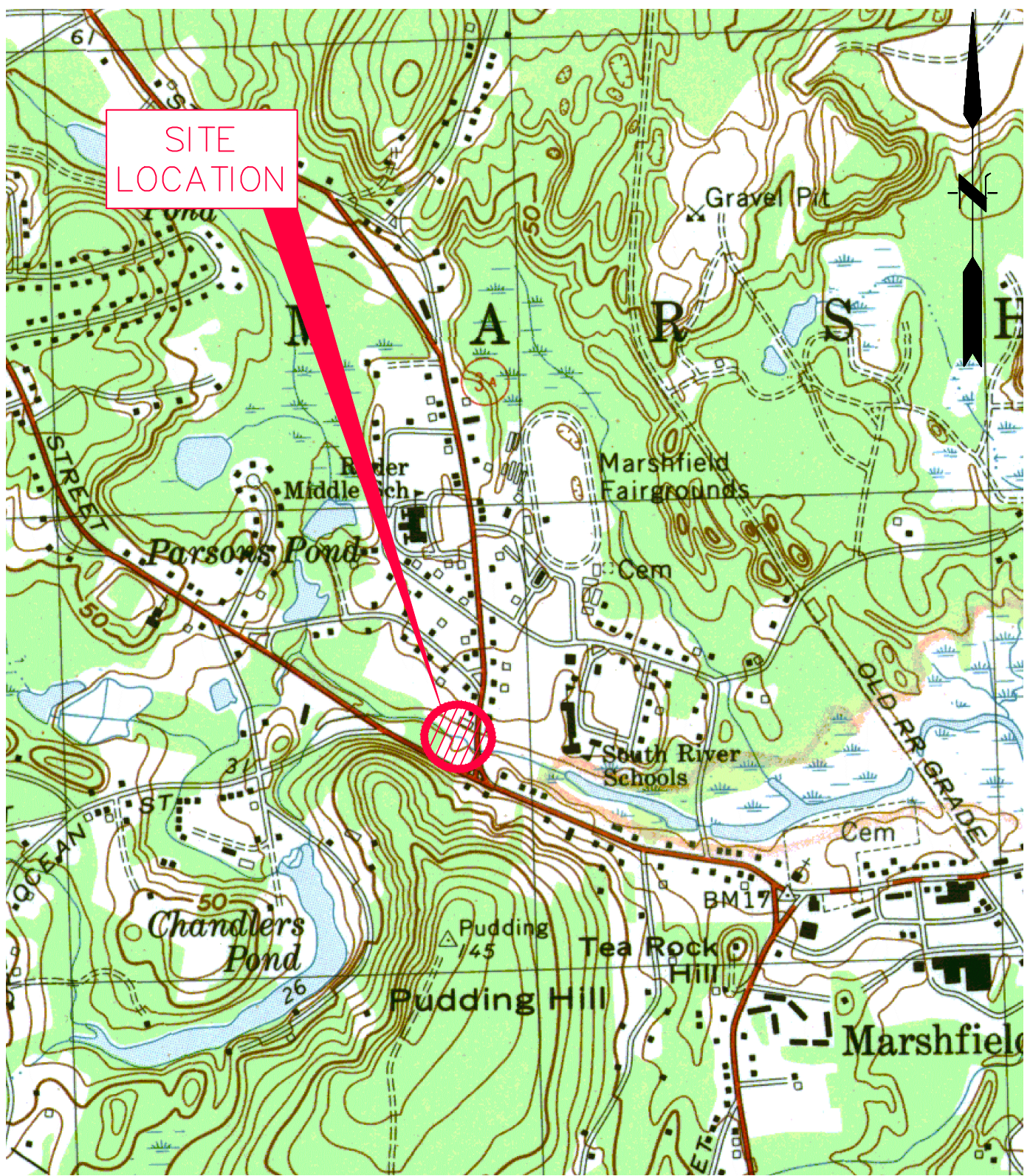
## Figures

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USGS Site Location Map  
NHESP Habitats Map



File Path: J:\DWG\2018\10319\A23\Civil\Figures\20180319\_A23\_LOC01.dwg Layout: FIG 1 Plotted: Fri, February 12, 2021 - 7:23 AM User: dnewhall  
 Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 CTB File: FO.STB  
 LAYER STATE:



**REFERENCE:**

INFORMATION ON THIS PLAN WAS TAKEN FROM THE MASS.GOV WEB SITE. SCANNED 1:25,000 USGS TOPOGRAPHIC QUAD IMAGES, 2014.

<b>SCALE:</b>	
HORZ.:	1" = 1000'
VERT.:	
<b>DATUM:</b>	
HORZ.:	
VERT.:	
<b>GRAPHIC SCALE</b>	



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TOWN OF MARSHFIELD

LOCATION MAP

SOUTH RIVER FISH PASSAGE AND VETERANS  
 MEMORIAL PARK IMPROVEMENTS PROJECT  
 MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319\_A23  
 DATE: FEBRUARY 2021

**FIG. 1**



Figure 2 – Mass DEP Priority Resources Map





## **Appendix A**

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Project Drawing Set

## Appendix B

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Copy of 2022 CGP



**National Pollutant Discharge Elimination System (NPDES)  
Construction General Permit (CGP) for Stormwater Discharges from  
Construction Activities**

In compliance with the provisions of the Clean Water Act, 33 U.S.C. § 1251 et. seq., (hereafter CWA), as amended by the Water Quality Act of 1987, P.L. 100-4, "operators" of construction activities (defined in Appendix A) that meet the requirements of Part 1.1 of this National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), are authorized to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of construction activities" (see Appendix A) until one of the conditions for terminating CGP coverage has been met (see Part 8.2).

This permit becomes effective on 12:00 am, February 17, 2022.

This permit and the authorization to discharge expire at 11:59pm, February 16, 2027.

Signed and issued this 18 day of January 2022

**DEBORAH SZARO** Digitally signed by DEBORAH SZARO  
Date: 2022.01.18 08:31:14 -05'00'

Deborah Szaro,  
Acting Regional Administrator, EPA Region 1.

Signed and issued this 18 day of January 2022

**JAVIER LAUREANO** Digitally signed by JAVIER LAUREANO  
Date: 2022.01.18 11:21:16 -05'00'

Javier Laureano,  
Director, Water Division, EPA Region 2.

Signed and issued this 18 day of January 2022

**CARMEN GUERRERO PEREZ** Digitally signed by CARMEN GUERRERO PEREZ  
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Carmen Guerrero-Perez,  
Director, Caribbean Environmental Protection Division, EPA Region 2.

Signed and issued this 18 day of January 2022

**CATHERINE LIBERTZ** Digitally signed by CATHERINE LIBERTZ  
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Catherine A. Libertz,  
Director, Water Division, EPA Region 3.

Signed and issued this 18 day of January 2022

**JEANEANNE GETTLE** Digitally signed by JEANEANNE GETTLE  
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Jeaneanne Gettle,  
Director, Water Division, EPA Region 4.

Signed and issued this 18 day of January 2022

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Tera Fong,  
Director, Water Division, EPA Region 5.

Signed and issued this 18 day of January 2022

**CHARLES MAGUIRE** Digitally signed by CHARLES MAGUIRE  
DN: cn=US, o=U.S. Government, ou=Environmental Protection Agency, cn=CHARLES MAGUIRE, o.9.2342.19200300.100.1.1#68001003650036  
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Charles W. Maguire,  
Director, Water Division, EPA Region 6.

Signed and issued this 18 day of January 2022

**JEFFERY ROBICHAUD** Digitally signed by JEFFERY ROBICHAUD  
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Jeffery Robichaud,  
Director, Water Division, EPA Region 7.

Signed and issued this 18 day of January 2022

**DARCY OCONNOR** Digitally signed by DARCY OCONNOR  
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Darcy O'Connor,  
Director, Water Division, EPA Region 8.

Signed and issued this 18 day of January 2022

**TOMAS TORRES** Digitally signed by TOMAS TORRES  
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Tomás Torres,  
Director, Water Division, EPA Region 9.

Signed and issued this 18 day of January 2022

**DANIEL OPALSKI** Digitally signed by DANIEL OPALSKI  
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Daniel D. Opalski,  
Director, Water Division, EPA Region 10.

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## **1 HOW TO OBTAIN COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT (CGP)**

To be covered under this permit, you must meet the eligibility conditions and follow the requirements for obtaining permit coverage in this Part.

### **1.1 ELIGIBILITY CONDITIONS**

**1.1.1** You are an “operator” of a construction site for which discharges will be covered under this permit. For the purposes of this permit and in the context of stormwater discharges associated with construction activity, an “operator” is any party associated with a construction project that meets either of the following two criteria:

- a.** The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- b.** The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Where there are multiple operators associated with the same project, all operators must obtain permit coverage.<sup>1</sup> Subcontractors generally are not considered operators for the purposes of this permit.

#### **1.1.2 Your site’s construction activities:**

- a.** Will disturb one or more acres of land, or will disturb less than one acre of land but are part of a common plan of development or sale (as defined in Appendix A) that will ultimately disturb one or more acres of land; or
- b.** Have been designated by EPA as needing permit coverage under 40 CFR § 122.26(a)(1)(v) or 40 CFR § 122.26(b)(15)(ii);

**1.1.3** Your site is located in an area where EPA is the permitting authority and where coverage under this permit is available (see Appendix B);

#### **1.1.4 Discharges from your site are not:**

- a.** Already covered by a different NPDES permit for the same discharge; or
- b.** In the process of having coverage under a different NPDES permit for the same discharge denied, terminated, or revoked.<sup>2, 3</sup>

**1.1.5** You can demonstrate you meet one of the criteria in the Endangered Species Protection section of the Notice of Intent (NOI) that you submit for coverage under this permit, per Part 1.4, with respect to the protection of Federally listed endangered or threatened species and Federally designated critical habitat under the Endangered Species Act

---

<sup>1</sup> If the operator of a “construction support activity” (see Part 1.2.1c) is different than the operator of the main site, that operator must also obtain permit coverage. See Part 7.1 for clarification on the sharing of permit-related functions between and among operators on the same site and for conditions that apply to developing a SWPPP for multiple operators associated with the same site.

<sup>2</sup> Parts 1.1.4a and 1.1.4b do not include sites currently covered under the 2017 CGP that are in the process of obtaining coverage under this permit, nor sites covered under this permit that are transferring coverage to a different operator.

<sup>3</sup> Notwithstanding a site being made ineligible for coverage under this permit because it falls under the description of Parts 1.1.4a or 1.1.4b, above, EPA may waive the applicable eligibility requirement after specific review if it determines that coverage under this permit is appropriate.

(ESA). If the EPA Regional Office grants you a waiver from electronic reporting per Part 1.4.2, you must complete the ESA worksheet in Appendix D to demonstrate you meet one of the criteria and submit it with your paper NOI (Appendix I).

- 1.1.6** You have completed the screening process in Appendix E relating to the protection of historic properties; and
- 1.1.7** You have complied with all requirements in Part 9 imposed by the applicable State, Indian Tribe, or Territory in which your construction activities and/or discharge will occur.
- 1.1.8** For "new sources" (as defined in Appendix A) only:
  - a.** EPA has not, prior to authorization under this permit, determined that discharges from your site will not meet applicable water quality standards. Where such a determination is made prior to authorization, EPA may notify you that an individual permit application is necessary. However, EPA may authorize your coverage under this permit after you have included appropriate controls and implementation procedures designed to bring your discharge into compliance with this permit, specifically the requirement to meet water quality standards. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3, will result in discharges that meet applicable water quality standards.
  - b.** Discharges from your site to a Tier 2, Tier 2.5, or Tier 3 water<sup>4</sup> will not lower the water quality of the applicable water. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not lower the water quality of such waters.
- 1.1.9** If you plan to add "cationic treatment chemicals" (as defined in Appendix A) to stormwater and/or authorized non-stormwater prior to discharge, you may not submit your NOI until you notify your applicable EPA Regional Office (see Appendix J) in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will result in discharges that meet applicable water quality standards.

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<sup>4</sup> Note: Your site will be considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first receiving water to which you discharge is identified by a State, Tribe, or EPA as a Tier 2, Tier 2.5, or Tier 3 water. For discharges that enter a storm sewer system prior to discharge, the first receiving water to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. The current list of Tier 2, Tier 2.5, and Tier 3 waters located in the areas eligible for coverage under this permit can be found at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>. You can also use EPA's Discharge Mapping Tool (<https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools>) to assist you in identifying whether any receiving waters to which you discharge are listed as impaired (and the pollutant for which it is impaired) and whether an approved total maximum daily load (TMDL) exists for that waterbody.

**1.2 TYPES OF DISCHARGES AUTHORIZED<sup>5</sup>**

- 1.2.1** The following stormwater discharges are authorized under this permit provided that appropriate stormwater controls are designed, installed, and maintained (see Parts 2 and 3):
- a.** Stormwater discharges, including stormwater runoff, snowmelt runoff, and surface runoff and drainage, associated with construction activity under 40 CFR § 122.26(b)(14) or § 122.26(b)(15)(i);
  - b.** Stormwater discharges designated by EPA as needing a permit under 40 CFR § 122.26(a)(1)(v) or § 122.26(b)(15)(ii);
  - c.** Stormwater discharges from on or off-site construction support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided that:
    - i.** The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
    - ii.** The support activity is not a commercial operation, nor does it serve multiple unrelated construction sites;
    - iii.** The support activity does not continue to operate beyond the completion of the construction activity at the site it supports; and
    - iv.** Stormwater controls are implemented in accordance with Part 2 and Part 3 for discharges from the support activity areas; and
  - d.** Stormwater discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining.
- 1.2.2** The following non-stormwater discharges associated with your construction activity are authorized under this permit provided that, with the exception of water used to control dust and to irrigate vegetation in stabilized areas, these discharges are not routed to areas of exposed soil on your site and you comply with any applicable requirements for these discharges in Parts 2 and 3:
- a.** Discharges from emergency fire-fighting activities;
  - b.** Fire hydrant flushings;
  - c.** Landscape irrigation;
  - d.** Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;
  - e.** Water used to control dust;
  - f.** Potable water including uncontaminated water line flushings;

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<sup>5</sup> See "Discharge" as defined in Appendix A. Note: Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA Section 402(k) by disclosure to EPA, State, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the SWPPP, or during an inspection.

- g.** External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (as defined in Appendix A) (e.g., paint or caulk containing polychlorinated biphenyls (PCBs));
  - h.** Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. You are prohibited from directing pavement wash waters directly into any receiving water, storm drain inlet, or constructed or natural site drainage features, unless the feature is connected to a sediment basin, sediment trap, or similarly effective control;
  - i.** Uncontaminated air conditioning or compressor condensate;
  - j.** Uncontaminated, non-turbid discharges of ground water or spring water;
  - k.** Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water; and
  - l.** Uncontaminated construction dewatering water<sup>6</sup> discharged in accordance with Part 2.4.
- 1.2.3** Also authorized under this permit are discharges of stormwater listed above in Part 1.2.1, or authorized non-stormwater discharges listed above in Part 1.2.2, commingled with a discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES permit authorization.

### **1.3 PROHIBITED DISCHARGES<sup>7</sup>**

The discharges listed in this Part are prohibited outright or authorized only under the identified conditions. To prevent the discharges in Parts 1.3.1 through 1.3.5, operators must comply with the applicable pollution prevention requirements in Part 2.3 or ensure the discharge is authorized by another NPDES permit consistent with Part 1.2.3 for commingled discharges.

- 1.3.1** Wastewater from washout of concrete, unless managed by an appropriate control as described in Part 2.3.4;
- 1.3.2** Wastewater from washout and/or cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
- 1.3.3** Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
- 1.3.4** Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and
- 1.3.5** Toxic or hazardous substances from a spill or other release.

<sup>6</sup> EPA notes that operators may need to comply with additional procedures to verify that the dewatering discharge is uncontaminated. Operators should review Part 9 to determine if any of these requirements apply to their discharge and should ensure that they have complied with any State, Tribal, or local dewatering requirements that apply.

<sup>7</sup> EPA includes these prohibited non-stormwater discharges here as a reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2. Any unauthorized non-stormwater discharges must be covered under an individual permit or alternative general permit.



## 1.4 SUBMITTING YOUR NOTICE OF INTENT (NOI)

All “operators” (as defined in Appendix A) associated with your construction site who meet the Part 1.1 eligibility conditions, and who seek coverage under this permit, must submit to EPA a complete and accurate NOI in accordance with the deadlines in Table 1 prior to commencement of construction activities (as defined in Appendix A).

**Exception:** If you are conducting construction activities in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services), and the related work requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services, you may discharge on the condition that a complete and accurate NOI is submitted within 30 calendar days after commencing construction activities (see Table 1) establishing that you are eligible for coverage under this permit. You must also provide documentation in your Stormwater Pollution Prevention Plan (SWPPP) to substantiate the occurrence of the public emergency pursuant to Part 7.2.3i.

### 1.4.1 Prerequisite for Submitting Your NOI

You must develop a SWPPP consistent with Part 7 before submitting your NOI for coverage under this permit.

### 1.4.2 How to Submit Your NOI

You must use EPA’s NPDES eReporting Tool (NeT) to electronically prepare and submit your NOI for coverage under the 2022 CGP unless you received a waiver from your applicable EPA Regional Office.

To access NeT, go to <https://cdx.epa.gov/cdx>.

Waivers from electronic reporting may be granted based on one of the following conditions:

- a. If your operational headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission; or
- b. If you have limitations regarding available computer access or computer capability.

If the EPA Regional Office grants you approval to use a paper NOI, and you elect to use it, you must complete the form in Appendix H.

### 1.4.3 Deadlines for Submitting Your NOI and Your Official Date of Permit Coverage

Table 1 provides the deadlines for submitting your NOI and the official start date of your permit coverage, which differ depending on when you commence construction activities.

**Table 1 NOI Submittal Deadlines and Official Start Date for Permit Coverage.**

Type of Operator	NOI Submittal Deadline <sup>8</sup>	Permit Authorization Date <sup>9</sup>
<b>Operator of a new site</b> (i.e., a site where construction activities commence on or after February 17, 2022)	At least 14 calendar days before commencing construction activities.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
<b>Operator of an existing site</b> (i.e., a site with 2017 CGP coverage where construction activities commenced prior to February 17, 2022)	No later than May 18, 2022.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.  Provided you submit your NOI no later than May 18, 2022, your authorization under the 2017 CGP is automatically continued until you have been granted coverage under this permit or an alternative NPDES permit, or coverage is otherwise terminated.
<b>New operator of a permitted site</b> (i.e., an operator that through transfer of ownership and/or operation replaces the operator of an already permitted construction site that is either a “new site” or an “existing site”)	At least 14 calendar days before the date the transfer to the new operator will take place.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
<b>Operator of an “emergency-related project”</b> (i.e., a project initiated in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services)	No later than 30 calendar days after commencing construction activities.	You are considered provisionally covered under the terms and conditions of this permit immediately, and fully covered 14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.

<sup>8</sup> If you miss the deadline to submit your NOI, any and all discharges from your construction activities will continue to be unauthorized under the CWA until they are covered by this or a different NPDES permit. EPA may take enforcement action for any unpermitted discharges that occur between the commencement of construction activities and discharge authorization.

<sup>9</sup> Discharges are not authorized if your NOI is incomplete or inaccurate or if you are not eligible for permit coverage.

#### 1.4.4 Modifying your NOI

If after submitting your NOI you need to correct or update any fields, you may do so by submitting a "Change NOI" form using NeT. Waivers from electronic reporting may be granted as specified in Part 1.4.2. If the EPA Regional Office has granted you approval to submit a paper NOI modification, you may indicate any NOI changes on the same NOI form in Appendix H.

When there is a change to the site's operator, the new operator must submit a new NOI, and the previous operator must submit a Notice of Termination (NOT) form as specified in Part 8.3.

The following modifications to an NOI form will result in a 14-day review process:

- Changes to the name of the operator;
- Changes to the project or site name;
- Changes to the estimated area to be disturbed;
- Changes to the name of the receiving water<sup>10</sup>, or additions to the applicable receiving waters;
- Changes to eligibility information related to endangered species protection or historic preservation;
- Changes to information provided related to the use of chemical treatment at your site; and
- Changes to answers provided regarding the demolition of structures over 10,000 square feet of floor space built or renovated before January 1, 1980.

During the 14-day review process, you may continue to operate based on the information provided in your original NOI, but you must wait until the review period has ended before you may commence or continue activities on any portion of your site that would be affected by any of the above modifications, unless EPA notifies you that the authorization is delayed or denied.

#### 1.4.5 Your Official End Date of Permit Coverage

Once covered under this permit, your coverage will last until the date that:

- a. You terminate permit coverage consistent with Part 8; or
- b. You receive permit coverage under a different NPDES permit or a reissued or replacement version of this permit after expiring on February 16, 2027; or
- c. You fail to submit an NOI for coverage under a reissued or replacement version of this permit before the deadline for existing construction sites where construction activities continue after this permit has expired.

#### 1.5 REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE

You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so it is visible from the public road that is nearest to the active part of the construction

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<sup>10</sup> As defined in Appendix A, a "receiving water" is "a "Water of the United States" as defined in 40 CFR §122.2 into which the regulated stormwater discharges.

site, and it must use a font large enough to be readily viewed from a public right-of-way.<sup>11</sup> At a minimum, the notice must include:

- a. The NPDES ID (i.e., permit tracking number assigned to your NOI and the EPA webpage where a copy of the NOI can be found (<https://permitsearch.epa.gov/epermit-search/ui/search>));
- b. A contact name and phone number for obtaining additional construction site information;
- c. The Uniform Resource Locator (URL) for the SWPPP (if available), or the following statement: "If you would like to obtain a copy of the Stormwater Pollution Prevention Plan (SWPPP) for this site, contact the EPA Regional Office at [include the appropriate CGP Regional Office contact information found at <https://www.epa.gov/npdes/contact-us-stormwater#regional>];" and
- d. The following statement "If you observe indicators of stormwater pollutants in the discharge or in the receiving water, contact the EPA through the following website: <https://www.epa.gov/enforcement/report-environmental-violations>."

## 2 TECHNOLOGY-BASED EFFLUENT LIMITATIONS

You must comply with the following technology-based effluent limitations in this Part for all authorized discharges.<sup>12</sup>

### 2.1 GENERAL STORMWATER CONTROL DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS

You must design, install, and maintain stormwater controls required in Parts 2.2, 2.3, and 2.4 to minimize the discharge of pollutants in stormwater from construction activities.<sup>13</sup> To meet this requirement, you must:

#### 2.1.1 Account for the following factors in designing your stormwater controls:

- a. The expected amount, frequency, intensity, and duration of precipitation;<sup>14</sup>
- b. The nature of stormwater runoff (i.e., flow) and run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. You must design stormwater controls to control stormwater volume, velocity, and peak flow rates to minimize discharges of pollutants in stormwater and to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points; and
- c. The soil type and range of soil particle sizes expected to be present on the site.

<sup>11</sup> If the active part of the construction site is not visible from a public road, then place the notice of permit coverage in a position that is visible from the nearest public road and as close as possible to the construction site.

<sup>12</sup> For each of the effluent limits in Part 2, as applicable to your site, you must include in your SWPPP (1) a description of the specific control(s) to be implemented to meet the effluent limit; (2) any applicable design specifications; (3) routine maintenance specifications; and (4) the projected schedule for installation/implementation. See Part 7.2.6.

<sup>13</sup> The permit does not recommend or endorse specific products or vendors.

<sup>14</sup> Stormwater controls must be designed using the most recent data available to account for recent precipitation patterns and trends.

If your site is exposed to or has previously experienced major storms, such as hurricanes, storm surge, extreme/heavy precipitation, and flood events, you should also include consideration of and contingencies for whether implementing structural improvements, enhanced/resilient stormwater controls, and other mitigation measures may help minimize impacts from stormwater discharges from such major storm events.

**2.1.2 Design and install all stormwater controls in accordance with good engineering practices, including applicable design specifications.<sup>15</sup>**

**2.1.3 Complete installation of stormwater controls by the time each phase of construction activities has begun.**

- a. By the time construction activity in any given portion of the site begins, install and make operational any downgradient sediment controls (e.g., buffers, perimeter controls, exit point controls, storm drain inlet protection) that control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities.<sup>16</sup>
- b. Following the installation of these initial controls, install and make operational all stormwater controls needed to control discharges prior to subsequent earth-disturbing activities.

**2.1.4 Ensure all stormwater controls are maintained and remain in effective operating condition during permit coverage and are protected from activities that would reduce their effectiveness.**

- a. Comply with any specific maintenance requirements for the stormwater controls listed in this permit, as well as any recommended by the manufacturer.<sup>17</sup>
- b. If at any time you find that a stormwater control needs routine maintenance (i.e., minor repairs or other upkeep performed to ensure the site's stormwater controls remain in effective operating condition, not including significant repairs or the need to install a new or replacement control), you must immediately initiate the needed work, and complete such work by the close of the next business day. If it is infeasible to complete the routine maintenance by the close of the next business day, you must document why this is the case and why the repair or other upkeep to be performed should still be considered routine maintenance in your inspection report under Part 4.7.1c and complete such work no later than seven (7) calendar days from the time of discovery of the condition requiring maintenance.
- c. If you must repeatedly (i.e., three (3) or more times) make the same routine maintenance fixes to the same control at the same location, even if the fix can be completed by the close of the next business day, you must either:
  - i. Complete work to fix any subsequent repeat occurrences of this same problem under the corrective action procedures in Part 5, including keeping any records

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<sup>15</sup> Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practices and must be explained in your SWPPP. You must also comply with any additional design and installation requirements specified for the effluent limits in Parts 2.2, 2.3, and 2.4.

<sup>16</sup> Note that the requirement to install stormwater controls prior to each phase of construction activities for the site does not apply to the earth disturbance associated with the actual installation of these controls. Operators should take all reasonable actions to minimize the discharges of pollutants during the installation of stormwater controls.

<sup>17</sup> Any departures from such maintenance recommendations made by the manufacturer must reflect good engineering practices and must be explained in your SWPPP.

of the condition and how it was corrected under Part 5.4; or

- ii. Document in your inspection report under Part 4.7.1c why the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under this Part.<sup>18</sup>
- d. If at any time you find that a stormwater control needs a significant repair or that a new or replacement control is needed, you must comply with the corrective action deadlines for completing such work in in Part 5.2.1c.

## 2.2 EROSION AND SEDIMENT CONTROL REQUIREMENTS

You must implement erosion and sediment controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater from construction activities.

### 2.2.1 Provide and maintain natural buffers and/or equivalent erosion and sediment controls for discharges to any receiving waters that is located within 50 feet of the site's earth disturbances.

- a. **Compliance Alternatives.** For any discharges to receiving waters located within 50 feet of your site's earth disturbances, you must comply with one of the following alternatives:
  - i. Provide and maintain a 50-foot undisturbed natural buffer; or
  - ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
  - iii. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

See Appendix F, Part F.2 for additional conditions applicable to each compliance alternative.

- b. **Exceptions.** See Appendix F, Part F.2 for exceptions to the compliance alternatives.

### 2.2.2 Direct stormwater to vegetated areas and maximize stormwater infiltration and filtering to reduce pollutant discharges, unless infiltration would be inadvisable due to the underlying geology (e.g., karst topography) and ground water contamination concerns, or infeasible due to site conditions.<sup>19</sup>

<sup>18</sup> Such documentation could include, for example, that minor repairs completed within the required timeframe are all that is necessary to ensure that the stormwater control continues to operate as designed and installed and that the stormwater control remains appropriate for the flow reaching it.

<sup>19</sup> Operators should consider whether factors such as specific contaminant concerns from the construction site, the underlying soils or geology, hydrology, depth to the ground water table, or proximity to source water or wellhead protection area(s) make the site unsuitable for infiltrating construction stormwater. Site conditions that may be of particular concern include proximity to: a current or future drinking water aquifer; a drinking water well or spring (including private/household wells); highly conductive geology such as karst; known pollutant hot spots, such as hazardous waste sites, landfills, gas stations, brownfields; an on-site sewage system or underground storage tank; or soils that do not allow for infiltration. Operators may find it helpful to consult EPA's [Drinking Water Mapping Application to Protect Source Waters \(DWMAPS\)](#). DWMAPS is an online mapping tool that can be used to locate drinking water providers, potential sources of contamination, polluted waterways, and information on protection initiatives in the site area.

### 2.2.3 Install sediment controls along any perimeter areas of the site that are downslope from any exposed soil or other disturbed areas.<sup>20</sup>

- a. The perimeter control must be installed upgradient of any natural buffers established under Part 2.2.1, unless the control is being implemented pursuant to Part 2.2.1a.ii-iii;
- b. To prevent stormwater from circumventing the edge of the perimeter control, install the perimeter control on the contour of the slope and extend both ends of the control up slope (e.g., at 45 degrees) forming a crescent rather than a straight line;
- c. After installation, to ensure that perimeter controls continue to work effectively:
  - i. Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control; and
  - ii. After a storm event, if there is evidence of stormwater circumventing or undercutting the perimeter control, extend controls and/or repair undercut areas to fix the problem.
- d. **Exception.** For areas at “linear construction sites” (as defined in Appendix A) where perimeter controls are infeasible (e.g., due to a limited or restricted right-of-way), implement other practices as necessary to minimize pollutant discharges to perimeter areas of the site.

### 2.2.4 Minimize sediment track-out.

- a. Restrict vehicle use to properly designated exit points;
- b. Use appropriate stabilization techniques<sup>21</sup> at all points that exit onto paved roads;
  - i. **Exception:** Stabilization is not required for exit points at linear utility construction sites that are used only episodically and for very short durations over the life of the project, provided other exit point controls<sup>22</sup> are implemented to minimize sediment track-out;
- c. Implement additional track-out controls<sup>23</sup> as necessary to ensure that sediment removal occurs prior to vehicle exit; and
- d. Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out

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<sup>20</sup> Examples of perimeter controls include filter berms; different types of silt fence such as wire-backed silt fence, super silt fence, or multi-layer geotextile silt fence; compost filter socks; gravel barriers; and temporary diversion dikes.

<sup>21</sup> Examples of appropriate stabilization techniques include the use of aggregate stone with an underlying geotextile or non-woven filter fabric, and turf mats.

<sup>22</sup> Examples of other exit point controls include preventing the use of exit points during wet periods; minimizing exit point use by keeping vehicles on site to the extent possible; limiting exit point size to the width needed for vehicle and equipment usage; using scarifying and compaction techniques on the soil; and avoiding establishing exit points in environmentally sensitive areas (e.g., *karst areas*; *steep slopes*).

<sup>23</sup> Examples of additional track-out controls include the use of wheel washing, rumble strips, and rattle plates.



sediment into any constructed or natural site drainage feature, storm drain inlet, or receiving water.<sup>24</sup>

**2.2.5 Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil:<sup>25</sup>**

- a. Locate the piles outside of any natural buffers established under Part 2.2.1 and away from any constructed or natural site drainage features, storm drain inlets, and areas where stormwater flow is concentrated;
- b. Install a sediment barrier along all downgradient perimeter areas of stockpiled soil or land clearing debris piles;<sup>26</sup>
- c. For piles that will be unused for 14 or more days, provide cover<sup>27</sup> or appropriate temporary stabilization (consistent with Part 2.2.14);
- d. You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any constructed or natural site drainage feature, storm drain inlet, or receiving water.

**2.2.6 Minimize dust.** On areas of exposed soil, minimize dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged in stormwater from the site.

**2.2.7 Minimize steep slope disturbances.** Minimize the disturbance of "steep slopes" (as defined in Appendix A).<sup>28</sup>

**2.2.8 Preserve native topsoil, unless infeasible.<sup>29</sup>**

**2.2.9 Minimize soil compaction.<sup>30</sup>** In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed:

<sup>24</sup> Fine grains that remain visible (e.g., staining) on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of Part 2.2.4.

<sup>25</sup> The requirements in Part 2.2.5 do not apply to the storage of rock, such as rip rap, landscape rock, pipe bedding gravel, and boulders. Refer to Part 2.3.3a for the requirements that apply to these types of materials.

<sup>26</sup> Examples of sediment barriers include berms, dikes, fiber rolls, silt fences, sandbags, gravel bags, or straw bale.

<sup>27</sup> Examples of cover include tarps, blown straw and hydroseeding.

<sup>28</sup> Where disturbance to steep slopes cannot be avoided, operators should consider implementing controls suitable for steep slope disturbances that are effective at minimizing erosion and sediment discharge (e.g., preservation of existing vegetation, hydraulic mulch, geotextiles and mats, compost blankets, earth dikes or drainage swales, terraces, velocity dissipation devices). To identify slopes and soil types that are of comparatively higher risk for sediment discharge in areas of the country where the CGP is in effect, operators can use the tables in Appendix F (see Tables F-2 thru F-6).

<sup>29</sup> Stockpiling topsoil at off-site locations, or transferring topsoil to other locations, is an example of a practice that is consistent with the requirements in Part 2.2.8. Preserving native topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed. For example, some sites may be designed to be highly impervious after construction, and therefore little or no vegetation is intended to remain, or may not have space to stockpile native topsoil on site for later use, in which case it may not be feasible to preserve topsoil.

<sup>30</sup> Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted.

- a. Restrict vehicle and equipment use in these locations to avoid soil compaction; and
- b. Before seeding or planting areas of exposed soil that have been compacted, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth.

**2.2.10 Protect storm drain inlets.**

- a. Install inlet protection measures that remove sediment from discharges prior to entry into any storm drain inlet that carries stormwater from your site to a receiving water, provided you have authority to access the storm drain inlet.<sup>31</sup> Inlet protection measures are not required for storm drain inlets that are conveyed to a sediment basin, sediment trap, or similarly effective control; and
- b. Clean, or remove and replace, the inlet protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

**2.2.11 Control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.<sup>32</sup>**

**2.2.12 If you install a sediment basin or similar impoundment:**

- a. Situate the basin or impoundment outside of any receiving water, and any natural buffers established under Part 2.2.1;
- b. Design the basin or impoundment to avoid collecting water from wetlands;
- c. Design the basin or impoundment to provide storage for either:
  - i. The calculated volume of runoff from a 2-year, 24-hour storm;<sup>33</sup> or
  - ii. 3,600 cubic feet per acre drained.
- d. Utilize outlet structures that withdraw water from the surface of the sediment basin or similar impoundment, unless infeasible;<sup>34</sup>
- e. Use erosion controls and velocity dissipation devices to prevent erosion at inlets and outlets; and

<sup>31</sup> Inlet protection measures can be removed in the event of flood conditions or to prevent erosion.

<sup>32</sup> Examples of stormwater controls that can be used to comply with this requirement include the use of erosion controls and/or velocity dissipation devices (e.g., check dams, sediment traps), within and along the length of a constructed site drainage feature and at the outfall to slow down stormwater.

<sup>33</sup> Operators may refer to <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates> for guidance on determining the volume of precipitation associated with their site's local 2-year, 24-hour storm event.

<sup>34</sup> The circumstances in which it is infeasible to design outlet structures in this manner are rare. Exceptions may include areas with extended cold weather, where using surface outlets may not be feasible during certain time periods (although they must be used during other periods). If you determine that it is infeasible to meet this requirement, you must provide documentation in your SWPPP to support your determination, including the specific conditions or time periods when this exception will apply.

- f. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.

**2.2.13 If using treatment chemicals** (e.g., *polymers, flocculants, coagulants*):

- a. **Use conventional erosion and sediment controls before and after the application of treatment chemicals.** Chemicals may only be applied where treated stormwater is directed to a sediment control (e.g., *sediment basin, perimeter control*) before discharge.
- b. **Select appropriate treatment chemicals.** Chemicals must be appropriately suited to the types of soils likely to be exposed during construction and present in the discharges being treated (i.e., *the expected turbidity, pH, and flow rate of stormwater flowing into the chemical treatment system or area*).
- c. **Minimize discharge risk from stored chemicals.** Store all treatment chemicals in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures (e.g., *spill berms, dikes, spill containment pallets*), or provide equivalent measures designed and maintained to minimize the potential discharge of treatment chemicals in stormwater or by any other means (e.g., *storing chemicals in a covered area, having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill*).
- d. **Comply with State/local requirements.** Comply with applicable State and local requirements regarding the use of treatment chemicals.
- e. **Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier.** Use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the provider/supplier of the applicable chemicals, or document in your SWPPP specific departures from these specifications and how they reflect good engineering practice.
- f. **Ensure proper training.** Ensure all persons who handle and use treatment chemicals at the construction site are provided with appropriate, product-specific training prior to beginning application of treatment chemicals. Among other things, the training must cover proper dosing requirements.
- g. **Perform additional measures specified by the EPA Regional Office for the authorized use of cationic chemicals.** If you have been authorized to use cationic chemicals at your site pursuant to Part 1.1.9, you must perform all additional measures as conditioned by your authorization to ensure the use of such chemicals will not result in discharges that do not meet water quality standards.

**2.2.14 Stabilize exposed portions of the site.** Implement and maintain stabilization measures (e.g., *seeding protected by erosion controls until vegetation is established*,<sup>35</sup> *sodding, mulching, erosion control blankets, hydromulch, gravel*) that minimize erosion from any areas of exposed soil on the site in accordance with Part.

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<sup>35</sup> If you will be evaluating the use of some type of erosion control netting to the site as part of your site stabilization, EPA encourages you to consider employing products that have been shown to minimize

**a. Stabilization Deadlines:<sup>36</sup>****Table 2 Deadlines for Initiating and Completing Site Stabilization.**

Total Amount of Land Disturbance Occurring At Any One Time <sup>37</sup>	Deadline
<b>i. Five acres or less (≤5.0)</b>  <b>Note: this includes sites disturbing more than five acres (&gt;5.0) total over the course of a project, but that limit disturbance at any one time (i.e., phase the disturbance) to five acres or less (≤5.0)</b>	<ul style="list-style-type: none"> <li>• Initiate the installation of stabilization measures immediately<sup>38</sup> in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;<sup>39</sup> and</li> <li>• Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days</li> </ul>

impacts on wildlife. For instance, the U.S. Fish & Wildlife Service provides recommendations on the type of netting practices that are considered “wildlife friendly,” including those that use natural fiber or 100 percent biodegradable materials and that use a loose weave with a non-welded, movable jointed netting, as well as those products that are not wildlife friendly including square plastic netting that are degradable (e.g., photodegradable, UV-degradable, oxo-degradable), netting made from polypropylene, nylon, polyethylene, or polyester. Other recommendations include removing the netting product when it is no longer needed. See [https://www.fws.gov/midwest/eastlansing/library/pdf/WildlifeFriendlyErosionControlProducts\\_revised.pdf](https://www.fws.gov/midwest/eastlansing/library/pdf/WildlifeFriendlyErosionControlProducts_revised.pdf) for further information. There also may be State, Tribal, or local requirements about using wildlife friendly erosion control products.

<sup>36</sup> EPA may determine, based on an inspection carried out under Part 4.8 and corrective actions required under Part 5.3, that the level of sediment discharge on the site makes it necessary to require a faster schedule for completing stabilization. For instance, if sediment discharges from an area of exposed soil that is required to be stabilized are compromising the performance of existing stormwater controls, EPA may require stabilization to correct this problem.

<sup>37</sup> Limiting disturbances to five (5) acres or less at any one time means that at no time during the project do the cumulative earth disturbances exceed five (5) acres. The following examples would qualify as limiting disturbances at any one time to five (5) acres or less:

1. The total area of disturbance for a project is five (5) acres or less.
2. The total area of disturbance for a project will exceed five (5) acres, but the operator ensures that no more than five (5) acres will be disturbed at any one time through implementation of stabilization measures. In this way, site stabilization can be used to “free up” land that can be disturbed without exceeding the five (5)-acre cap to qualify for the 14-day stabilization deadline. For instance, if an operator completes stabilization of two (2) acres of land on a five (5)-acre disturbance, then two (2) additional acres could be disturbed while still qualifying for the longer 14-day stabilization deadline.

<sup>38</sup> The following are examples of activities that would constitute the immediate initiation of stabilization:

1. Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable, but no later than one (1) calendar day of completing soil preparation;
2. Applying mulch or other non-vegetative product to the exposed area;
3. Seeding or planting the exposed area;
4. Starting any of the activities in # 1 – 3 on a portion of the entire area that will be stabilized; and
5. Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.

<sup>39</sup> The requirement to initiate stabilization immediately is triggered as soon as you know that construction work on a portion of the site is temporarily ceased and will not resume for 14 or more days, or as soon as you know that construction work is permanently ceased. In the context of this provision, “immediately” means as soon as practicable, but no later than the end of the next business day, following the day when the construction activities have temporarily or permanently ceased.

Total Amount of Land Disturbance Occurring At Any One Time <sup>37</sup>	Deadline
	after stabilization has been initiated. <sup>40</sup>
ii. More than five acres (>5.0)	<ul style="list-style-type: none"> <li>• Initiate the installation of stabilization measures immediately<sup>41</sup> in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;<sup>42</sup> and</li> <li>• Complete the installation of stabilization measures as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.<sup>43</sup></li> </ul>

**b. Exceptions:**

- i. Arid, semi-arid, and drought-stricken areas** (as defined in Appendix A). If it is the seasonally dry period (as defined in Appendix A)<sup>44</sup> or a period in which drought is occurring, and vegetative stabilization measures are being used:

- (a) Immediately initiate and, within 14 calendar days of temporary or permanent cessation of work in any portion of your site, complete the installation of temporary non-vegetative stabilization measures to the extent necessary to prevent erosion;
- (b) As soon as practicable, given conditions or circumstances on the site, complete all activities necessary to seed or plant the area to be stabilized; and
- (c) If construction is occurring during the seasonally dry period, indicate in your SWPPP the beginning and ending dates of the seasonally dry period and your site conditions. Also include the schedule you will follow for initiating and completing vegetative stabilization.

- ii. Unforeseen circumstances.** Operators that are affected by unforeseen circumstances<sup>45</sup> that delay the initiation and/or completion of vegetative stabilization:

<sup>40</sup> If vegetative stabilization measures are being implemented, stabilization is considered "installed" when all activities necessary to seed or plant the area are completed, including the application of any non-vegetative protective cover (e.g., mulch, erosion control blanket), if applicable. If non-vegetative stabilization measures are being implemented, stabilization is considered "installed" when all such measures are implemented or applied.

<sup>41</sup> See footnote 38.

<sup>42</sup> See footnote 39.

<sup>43</sup> See footnote 40.

<sup>44</sup> The term "seasonally dry period" as defined in Appendix A refers to a month in which the long-term average total precipitation is less than or equal to 0.5 inches. Refer to EPA's Seasonally Dry Period Locator Tool at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates> and supporting maps for assistance in determining whether a site is operating during a seasonally dry period for the area.

<sup>45</sup> Examples include problems with the supply of seed stock or with the availability of specialized equipment and unsuitability of soil conditions due to excessive precipitation and/or flooding.

- (a) Immediately initiate and, within 14 calendar days, complete the installation of temporary non-vegetative stabilization measures to prevent erosion;
- (b) Complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on your site; and
- (c) Document in the SWPPP the circumstances that prevent you from meeting the deadlines in Part 2.2.14a and the schedule you will follow for initiating and completing stabilization.

**iii. Discharges to a sediment- or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes.** Complete stabilization as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.

**c. Final Stabilization Criteria** (for any areas not covered by permanent structures):

- i. Establish uniform, perennial vegetation (*i.e., evenly distributed, without large bare areas*) to provide 70 percent or more of the vegetative cover native to local undisturbed areas; and/or
- ii. Implement permanent non-vegetative stabilization measures<sup>46</sup> to provide effective cover of any areas of exposed soil.

**iii. Exceptions:**

- (a) **Arid, semi-arid, and drought-stricken areas** (as defined in Appendix A). Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the vegetative cover native to local undisturbed areas within three (3) years and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls have been applied to provide cover for at least three years without active maintenance.
- (b) **Disturbed areas on agricultural land that are restored to their preconstruction agricultural use.** The Part 2.2.14c final stabilization criteria do not apply.
- (c) **Areas that need to remain disturbed.** In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed, and only the minimum area needed remains disturbed (*e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, materials*).

## 2.3 POLLUTION PREVENTION REQUIREMENTS<sup>47</sup>

You must implement pollution prevention controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater and to prevent the discharge of pollutants from spilled or leaked materials from construction activities.

<sup>46</sup> Examples of permanent non-vegetative stabilization measures include riprap, gravel, gabions, and geotextiles.

<sup>47</sup> Under this permit, you are not required to minimize exposure for any products or materials where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

**2.3.1 For equipment and vehicle fueling and maintenance:**

- a. Provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities;<sup>48</sup>
- b. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR part 112 and Section 311 of the CWA;
- c. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;
- d. Use drip pans and absorbents under or around leaky vehicles;
- e. Dispose of or recycle oil and oily wastes in accordance with other Federal, State, Tribal, or local requirements; and
- f. Clean up spills or contaminated surfaces immediately, using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

**2.3.2 For equipment and vehicle washing:**

- a. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters;<sup>49</sup>
- b. Ensure there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water; and
- c. For storage of soaps, detergents, or solvents, provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these detergents to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

**2.3.3 For storage, handling, and disposal of building products, materials, and wastes:<sup>50</sup>**

- a. For building materials and building products,<sup>51</sup> provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these products to

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<sup>48</sup> Examples of effective means include:

- Locating activities away from receiving waters, storm drain inlets, and constructed or natural site drainage feature so that stormwater coming into contact with these activities cannot reach waters of the U.S.;
- Providing secondary containment (e.g., *spill berms, dikes, spill containment pallets*) and cover where appropriate; and
- Having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill.

<sup>49</sup> Examples of effective means include locating activities away from receiving waters and storm drain inlets or constructed or natural site drainage features and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls.

<sup>50</sup> Compliance with the requirements of this permit does not relieve compliance requirements with respect to Federal, State, or local laws and regulations governing the storage, handling, and disposal of solid, hazardous, or toxic wastes and materials.

<sup>51</sup> Examples of building materials and building products typically present at construction sites include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.



precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

Exception: Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

- b.** *For pesticides, herbicides, insecticides, fertilizers, and landscape materials:*
- i.** In storage areas, provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these chemicals to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas; and
  - ii.** Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label (see also Part 2.3.5).
- c.** *For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:* The following requirements apply to the storage and handling of chemicals on your site. If you are already implementing controls as part of an SPCC or other spill prevention plan that meet or exceed the requirements of this Part, you may continue to do so and be considered in compliance with these provisions provided you reference the applicable parts of the SPCC or other plans in your SWPPP as required in Part 7.2.6b.viii.
- i.** If any chemical container has a storage capacity of less than 55 gallons:
    - (a) The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;
    - (b) If stored outside, use a spill containment pallet or similar device to capture small leaks or spills; and
    - (c) Have a spill kit available on site that is in good working condition (i.e., not damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill.
  - ii.** If any chemical container has a storage capacity of 55 gallons or more:
    - (a) The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;
    - (b) Store containers a minimum of 50 feet from receiving waters, constructed or natural site drainage features, and storm drain inlets. If infeasible due to site constraints, store containers as far away from these features as the site permits. If site constraints prevent you from storing containers 50 feet away from receiving waters or the other features identified, you must document in your SWPPP the specific reasons why the 50-foot setback is infeasible, and how you will store containers as far away as the site permits;
    - (c) Provide either (1) cover (e.g., *temporary roofs*) to minimize the exposure of these containers to precipitation and to stormwater, or (2) secondary containment (e.g., *curbing, spill berms, dikes, spill containment pallets, double-wall, above-ground storage tank*); and
    - (d) Have a spill kit available on site that is in good working condition (i.e., not

damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill. Additional secondary containment measures are listed at 40 CFR § 112.7(c)(1).

- iii. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.
- d. *For hazardous or toxic wastes:*<sup>52</sup>
  - i. Separate hazardous or toxic waste from construction and domestic waste;
  - ii. Store waste in sealed containers, constructed of suitable materials to prevent leakage and corrosion, and labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable Federal, State, Tribal, or local requirements;
  - iii. Store all outside containers within appropriately-sized secondary containment (e.g., *spill berms, dikes, spill containment pallets*) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., *storing chemicals in a covered area, having a spill kit available on site*);
  - iv. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with Federal, State, Tribal, and local requirements;
  - v. Clean up spills immediately, using dry clean-up methods, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and
  - vi. Follow all other Federal, State, Tribal, and local requirements regarding hazardous or toxic waste.
- e. *For construction and domestic wastes:*<sup>53</sup>
  - i. Provide waste containers (e.g., *dumpster, trash receptacle*) of sufficient size and number to contain construction and domestic wastes;
    - (a) For waste containers with lids, keep waste container lids closed when not in use, and close lids at the end of the business day and during storm events. For waste containers without lids, provide either (1) cover (e.g., *a tarp, plastic sheeting, temporary roof*) to minimize exposure of wastes to precipitation, or (2) a similarly effective means designed to minimize the discharge of pollutants (e.g., *secondary containment*);
    - (b) On business days, clean up and dispose of waste in designated waste

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<sup>52</sup> Examples of hazardous or toxic waste that may be present at construction sites include paints, caulks, sealants, fluorescent light ballasts, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.

<sup>53</sup> Examples of construction and domestic wastes include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, demolition debris; and other trash or discarded materials.

containers; and

(c) Clean up immediately if containers overflow, and if there is litter elsewhere on the site from escaped trash.

ii. Waste containers are not required for the waste remnant or unused portions of construction materials or final products that are covered by the exception in Part 2.2.3a provided that:

(a) These wastes are stored separately from other construction or domestic wastes addressed by Part 2.3.3e.i (i.e., wastes not covered by the exception in Part 2.3.3a). If the wastes are mixed, they must be stored in waste containers as required in Part 2.3.3e.i; and

(b) These wastes are stored in designated areas of the site, the wastes are described in the SWPPP (see Part 7.2.6b.ix), and identified in the site plan (see Part 7.2.4i).

f. For sanitary waste, position portable toilets so they are secure and will not be tipped or knocked over, and are located away from receiving waters, storm drain inlets, and constructed or natural site drainage features.

**2.3.4 For washing applicators and containers used for stucco, paint, concrete, form release oils, curing compounds, or other materials:**

a. Direct wash water into a leak-proof container or leak-proof and lined pit designed so no overflows can occur due to inadequate sizing or precipitation;

b. Handle washout or cleanout wastes as follows:

i. For liquid wastes:

(a) Do not dump liquid wastes or allow them to enter into constructed or natural site drainage features, storm inlets, or receiving waters;

(b) Do not allow liquid wastes to be disposed of through infiltration or to otherwise be disposed of on the ground;

(c) Comply with applicable State, Tribal, or local requirements for disposal

ii. Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 2.3.3e; and

c. Locate any washout or cleanout activities as far away as possible from receiving waters, constructed or natural site drainage features, and storm drain inlets, and, to the extent feasible, designate areas to be used for these activities and conduct such activities only in these areas.

**2.3.5 For the application of fertilizers:**

a. Apply at a rate and in amounts consistent with manufacturer's specifications, or document in the SWPPP departures from the manufacturer specifications where appropriate in accordance with Part 7.2.6b.x;

b. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;

- c. Avoid applying before heavy rains that could cause excess nutrients to be discharged;
- d. Never apply to frozen ground;
- e. Never apply to constructed or natural site drainage features; and
- f. Follow all other Federal, State, Tribal, and local requirements regarding fertilizer application.

### **2.3.6 Emergency Spill Notification Requirements**

Discharges of toxic or hazardous substances from a spill or other release are prohibited, consistent with Part 1.3.5. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR part 110, 40 CFR part 117, or 40 CFR part 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR part 110, 40 CFR part 117, and 40 CFR part 302 as soon as you have knowledge of the release. You must also, within seven (7) calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release. State, Tribal, or local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

## **2.4 CONSTRUCTION DEWATERING REQUIREMENTS**

Comply with the following requirements to minimize the discharge of pollutants from dewatering<sup>54</sup> operations.

- 2.4.1** Route dewatering water through a sediment control (e.g., sediment trap or basin, pumped water filter bag) designed to prevent discharges with visual turbidity;<sup>55</sup>
- 2.4.2** Do not discharge visible floating solids or foam;
- 2.4.3** The discharge must not cause the formation of a visible sheen on the water surface, or visible oily deposits on the bottom or shoreline of the receiving water. Use an oil-water separator or suitable filtration device (such as a cartridge filter) designed to remove oil, grease, or other products if dewatering water is found to or expected to contain these materials;
- 2.4.4** To the extent feasible, use well-vegetated (e.g., grassy or wooded), upland areas of the site to infiltrate dewatering water before discharge.<sup>56</sup> You are prohibited from using receiving waters as part of the treatment area;
- 2.4.5** To prevent dewatering-related erosion and related sediment discharges:
  - a. Use stable, erosion-resistant surfaces (e.g., well-vegetated grassy areas, clean filter stone, geotextile underlayment) to discharge from dewatering controls;

<sup>54</sup> "Dewatering" is defined in Appendix A as "the act of draining accumulated stormwater and/or ground water from building foundations, vaults, and trenches, or other similar points of accumulation."

<sup>55</sup> For the purposes of this permit, visual turbidity is present where there is a sediment plume in the discharge or the discharge appears cloudy, or opaque, or has a visible contrast that can be identified by an observer.

<sup>56</sup> See footnote 19.

- b. Do not place dewatering controls, such as pumped water filter bags, on steep slopes (as defined in Appendix A); and
  - c. At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11.
- 2.4.6** For backwash water, either haul it away for disposal or return it to the beginning of the treatment process;
- 2.4.7** Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications; and
- 2.4.8** Comply with dewatering-specific inspection requirements in Part 4.

### **3 WATER QUALITY-BASED EFFLUENT LIMITATIONS**

#### **3.1 GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS**

Discharges must be controlled as necessary to meet applicable water quality standards. Discharges must also comply with any additional State or Tribal requirements that are in Part 9.

In the absence of information demonstrating otherwise, EPA expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards. If at any time you become aware, or EPA determines, that discharges are not being controlled as necessary to meet applicable water quality standards, you must take corrective action as required in Parts 5.1 and 5.2, and document the corrective actions as required in Part 5.4.

EPA may insist that you install additional controls (to meet the narrative water quality-based effluent limit above) on a site-specific basis, or require you to obtain coverage under an individual permit, if information in your NOI or from other sources indicates that your discharges are not controlled as necessary to meet applicable water quality standards. This includes situations where additional controls are necessary to comply with a wasteload allocation in an EPA-established or approved TMDL.

If during your coverage under a previous permit, you were required to install and maintain stormwater controls specifically to meet the assumptions and requirements of an EPA-approved or established TMDL (for any parameter) or to otherwise control your discharge to meet water quality standards, you must continue to implement such controls as part of your coverage under this permit.

#### **3.2 WATER QUALITY-BASED CONDITIONS FOR SITES DISCHARGING TO CERTAIN IMPAIRED AND HIGH QUALITY RECEIVING WATERS**

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes,<sup>57</sup> you must comply with the inspection frequency specified in Part 4.3 and you must comply with the stabilization deadline specified in Part 2.2.14b.iii.<sup>58</sup>

<sup>57</sup> Refer to Appendix A for definitions of "impaired water" and "Tier 2," "Tier 2.5," and "Tier 3" waters. For assistance in determining whether your site discharges to impaired waters, EPA has developed a tool that is available at <https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools>. For assistance in determining whether your site discharges to a Tier 2, 2.5, or 3 water, refer to the list of such waters at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>.

<sup>58</sup> If you qualify for any of the reduced inspection frequencies in Part 4.4, you may conduct inspections in

If you discharge to a water that is impaired for a parameter other than a sediment-related parameter or nutrients, EPA will inform you if any additional controls are necessary for your discharge to be controlled as necessary to meet water quality standards. These controls might include those necessary for your discharge to be consistent with the assumptions of any available wasteload allocation in any applicable TMDL. In addition, EPA may require you to apply for and obtain coverage under an individual NPDES permit.

In addition, on a case-by-case basis, EPA may notify operators of new sites or operators of existing sites with increased discharges that additional analyses, stormwater controls, and/or other measures are necessary to comply with the applicable antidegradation requirements, or notify you that an individual permit application is necessary.

If you discharge to a water that is impaired for polychlorinated biphenyls (PCBs) and are engaging in demolition of any structure with at least 10,000 square feet of floor space built or renovated before January 1, 1980, you must:

- a. Implement controls<sup>59</sup> to minimize the exposure of PCB-containing building materials, including paint, caulk, and pre-1980 fluorescent lighting fixtures, to precipitation and to stormwater; and
- b. Ensure that disposal of such materials is performed in compliance with applicable State, Federal, and local laws.

### **3.3 TURBIDITY BENCHMARK MONITORING FOR SITES DISCHARGING DEWATERING WATER TO PROTECT THE WATER QUALITY OF SENSITIVE WATERS**

For sites discharging dewatering water to “sensitive waters” (i.e., receiving waters listed as impaired for sediment or a sediment-related parameter (as defined in Appendix A), or receiving waters designated as a Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes) you are required to comply with the benchmark monitoring requirements in this Part and document the procedures you will use at your site in your SWPPP pursuant to Part 7.2.8. A summary of these requirements is included in Table 1.

EPA notes that the benchmark threshold is not an effluent limitation, rather it is an indicator that the dewatering controls may not be working to protect water quality, which the operator must investigate and correct as appropriate. A benchmark exceedance is not a permit violation. However, if a benchmark exceedance triggers corrective action in Part 5.1.5a, failure to conduct any required action is a permit violation.

Where there are multiple operators associated with the same site, the operators may coordinate with one another to carry out the monitoring requirements of this Part in order to avoid duplicating efforts. Such coordinating arrangements must be described in the SWPPP consistent with Part 7.2.8. Regardless of how the operators divide the

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accordance with Part 4.4 for any portion of your site that discharges to a sensitive water.

<sup>59</sup> Examples of controls to minimize exposure of PCBs to precipitation and stormwater include separating work areas from non-work areas and selecting appropriate personal protective equipment and tools, constructing a containment area so that all dust or debris generated by the work remains within the protected area, and using tools that minimize dust and heat (<212°F). For additional information, refer to Part 2.3.3 of the CGP Fact Sheet.

responsibilities for monitoring and reporting, each operator remains responsible for compliance with these requirements.<sup>60</sup>

### 3.3.1 Turbidity monitoring requirements<sup>61</sup>

- a. Sampling frequency.** You must collect at least one turbidity sample from your dewatering discharge each day a discharge occurs.
- b. Sampling location.** Samples must be taken at all points where dewatering water is discharged. Samples must be taken after the dewatering water has been treated by installed treatment devices pursuant to Parts 2.4.1 and 2.4.3 and prior to its discharge off site into a receiving water, constructed or natural site drainage feature, or storm drain inlet.
- c. Representative samples.** Samples taken must be representative of the dewatering discharge for any given day as required in Appendix G (standard permit conditions), Part G.10.2.
- d. Test methods.** Samples must be measured using a turbidity meter that reports results in nephelometric turbidity units (NTUs) and conforms with a Part 136-approved method (e.g., methods 180.1 and 2130). You are required to use the meter, and conduct a calibration verification prior to each day's use, consistent with the manufacturer's instructions.

### 3.3.2 Turbidity benchmark

- a.** The benchmark threshold for turbidity for this permit is 50 NTUs (referred to elsewhere in this permit as the "standard 50 NTU benchmark") unless EPA has authorized the use of an alternate benchmark in accordance with Part 3.3.2b.
- b. Request for alternate benchmark threshold.**
  - i.** At any time prior to or during your coverage under this permit, you may request that EPA approve a benchmark for your site that is higher than 50 NTUs if you have information demonstrating the higher number is the same as your receiving water's water quality standard for turbidity. Unless EPA approves an alternate benchmark, you will be required to use the standard 50 NTU benchmark. To request approval of an alternate benchmark, you must submit the following information to your applicable EPA Regional Office (see Appendix K):
    - (a) The current turbidity water quality standard that applies to your receiving

<sup>60</sup> For instance, if Operator A relies on Operator B to meet the Part 3.3.1 turbidity monitoring requirements, the Part 3.3.4 reporting and recordkeeping requirements, and the Part 5.2.2 corrective action provisions when applicable, Operator A does not have to duplicate these same functions if Operator B is implementing them for both operators to be in compliance with the permit. However, Operator A remains responsible for complying with these permit requirements if Operator B fails to take actions that were necessary for Operator A to comply with the permit. See also footnote 83. EPA notes that both Operator A and B are required to submit turbidity monitoring reports as required under Part 3.3.4, however, Operator A's report does not need to include the data collected by Operator B as long as Operator B submits the required data and Operator A's report indicates that it is relying on Operator B to report the data. See Part 3.3.4a.

<sup>61</sup> Operators may find it useful to consult EPA's *Monitoring and Inspection Guide for Construction Dewatering*, available at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>, which provides guidelines on how to correctly monitor for turbidity, determine if the weekly average exceeds the benchmark, and, if so, how to proceed with corrective action.



water and the source/citation.<sup>62</sup>

(b) If the applicable turbidity water quality standard requires information on natural or background turbidity levels (e.g., “no more than 10 NTU above natural turbidity levels”) to determine the specific standard for the receiving water, include available data that can be used to establish the natural turbidity levels of your receiving water (including literature studies or Federal, State, Tribal, or local government data). Data must be representative of the natural turbidity levels of your specific receiving water. Identify the source(s) of all data provided, including if the data are from samples you collected of the receiving water.

- ii. EPA will inform you of its decision on whether to approve the requested alternate benchmark within 30 days. EPA may approve your request, request additional time (e.g., if additional information is needed to substantiate the data you provided), or deny your request. Unless and until EPA approves your request to use an alternate benchmark, you are required to use the standard benchmark of 50 NTUs and take any required corrective actions if an exceedance occurs.

**3.3.3 Comparison of turbidity samples to benchmark.** Compare the weekly average<sup>63</sup> of your turbidity monitoring results to the standard 50 NTU benchmark, or alternate benchmark if approved by EPA.

- a. If the weekly average of your turbidity monitoring results exceeds the standard benchmark (or your approved alternate benchmark), you are required to conduct follow-up corrective action in accordance with Part 5.2.2 and document any corrective action taken in your corrective action log in accordance with Part 5.4.
- b. For averaging purposes, a “monitoring week” starts with a Monday and ends on Sunday. Once a new monitoring week starts, you will need to calculate a new average for that week of turbidity monitoring results.<sup>64</sup> A weekly average may consist of one or more turbidity monitoring results.
- c. Although you are not required to collect and analyze more than one turbidity sample per day from your dewatering discharge, if you do collect and analyze more than one sample on any given day, you must include any additional results in the

<sup>62</sup> For instance, if your site is located in Washington, DC, and you are discharging to a Class B water, for which the water quality standard is that turbidity may not increase above ambient levels by more than 20 percent, you would reference “Water Quality Standards for the District of Columbia, Chapter 11, Section 1104.8.”

<sup>63</sup> A “weekly average” is defined as the sum of all of the turbidity samples taken during a “monitoring week” divided by the number of samples measured during that week. Average values should be calculated to the nearest whole number.

<sup>64</sup> For example, if turbidity samples from your dewatering discharge in week 1 result in values of 30 NTU on Tuesday, 40 NTU on Wednesday, and 45 NTU on Thursday, your weekly average turbidity value would be 38.33 NTU  $((30+40+45) \div 3 = 38 \text{ NTU})$ . If in week 2, your turbidity samples resulted in values of 45 NTU on Monday, 30 NTU on Tuesday, 25 NTU on Wednesday, and 15 NTU on Thursday, you would calculate a new average for that week, which would yield an average turbidity value of 28.75 NTU  $((45+30+25+15) \div 4 = 29 \text{ NTU})$ . By comparison, if your samples on consecutive days from Friday to Monday were 60 NTU, 45 NTU, 40 NTU, and 43 NTU, respectively, and there are no other dewatering discharges for the remainder of the week, you would calculate one weekly average for the Friday to Sunday to be 48 NTU  $((60+45+40) \div 3 = 48 \text{ NTU})$ , and a separate weekly average for the one Monday to be 43 NTU  $(43 \div 1 = 43 \text{ NTU})$ .

calculation of your weekly average (i.e., add all individual results for that monitoring week and divide by the total number of samples).<sup>65</sup>

- d. If you are conducting turbidity monitoring for more than one dewatering discharge point, you must calculate a weekly average turbidity value for each discharge point and compare each to the turbidity benchmark.

### 3.3.4 Reporting and recordkeeping.

- a. You must submit reports of your weekly average turbidity data to EPA no later than 30 days following the end of each monitoring quarter. If there are monitoring weeks in which there was no dewatering discharge, or if there is a monitoring quarter with no dewatering discharge, indicate this in your turbidity monitoring report. If another operator associated with your same site is conducting turbidity monitoring on your behalf pursuant to Part 3.3, indicate this in your turbidity monitoring report.
- b. For the purposes of this permit, the following monitoring quarters and reporting deadlines apply:

**Table 3. Monitoring Quarters and Deadlines for Reporting Turbidity Benchmark Monitoring Data.**

Monitoring Quarter #	Months	Reporting Deadline (no later than 30 days after end of the monitoring quarter)
1	January 1 – March 31	April 30
2	April 1 – June 30	July 30
3	July 1 – September 30	October 30
4	October 1 – December 31	January 30

- c. You must use EPA's NPDES eReporting Tool (NeT) to electronically submit your quarterly turbidity data, unless, consistent with Part 1.4.2, you received a waiver from your applicable EPA Regional Office. If the EPA Regional Office grants you approval to use a paper turbidity monitoring report form, and you elect to use it, you must complete the form in Appendix K. If EPA approves of your request to use an alternate turbidity benchmark pursuant to Part 3.3.2b, EPA will substitute the alternate benchmark in your NeT account.
- d. For each day in which you are required to monitor, you must record the monitoring information required by Appendix G, Parts G.10.2 and G.10.3 and retain all such information for a period of at least three years from the date this permit expires or from the date your authorization is terminated.

<sup>65</sup> For example, if during a monitoring week you take two turbidity samples on Tuesday with a value of 30 NTU and 35 NTU, three samples on Wednesday with a value of 40 NTU, 45 NTU, and 48 NTU, and one sample on Thursday with a value of 45 NTU, your weekly average turbidity value for this week would be 41 NTU  $((30+35+40+45+48+45) \div 6 = 41 \text{ NTU})$ .

**Table 4. Summary of Turbidity Benchmark Monitoring Requirements.**

Applicability	Sampling Requirement	Turbidity Benchmark	Corrective Action	Reporting
Sites discharging dewatering water to a sediment-impaired water or to a water designated as a Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes.	Collect at least one turbidity sample per day, from each discharge point, on any day there is a dewatering discharge.  Use turbidity sampling procedures specified in Part 3.3.1.	Compare the weekly average of your turbidity monitoring results to the 50 NTU benchmark (or alternate benchmark if approved by EPA).	If the weekly average of turbidity monitoring results exceeds the 50 NTU turbidity benchmark (or alternate benchmark if approved by EPA), you are required to take follow-up corrective action in accordance with Part 5.2.2.	Report all weekly average turbidity monitoring results on a quarterly basis via NeT-CGP (unless use of the paper monitoring form in Appendix K is approved by EPA) no later than 30 days following the end of each monitoring quarter.

**4 INSPECTION REQUIREMENTS**

**4.1 PERSON(S) RESPONSIBLE FOR CONDUCTING SITE AND DEWATERING INSPECTIONS**

The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that any person conducting inspections pursuant to this Part is a “qualified person.” A qualified person is someone who has completed the training required by Part 6.3.

**4.2 FREQUENCY OF INSPECTIONS.<sup>66</sup>**

At a minimum, you must conduct a site inspection in accordance with one of the two schedules listed below, unless you are subject to the Part 4.3 site inspection frequency for discharges to sediment or nutrient-impaired or high quality waters, or qualify for a Part 4.4 reduction in the inspection frequency:

**4.2.1** At least once every seven (7) calendar days; or

**4.2.2** Once every 14 calendar days *and* within 24 hours<sup>67</sup> of the occurrence of:

- a.** A storm event that produces 0.25 inches or more of rain within a 24-hour period.
  - i.** If a storm event produces 0.25 inches or more of rain within a 24-hour period (including when there are multiple, smaller storms that alone produce less than 0.25 inches but together produce 0.25 inches or more in 24 hours), you are required to conduct one inspection within 24 hours of when 0.25 inches of rain or more has fallen.

<sup>66</sup> Inspections are only required during the site’s normal working hours.

<sup>67</sup> For the purposes of the inspection requirements in this Part, conducting an inspection “within 24 hours” means that once either of the two conditions in Parts 4.2.2a or 4.2.2b are met you have 24 hours from that time to conduct an inspection. For clarification, the 24 hours is counted as a continuous passage of time, and not counted by business hours (e.g., 3 business days of 8 hours each). When the 24-hour inspection time frame occurs entirely outside of normal working hours, you must conduct an inspection by no later than the end of the next business day.

- ii. If a storm event produces 0.25 inches or more of rain within a 24-hour period on the first day of a storm and continues to produce 0.25 inches or more of rain on subsequent days, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the last day of the storm that produces 0.25 inches or more of rain (i.e., only two inspections would be required for such a storm event).<sup>68</sup>
  - b. A discharge caused by snowmelt from a storm event that produces 3.25 inches<sup>69</sup> or more of snow within a 24-hour period. You are required to conduct one inspection once the discharge of snowmelt from a 3.25-inch or more snow accumulation occurs. Additional snowmelt inspections are only required if following the discharge from the first snowmelt, there is a discharge from a separate storm event that produces 3.25 inches or more of snow.
- 4.2.3** To determine whether a storm event meets either of the thresholds in Parts 4.2.2a or 4.2.2b:
- a. For rain, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any 24-hour period during which there is 0.25 inches or more of rainfall, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.
  - b. For snow, you must either take measurements of snowfall at your site,<sup>70</sup> or rely on similar information from a local weather forecasting provider that is representative of your location.

### **4.3 INCREASE IN INSPECTION FREQUENCY FOR CERTAIN SITES.**

The increased inspection frequencies established in this Part take the place of the Part 4.2 inspection frequencies for the portion of the site affected.

- 4.3.1 For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes (see Part 3.2),** you must conduct an once every seven (7) calendar days *and* within 24 hours of the occurrence of a storm event that produces 0.25 inches or more of rain within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

<sup>68</sup> For example, if 0.30 inches of rain falls on Day 1, 0.25 inches of rain falls on Day 2, and 0.10 inches of rain fall on Day 3, you would be required to conduct a first inspection within 24 hours of the Day 1 rainfall and a second inspection within 24 hours of the Day 2 rainfall, but a third inspection would not be required within 24 hours of the Day 3 rainfall.

<sup>69</sup> This is the amount of snow that is equivalent to 0.25 inches of rain, based on information from the National Oceanic and Atmospheric Administration (NOAA) indicating that 13 inches of snow is, on average, equivalent to 1 inch of rain. See <https://www.nssl.noaa.gov/education/svrwx101/winter/faq/>.

<sup>70</sup> For snowfall measurements, EPA suggests use of NOAA's National Weather Service guidelines at [https://www.weather.gov/jkl/snow\\_measurement](https://www.weather.gov/jkl/snow_measurement). These guidelines recommend use of a "snowboard" (a piece of wood about 16 inches by 16 inches) that is placed in an unobstructed part of the site on a hard surface.

Refer to Parts 4.2.3a and 4.2.3b for the requirements to determine if a storm event produces enough rain or snow to trigger the inspection requirement.

**4.3.2 For sites discharging dewatering water**, you must conduct an inspection in accordance with Part 4.6.3 during the discharge once per day on which the discharge occurs. The Part 4.2 inspection frequency still applies to all other portions of the site, unless the site is affected by either the increased frequency in Part 4.3.1 or the reduced frequency in Part 4.4.

#### **4.4 REDUCTIONS IN INSPECTION FREQUENCY**

##### **4.4.1 Stabilized areas.**

**a.** You may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, then once per month until permit coverage is terminated consistent with Part 8 in any area of your site where the stabilization steps in Part 2.2.14a have been completed. If construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.2 and 4.3, as applicable. You must document the beginning and ending dates of this period in your SWPPP.

**b. Exception.** For “linear construction sites” (as defined in Appendix A) where disturbed portions have undergone final stabilization at the same time active construction continues on others, you may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, in any area of your site where the stabilization steps in Part 2.2.14a have been completed. After the first month, inspect once more within 24 hours of the occurrence of a storm event that produces 0.25 inches of rain or more within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. If there are no issues or evidence of stabilization problems, you may suspend further inspections. If “wash-out” of stabilization materials and/or sediment is observed, following re-stabilization, inspections must resume at the inspection frequency required in Part 4.4.1a. Inspections must continue until final stabilization is visually confirmed following a storm event that produces 0.25 inches of rain or more within a 24-hour period.

**4.4.2 Arid, semi-arid, or drought-stricken areas** (as defined in Appendix A). If it is the seasonally dry period<sup>71</sup> or a period in which drought is occurring, you may reduce the frequency of inspections to once per month and within 24 hours of the occurrence of a storm event that produces 0.25 inches of rain or more within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. You must document that you are using this reduced schedule and the beginning and ending dates of the seasonally dry period in your SWPPP. Follow the procedures in Part 4.2.3a and 4.2.3b, accordingly, to determine if a storm event occurs that produces 0.25 inches or more of rain or 3.25 inches or more of snow within a 24-hour period. For any 24-hour period during which there is 0.25 inches or more of rainfall, or 3.25 inches or more of snow, you must record the total rainfall or snow measured for that day in accordance with Part 4.7.1d.

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<sup>71</sup> See footnote 44.

**4.4.3 Frozen conditions:**

- a.** If you are suspending construction activities due to frozen conditions, you may temporarily suspend inspections on your site until thawing conditions (as defined in Appendix A) begin to occur if:
  - i.** Discharges are unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages.<sup>72</sup> If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable;
  - ii.** Land disturbances have been suspended; and
  - iii.** All disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.
- b.** If you are still conducting construction activities during frozen conditions, you may reduce your inspection frequency to once per month if:
  - i.** Discharges are unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable; and
  - ii.** Except for areas in which you are actively conducting construction activities, disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

You must document the beginning and ending dates of this period in your SWPPP.

**4.5 AREAS THAT MUST BE INSPECTED**

During your site inspection, you must at a minimum inspect the following areas of your site:

- 4.5.1** All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 2.2.14a;
- 4.5.2** All stormwater controls, including pollution prevention controls, installed at the site to comply with this permit;<sup>73</sup>
- 4.5.3** Material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit;
- 4.5.4** All areas where stormwater typically flows within the site, including constructed or natural site drainage features designed to divert, convey, and/or treat stormwater;
- 4.5.5** All areas where construction dewatering is taking place, including controls to treat the dewatering discharge and any channelized flow of water to and from those controls;

<sup>72</sup> Use data sets that include the most recent data available to account for recent precipitation patterns and trends.

<sup>73</sup> This includes the requirement to inspect for sediment that has been tracked out from the site onto paved roads, sidewalks, or other paved areas consistent with Part 2.2.4.

**4.5.6** All points of discharge from the site; and

**4.5.7** All locations where stabilization measures have been implemented.

You are not required to inspect areas that, at the time of the inspection, are considered unsafe to your inspection personnel.

#### **4.6 REQUIREMENTS FOR INSPECTIONS**

**4.6.1** During each site inspection, you must at a minimum:

- a.** Check whether all stormwater controls (*i.e., erosion and sediment controls and pollution prevention controls*) are properly installed, appear to be operational, and are working as intended to minimize pollutant discharges.
- b.** Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site.
- c.** Identify any locations where new or modified stormwater controls are necessary to meet the requirements of Parts 2 and/or 3.
- d.** Check for signs of visible erosion and sedimentation (*i.e., sediment deposits*) that have occurred and are attributable to your discharge at points of discharge and, if applicable, on the banks of any receiving waters flowing within or immediately adjacent to the site;
- e.** Check for signs of sediment deposition that are visible from your site and attributable to your discharge (e.g., sand bars with no vegetation growing on top in receiving waters or in other constructed or natural site drainage features, or the buildup of sediment deposits on nearby streets, curbs, or open conveyance channels).
- f.** Identify any incidents of noncompliance observed.

**4.6.2** If a discharge is occurring during your inspection:

- a.** Identify all discharge points at the site; and
- b.** Observe and document the visual quality of the discharge, and take note of the characteristics of the stormwater discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants. Check also for signs of these same pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.

**4.6.3** For dewatering inspections conducted pursuant to Parts 4.3.2, record the following in a report within 24 hours of completing the inspection:

- a.** The inspection date;
- b.** Names and titles of personnel making the inspection;
- c.** Approximate times that the dewatering discharge began and ended on the day of inspection;<sup>74</sup>
- d.** Estimates of the rate (in gallons per day) of discharge on the day of inspection;

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<sup>74</sup> If the dewatering discharge is a continuous discharge that continues after normal business hours, indicate that the discharge is continuous.



- e. Whether or not any of the following indications of pollutant discharge were observed at the point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features or storm drain inlets:<sup>75</sup>
  - i. a sediment plume, suspended solids, unusual color, presence of odor, decreased clarity, or presence of foam; and/or
  - ii. a visible sheen on the water surface or visible oily deposits on the bottom or shoreline of the receiving water; and
- f. Photographs of (1) the dewatering water prior to treatment by a dewatering control(s) and the final discharge after treatment; (2) the dewatering control(s); and (3) the point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features, storm drain inlets, and other conveyances to receiving waters.

You must also comply with the Part 4.7.2, 4.7.3, and 4.7.4 requirements for signing the reports, keeping them available on site, and retaining copies.

**4.6.4** Based on the results of your inspection:

- a. Complete any necessary maintenance repairs or replacements under Part 2.1.4 or under Part 5, whichever applies; and
- b. Modify your SWPPP site map in accordance with Part 7.4.1 to reflect changes to your stormwater controls that are no longer accurately reflected on the current site map.

**4.7 INSPECTION REPORT**

**4.7.1** You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report (except for dewatering inspection reports, which are covered in Part 4.6.3) must include the following:

- a. The inspection date;
- b. Names and titles of personnel making the inspection;
- c. A summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 4.6, including any problems found during your inspection that make it necessary to perform routine maintenance pursuant to Part 2.1.4b or corrective action pursuant to Part 5. Include also any documentation as to why the corrective action procedures under Part 5 are unnecessary to fix a problem that repeatedly occurs as described in Part 2.1.4c;
- d. If you are inspecting your site at the frequency specified in Part 4.2.2, Part 4.3, or Part 4.4.1b, and you conducted an inspection because of a storm event that produced rainfall measuring 0.25 inches or more within a 24-hour period, you must include the applicable rain gauge or weather station readings that triggered the inspection. Similarly, if you conducted an inspection because of a snowmelt discharge from a storm event that produced 3.25 inches or more of snow within a 24-hour period, you must include any measurements taken of snowfall at your site, or weather station information you relied on; and

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<sup>75</sup> If the operator observes any of these indicators of pollutant discharge, corrective action is required consistent with Parts 5.1.5b and 5.2.2.

- e. If you determined that it is unsafe to inspect a portion of your site, you must describe the reason you found it to be unsafe and specify the locations to which this condition applies.

**4.7.2** Each inspection report must be signed by the operator's signatory in accordance with Appendix G, Part G.11 of this permit.

**4.7.3** You must keep a copy of all inspection reports at the site or at an easily accessible location, so that it can be made immediately available at the time of an on-site inspection or upon request by EPA.<sup>76</sup>

**4.7.4** You must retain all inspection reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

#### **4.8 INSPECTIONS BY EPA**

You must allow EPA, or an authorized representative of EPA, to conduct the following activities at reasonable times. To the extent that you are utilizing shared controls, that are not on site, to comply with this permit, you must make arrangements for EPA to have access at all reasonable times to those areas where the shared controls are located.

**4.8.1** Enter onto all areas of the site, including any construction support activity areas covered by this permit, any off-site areas where shared controls are utilized to comply with this permit, discharge locations, adjoining waterbodies, and locations where records are kept under the conditions of this permit;

**4.8.2** Access and copy any records that must be kept under the conditions of this permit;

**4.8.3** Inspect your construction site, including any construction support activity areas covered by this permit (see Part 1.2.1c), any stormwater controls installed and maintained at the site, and any off-site shared controls utilized to comply with this permit; and

**4.8.4** Sample or monitor for the purpose of ensuring compliance.

### **5 CORRECTIVE ACTIONS**

#### **5.1 CONDITIONS TRIGGERING CORRECTIVE ACTION.**

You must take corrective action to address any of the following conditions identified at your site:

**5.1.1** A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with Part 2.1.4c, you find it necessary to repeatedly (i.e., three (3) or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under Part 4.7.1c that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under Part 2.1.4); or

**5.1.2** A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or

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<sup>76</sup> Inspection reports may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of inspection report records, refer to the Fact Sheet discussion related to Part 4.7.3.

- 5.1.3** Your discharges are not meeting applicable water quality standards;
- 5.1.4** A prohibited discharge has occurred (see Part 1.3); or
- 5.1.5** During discharge from site dewatering activities:
  - a.** The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to Part 3.3.2b); or
  - b.** You observe or you are informed by EPA, State, or local authorities of the presence of the conditions specified in Part 4.6.3e.

## **5.2 CORRECTIVE ACTION DEADLINES**

- 5.2.1** If responding to any of the Part 5.1.1, 5.1.2, 5.1.3, or 5.1.4 triggering conditions, you must:
  - a.** Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events; and
  - b.** When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day; or
  - c.** When the problem requires a new or replacement control or significant repair, install the new or modified control and make it operational, or complete the repair, by no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7-day timeframe and document your schedule for installing the stormwater control(s) and making it operational as soon as feasible after the 7-day timeframe. Where these actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within seven (7) calendar days of completing this work.
- 5.2.2** If responding to either of the Part 5.1.5 triggering conditions related to site dewatering activities, you must:
  - a.** Immediately take all reasonable steps to minimize or prevent the discharge of pollutants until you can implement a solution, including shutting off the dewatering discharge as soon as possible depending on the severity of the condition<sup>77</sup> taking safety considerations into account;
  - b.** Determine whether the dewatering controls are operating effectively and whether they are causing the conditions; and
  - c.** Make any necessary adjustments, repairs, or replacements to the dewatering controls to lower the turbidity levels below the benchmark or remove the visible plume or sheen.

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<sup>77</sup> For instance, if the weekly average of your turbidity monitoring results or a single sample is extremely high (e.g., a single turbidity sample results in 355 NTUs or higher), you should take action to safely shut off the discharge so that you can evaluate the cause of the high turbidity. Note: A single turbidity sample of 355 NTUs or higher means that the weekly average turbidity value will exceed 50 NTU regardless of the turbidity values the other days during the week.

When you have completed these steps and made any changes deemed necessary, you may resume discharging from your dewatering activities.

### **5.3 CORRECTIVE ACTION REQUIRED BY EPA**

You must comply with any corrective actions required by EPA as a result of permit violations found during an inspection carried out under Part 4.8.

### **5.4 CORRECTIVE ACTION LOG**

**5.4.1** For each corrective action taken in accordance with this Part, you must record the following in a corrective action log:

- a.** Within 24 hours of identifying the corrective action condition, document the specific condition and the date and time it was identified.
- b.** Within 24 hours of completing the corrective action (in accordance with the deadlines in Part 5.2), document the actions taken to address the condition, including whether any SWPPP modifications are required.

**5.4.2** Each entry into the corrective action log, consisting of the information required by both Parts 5.4.1a and 5.4.1b, must be signed by the operator's signatory in accordance with Appendix G, Part G.11.2 of this permit.

**5.4.3** You must keep a copy of the corrective action log at the site or at an easily accessible location, so that it can be made immediately available at the time of an on-site inspection or upon request by EPA.<sup>78</sup>

**5.4.4** You must retain the corrective action log for at least three (3) years from the date that your permit coverage expires or is terminated.

## **6 STORMWATER TEAM FORMATION/STAFF TRAINING REQUIREMENTS**

### **6.1 STORMWATER TEAM**

Each operator, or group of multiple operators, must assemble a "stormwater team" that will be responsible for carrying out activities necessary to comply with this permit. The stormwater team must include the following people:

- a.** Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention controls);
- b.** Personnel responsible for the application and storage of treatment chemicals (if applicable);
- c.** Personnel who are responsible for conducting inspections as required in Part 4.1; and
- d.** Personnel who are responsible for taking corrective actions as required in Part 5.

Members of the stormwater team must be identified in the SWPPP pursuant to Part 7.2.2.

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<sup>78</sup> The corrective action log may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of corrective action log records, refer to the Fact Sheet discussion related to Part 4.7.3.

## 6.2 GENERAL TRAINING REQUIREMENTS FOR STORMWATER TEAM MEMBERS

Prior to the commencement of construction activities, you must ensure that all persons<sup>79</sup> assigned to the stormwater team understand the requirements of this permit and their specific responsibilities with respect to those requirements, including the following related to the scope of their job duties:

- a. The permit requirements and deadlines associated with installation, maintenance, and removal of stormwater controls, as well as site stabilization;
- b. The location of all stormwater controls on the site required by this permit and how they are to be maintained;
- c. The proper procedures to follow with respect to the permit's pollution prevention requirements; and
- d. When and how to conduct inspections, record applicable findings, and take corrective actions. Specific training requirements for persons conducting site inspections are included in Part 6.3.

You are responsible for ensuring that all activities on the site comply with the requirements of this permit. You are not required to provide or document formal training for subcontractors or other outside service providers (unless the subcontractors or outside service providers are responsible for conducting the inspections required in Part 4, in which case you must provide such documentation consistent with Part 7.2.2), but you must ensure that such personnel understand any requirements of this permit that may be affected by the work they are subcontracted to perform.

## 6.3 TRAINING REQUIREMENTS FOR PERSONS CONDUCTING INSPECTIONS

For projects that receive coverage under this permit on or after February 17, 2023, to be considered a qualified person under Part 4.1 for conducting inspections under Part 4, you must, at a minimum, either:

- a. Have completed the EPA construction inspection course developed for this permit and have passed the exam; or
- b. Hold a current valid construction inspection certification or license from a program that, at a minimum, covers the following:<sup>80</sup>
  - i. Principles and practices of erosion and sediment control and pollution prevention practices at construction sites;
  - ii. Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites; and
  - iii. Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4.

<sup>79</sup> If the person requiring training is a new employee who starts after you commence construction activities, you must ensure that this person has the proper understanding as required above prior to assuming particular responsibilities related to compliance with this permit. For emergency-related projects, the requirement to train personnel prior to commencement of construction activities does not apply, however, such personnel must have the required training prior to NOI submission.

<sup>80</sup> If one of the following topics (e.g., installation and maintenance of pollution prevention practices) is not covered by the non-EPA training program, you may consider supplementing the training with the analogous module of the EPA course (e.g., Module 4) that covers the missing topic.

For projects that receive coverage under this permit prior to February 17, 2023, any personnel conducting site inspections pursuant to Part 4 on your site must, at a minimum, be a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.<sup>81</sup>

#### **6.4 STORMWATER TEAM'S ACCESS TO PERMIT DOCUMENTS**

Each member of the stormwater team must have easy access to an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

### **7 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)**

#### **7.1 GENERAL REQUIREMENTS**

All operators associated with a construction site under this permit must develop a SWPPP consistent with the requirements in Part 7 prior to their submittal of the NOI.<sup>82, 83, 84</sup> The SWPPP must be kept up-to-date throughout coverage under this permit.

If a SWPPP was prepared under a previous version of this permit, the operator must review and update the SWPPP to ensure that this permit's requirements are addressed prior to submitting an NOI for coverage under this permit.

#### **7.2 SWPPP CONTENTS**

At a minimum, the SWPPP must include the information specified in this Part and as specified in other parts of this permit.

##### **7.2.1 All Site Operators.** Include a list of all other operators who will be engaged in construction activities at the site, and the areas of the site over which each operator has control.

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<sup>81</sup> If you receive coverage for a project prior to February 17, 2023, and construction activities for the same project will continue after February 17, 2023, the personnel conducting inspections do not need to take the additional training specified in Parts 6.3a and 6.3b for inspections conducted on the project site. If the same operator obtains coverage for a different project on or after February 17, 2023, personnel conducting inspections would be required to meet the requirements for a qualified person by completing the training in either Part 6.3a or Part 6.3b.

<sup>82</sup> The SWPPP does not establish the effluent limits and/or other permit terms and conditions that apply to your site's discharges; these limits, terms, and conditions are established in this permit.

<sup>83</sup> Where there are multiple operators associated with the same site, they may develop a group SWPPP instead of multiple individual SWPPPs. Regardless of whether there is a group SWPPP or multiple individual SWPPPs, each operator is responsible for compliance with the permit's terms and conditions. In other words, if Operator A relies on Operator B to satisfy its permit obligations, Operator A does not have to duplicate those permit-related functions if Operator B is implementing them such that both operators are in compliance with the permit. However, Operator A remains responsible for permit compliance if Operator B fails to take actions necessary for Operator A to comply with the permit. In addition, all operators must ensure, either directly or through coordination with other operators, that their activities do not cause a violation or compromise any other operators' controls and/or any shared controls. See also footnote 60.

<sup>84</sup> There are a number of commercially available products to assist operators in developing the SWPPP, as well as companies that can be hired to help develop a site-specific SWPPP. The permit does not state which are recommended, nor does EPA endorse any specific products or vendors. Where operators choose to rely on these products or services, the choice of which ones to use to comply with the requirements of this Part is a decision for the operator alone.

**7.2.2 Stormwater Team.** Identify the personnel (by name and position) that you have made part of the stormwater team pursuant to Part 6.1, as well as their individual responsibilities, including which members are responsible for conducting inspections.

Include verification that each member of the stormwater team has received the training required by Part 6.2. Include documentation that members of the stormwater team responsible for conducting inspections pursuant to Part 4 have received the training required by Part 6.3. If personnel on your team elect to complete the EPA inspector training program pursuant to Part 6.3a, you must include copies of the certificate showing that the relevant personnel have completed the training and passed the exam. If personnel on your team elect to complete a non-EPA inspector training program pursuant to Part 6.3b, you must include documentation showing that these persons have successfully completed the program and their certification or license is still current. You must also confirm that the non-EPA inspector training program satisfies the minimum elements for such programs in Part 6.3b.

**7.2.3 Nature of Construction Activities.** Include the following:

- a. A description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition;
- b. The size of the property (in acres or length in miles if a linear construction site);
- c. The total area expected to be disturbed by the construction activities (to the nearest quarter acre or nearest quarter mile if a linear construction site);
- d. A description of any on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c);
- e. The maximum area expected to be disturbed at any one time, including on-site and off-site construction support activity areas;
- f. A description and projected schedule for the following:<sup>85</sup>
  - i. Commencement of construction activities in each portion of the site, including clearing and grubbing, mass grading, demolition activities, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
  - ii. Temporary or permanent cessation of construction activities in each portion of the site;
  - iii. Temporary or final stabilization of exposed areas for each portion of the site; and
  - iv. Removal of temporary stormwater controls and construction equipment or vehicles, and the cessation of construction-related pollutant-generating activities.

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<sup>85</sup> If plans change due to unforeseen circumstances or for other reasons, the requirement to describe the sequence and estimated dates of construction activities is not meant to "lock in" the operator to meeting these dates. When departures from initial projections are necessary, this should be documented in the SWPPP itself, or in associated records, as appropriate.



- g.** A list and description of all pollutant-generating activities<sup>86</sup> on the site. For each pollutant-generating activity, include an inventory of pollutants or pollutant constituents (e.g., *sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels*) associated with that activity, which could be discharged in stormwater from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed or removed during construction;
- h.** Business days and hours for the project;
- i.** If you are conducting construction activities in response to a public emergency (see Part 1.4), a description of the cause of the public emergency (e.g., *mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services*), information substantiating its occurrence (e.g., *State disaster declaration or similar State or local declaration*), and a description of the construction necessary to reestablish affected public services.

**7.2.4 Site Map.** Include a legible map, or series of maps, showing the following features of the site:

- a.** Boundaries of the property;
- b.** Locations where construction activities will occur, including:
  - i.** Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities;
  - ii.** Approximate slopes before and after major grading activities (note any steep slopes (as defined in Appendix A));
  - iii.** Locations where sediment, soil, or other construction materials will be stockpiled;
  - iv.** Any receiving water crossings;
  - v.** Designated points where vehicles will exit onto paved roads;
  - vi.** Locations of structures and other impervious surfaces upon completion of construction; and
  - vii.** Locations of on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c).
- c.** Locations of any receiving waters within the site and all receiving waters within one mile downstream of the site's discharge point(s). Also identify if any of these receiving waters are listed as impaired or are identified as a Tier 2, Tier 2.5, or Tier 3 water;
- d.** Any areas of Federally listed critical habitat within the action area of the site as defined in Appendix A;
- e.** Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures);
- f.** Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities;

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<sup>86</sup> Examples of pollutant-generating activities include paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering activities.

- g.** Stormwater and authorized non-stormwater discharge locations, including:
  - i.** Locations where stormwater and/or authorized non-stormwater will be discharged to storm drain inlets, including a notation of whether the inlet conveys stormwater to a sediment basin, sediment trap, or similarly effective control;<sup>87</sup>
  - ii.** Locations where stormwater or authorized non-stormwater will be discharged directly to receiving waters (i.e., not via a storm drain inlet); and
  - iii.** Locations where turbidity benchmark monitoring will take place to comply with Part 3.3, if applicable to your site.
- h.** Locations of all potential pollutant-generating activities identified in Part 7.2.3g;
- i.** Designated areas where construction wastes that are covered by the exception in Part 2.3.3e.ii because they are not pollutant-generating will be stored;
- j.** Locations of stormwater controls, including natural buffer areas and any shared controls utilized to comply with this permit; and
- k.** Locations where polymers, flocculants, or other treatment chemicals will be used and stored.

**7.2.5 Non-Stormwater Discharges.** Identify all authorized non-stormwater discharges in Part 1.2.2 that will or may occur.

**7.2.6 Description of Stormwater Controls.**

- a.** For each of the Part 2.2 erosion and sediment control requirements, Part 2.3 pollution prevention requirements, and Part 2.4 construction dewatering requirements, as applicable to your site, you must include the following:
  - i.** A description of the specific control(s) to be implemented to meet these requirements;
  - ii.** The design specifications for controls described in Part 7.2.6a.i (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon);<sup>88</sup>
  - iii.** Routine stormwater control maintenance specifications; and
  - iv.** The projected schedule for stormwater control installation/implementation.
- b.** You must also include any of the following additional information as applicable.
  - i. Natural buffers and/or equivalent sediment controls** (see Part 2.2.1 and Appendix F). You must include the following:
    - (a) The compliance alternative to be implemented;
    - (b) If complying with alternative 2, the width of natural buffer retained;

<sup>87</sup> The requirement to show storm drain inlets in the immediate vicinity of the site on your site map only applies to those inlets that are easily identifiable from your site or from a publicly accessible area immediately adjacent to your site.

<sup>88</sup> Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practice and must be explained in the SWPPP.

- (c) If complying with alternative 2 or 3, the erosion and sediment control(s) you will use to achieve an equivalent sediment reduction, and any information you relied upon to demonstrate the equivalency;
  - (d) If complying with alternative 3, a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size;
  - (e) For "linear construction sites" where it is infeasible to implement compliance alternative 1, 2, or 3, a rationale for this determination, and a description of any buffer width retained and/or supplemental erosion and sediment controls installed; and
  - (f) A description of any disturbances that are exempt under Part 2.2.1 that occur within 50 feet of a receiving water.
- ii. Perimeter controls for a "linear construction site"** (see Part 2.2.3d). For areas where perimeter controls are not feasible, include documentation to support this determination and a description of the other practices that will be implemented to minimize discharges of pollutants in stormwater associated with construction activities.
- Note: Routine maintenance specifications for perimeter controls documented in the SWPPP must include the Part 2.2.3c.i requirement that sediment be removed before it has accumulated to one-half of the above-ground height of any perimeter control.
- iii. Sediment track-out controls** (see Parts 2.2.4b and 2.2.4c). Document the specific stabilization techniques and/or controls that will be implemented to remove sediment prior to vehicle exit.
- iv. Inlet protection measures** (see Part 2.2.10a). Where inlet protection measures are not required because the storm drain inlets to which your site discharges are conveyed to a sediment basin, sediment trap, or similarly effective control, include a short description of the control that receives the stormwater flow from the site.
- v. Sediment basins** (see Part 2.2.12). In circumstances where it is infeasible to utilize outlet structures that withdraw water from the surface, include documentation to support this determination, including the specific conditions or time periods when this exception will apply.
- vi. Treatment chemicals** (see Part 2.2.13), you must include the following:
- (a) A listing of the soil types that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems. Also include a listing of soil types expected to be found in fill material to be used in these same areas, to the extent you have this information prior to construction;
  - (b) A listing of all treatment chemicals to be used at the site and why the selection of these chemicals is suited to the soil characteristics of your site;
  - (c) If the applicable EPA Regional Office authorized you to use cationic treatment chemicals for sediment control, include the specific controls and implementation procedures designed to ensure that your use of cationic

treatment chemicals will not lead to a discharge that does not meet water quality standards;

- (d) The dosage of all treatment chemicals to be used at the site or the methodology to be used to determine dosage;
- (e) Information from any applicable Safety Data Sheet (SDS);
- (f) Schematic drawings of any chemically enhanced stormwater controls or chemical treatment systems to be used for application of the treatment chemicals;
- (g) A description of how chemicals will be stored consistent with Part 2.2.13c;
- (h) References to applicable State or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems; and
- (i) A description of the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to use of the treatment chemicals at your site.

**vii. Stabilization measures** (see Part 2.2.14). You must include the following:

- (a) The specific vegetative and/or non-vegetative practices that will be used;
- (b) The stabilization deadline that will be met in accordance with Part 2.2.14;
- (c) If complying with the deadlines for sites in arid, semi-arid, or drought-stricken areas, the beginning and ending dates of the seasonally dry period (as defined in Appendix A)<sup>89</sup> and the schedule you will follow for initiating and completing vegetative stabilization; and
- (d) If complying with deadlines for sites affected by unforeseen circumstances that delay the initiation and/or completion of vegetative stabilization, document the circumstances and the schedule for initiating and completing stabilization.

**viii. Spill prevention and response procedures** (see Parts 1.3.5, 2.3.3c, 2.3.3d, and 2.3.6). You must include the following:

- (a) Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and
- (b) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR part 110, 40 CFR part 117, or 40 CFR part 302, occurs

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<sup>89</sup> See footnote 44.



monitoring requirements, describe the procedures you will follow to collect and evaluate samples, report results to EPA and keep records of monitoring information, and take corrective action when necessary. Include the specific type of turbidity meter you will use for monitoring, as well as any manuals or manufacturer instructions on how to operate and calibrate the meter. Describe any coordinating arrangement you may have with any other permitted operators on the same site with respect to compliance with the turbidity monitoring requirements, including which parties are tasked with specific responsibilities. If EPA has approved of an alternate turbidity benchmark pursuant to Part 3.3.2b, include any data and other documentation you relied on to request use of the specific alternative benchmark.

#### **7.2.9 Compliance with Other Requirements.**

- a. Threatened and Endangered Species Protection.** Include documentation required in the Endangered Species Protection section of the NOI in NeT, or the ESA worksheet in Appendix D, supporting your eligibility with regard to the protection of threatened and endangered species and designated critical habitat.
- b. Historic Properties.** Include documentation required in Appendix E supporting your eligibility with regard to the protection of historic properties.
- c. Safe Drinking Water Act Underground Injection Control (UIC) Requirements for Certain Subsurface Stormwater Controls.** If you are using any of the following stormwater controls at your site, document any contact you have had with the applicable State agency<sup>91</sup> or EPA Regional Office responsible for implementing the requirements for underground injection wells in the Safe Drinking Water Act and EPA's implementing regulations at 40 CFR § 144 -147. Such controls would generally be considered Class V UIC wells:
  - i.** Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);
  - ii.** Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow; and
  - iii.** Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).

**7.2.10 SWPPP Certification.** Your signatory must sign and date your SWPPP in accordance with Appendix G, Part G.11.

**7.2.11 Post-Authorization Additions to the SWPPP.** Once you are authorized for coverage under this permit, you must include the following documents as part of your SWPPP:

- a.** A copy of your NOI submitted to EPA along with any correspondence exchanged between you and EPA related to coverage under this permit;
- b.** A copy of the acknowledgment letter you receive from NeT assigning your NPDES ID (i.e., *permit tracking number*);

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<sup>91</sup> For State UIC program contacts, refer to the following EPA website: <https://www.epa.gov/uic>.

- c. A copy of this permit (an electronic copy easily available to the stormwater team is also acceptable).

### 7.3 ON-SITE AVAILABILITY OF YOUR SWPPP

You must keep a current copy of your SWPPP at the site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by EPA; a State, Tribal, or local agency approving stormwater management plans; the operator of a storm sewer system receiving discharges from the site; or representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).<sup>92</sup>

EPA may provide access to portions of your SWPPP to a member of the public upon request. Confidential Business Information (CBI) will be withheld from the public, but may not be withheld from EPA, USFWS, or NMFS.<sup>93</sup>

If an on-site location is unavailable to keep the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance of your construction site.

### 7.4 SWPPP MODIFICATIONS

**7.4.1** You must modify your SWPPP, including the site map(s), within seven (7) days of any of the following conditions:

- a. Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5. You do not need to modify your SWPPP if the estimated dates in Part 7.2.3f change during the course of construction;
- b. To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;
- c. If inspections or investigations by EPA or its authorized representatives determine that SWPPP modifications are necessary for compliance with this permit;
- d. Where EPA determines it is necessary to install and/or implement additional controls at your site in order to meet the requirements of this permit, the following must be included in your SWPPP:
  - i. A copy of any correspondence describing such measures and requirements; and

<sup>92</sup> The SWPPP may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of the SWPPP, refer to the Fact Sheet discussion related to Part 4.7.3.

<sup>93</sup> Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the CWA. The authorized representatives, including employees of other executive branch agencies, may review CBI during the course of reviewing draft regulations.



- ii. A description of the controls that will be used to meet such requirements.
  - e. To reflect any revisions to applicable Federal, State, Tribal, or local requirements that affect the stormwater controls implemented at the site; and
  - f. If applicable, if a change in chemical treatment systems or chemically enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.
- 7.4.2** You must maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change (see Part 7.2.9 above) and a brief summary of all changes.
- 7.4.3** All modifications made to the SWPPP consistent with Part 7.4 must be authorized by a person identified in Appendix G, Part G.11.b.
- 7.4.4** Upon determining that a modification to your SWPPP is required, if there are multiple operators covered under this permit, you must immediately notify any operators who may be impacted by the change to the SWPPP.

## **8 HOW TO TERMINATE COVERAGE**

Until you terminate coverage under this permit, you must comply with all conditions and effluent limitations in the permit. To terminate permit coverage, you must submit to EPA a complete and accurate Notice of Termination (NOT), which certifies that you have met the requirements for terminating in Part 8.

### **8.1 MINIMUM INFORMATION REQUIRED IN NOT**

- 8.1.1** NPDES ID (i.e., *permit tracking number*) provided by EPA when you received coverage under this permit;
- 8.1.2** Basis for submission of the NOT (see Part 8.2);
- 8.1.3** Operator contact information;
- 8.1.4** Name of site and address (or a description of location if no street address is available); and
- 8.1.5** NOT certification.

### **8.2 CONDITIONS FOR TERMINATING CGP COVERAGE**

You may terminate CGP coverage only if one or more of the conditions in Parts 8.2.1, 8.2.2, or 8.2.3 has occurred. Until your termination is effective consistent with Part 8.5, you must continue to comply with the conditions of this permit.

- 8.2.1** You have completed all construction activities at your site and, if applicable, construction support activities covered by this permit (see Part 1.2.1c), and you have met all of the following requirements:
- a. For any areas that (1) were disturbed during construction, (2) are not covered by permanent structures, and (3) over which you had control during the construction activities, you have met the requirements for final vegetative or non-vegetative stabilization in Part 2.2.14c.

To document that you have met these stabilization requirements, you must take either ground or aerial photographs that show your site's compliance with the Part 2.2.14 stabilization requirements and submit them with your NOT. If any portion of your

site is covered by one of the exceptions in Part 2.2.14c.iii, indicate which exception applies and include a supplementary explanation with your photographs that provides the necessary context for why this portion of the site is in compliance with the final stabilization criteria even though it appears to be unstabilized. You are not required to take photographs of every distinct part of your site that is being stabilized, however, the conditions of the site portrayed in any photographs that are submitted must be substantially similar<sup>94</sup> to those of the areas that are not photographed. You must also comply with the following related to these photographs:

- i. Take photographs both before and after the site has met the final stabilization criteria in Part 2.2.14c;
  - ii. All photographs must be clear and in focus, and in the original format and resolution; and
  - iii. Include the date each photograph was taken, and a brief description of the area of the site captured by the photograph (e.g., photo shows application of seed and erosion control mats to remaining exposed surfaces on northeast corner of site).
- b. You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage;
  - c. You have removed all stormwater controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable (as defined in Appendix A); and
  - d. You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage; or
- 8.2.2** You have transferred control of all areas of the site for which you are responsible under this permit to another operator, and that operator has submitted an NOI and obtained coverage under this permit; or
- 8.2.3** Coverage under an individual or alternative general NPDES permit has been obtained.
- 8.3 HOW TO SUBMIT YOUR NOT**

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit an NOT for the 2022 CGP.

To access NeT, go to <https://cdx.epa.gov/cdx>.

Waivers from electronic reporting may be granted as specified in Part 1.4.2. If the EPA Regional Office grants you approval to use a paper NOT, and you elect to use it, you must complete the form in Appendix I.

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<sup>94</sup> Stabilization conditions that are substantially similar would include areas that are using the same type of stabilization measures and that have similar slopes, soils, and topography, and have achieved the same level of stabilization.

**8.4 DEADLINE FOR SUBMITTING THE NOT**

You must submit an NOT within 30 calendar days after any one of the conditions in Part 8.2 occurs.

**8.5 EFFECTIVE DATE OF TERMINATION OF COVERAGE**

Your authorization to discharge under this permit terminates at midnight of the calendar day that a complete NOT is submitted to EPA.

**9 PERMIT CONDITIONS APPLICABLE TO SPECIFIC STATES, INDIAN COUNTRY LANDS, OR TERRITORIES**

The provisions in this Part provide additions to the applicable conditions of this permit to reflect specific additional conditions required as part of the State or Tribal CWA Section 401 certification process, or the Coastal Zone Management Act (CZMA) certification process, or as otherwise established by the permitting authority. The specific additional revisions and requirements only apply to activities in those specific States, Indian country, and areas in certain States with Federal Facilities or areas subject to construction projects by Federal Operators. States, Indian country, and other areas not included in this Part do not have any additions to the applicable conditions of this permit.

**9.1 EPA REGION 1****9.1.1 NHR100000 State of New Hampshire**

- a.** Should the permit coverage for an individual applicant be insufficient to achieve water quality standards, the New Hampshire Department of Environmental Services (NHDES) may prepare additional 401 certification conditions for that applicant. Any additional 401 certification conditions will follow all required NHDES public participation requirements.
- b.** If you disturb 100,000 square feet or more of contiguous area, you must also comply with RSA 485-A:17 and Env-Wq 1500, and, unless exempt, apply for an Alteration of Terrain (AoT) permit from NHDES. This requirement also applies to a lower disturbance threshold of 50,000 square feet or more when construction occurs within the protected shoreline under the Shoreland Water Quality Protection Act (see RSA 483-B and Env-Wq 1400). A permit application must also be filed if your project disturbs an area of greater than 2,500 square feet, is within 50 feet of any surface water, and has a flow path of 50 feet or longer disturbing a grade of 25 percent or greater. Project sites with disturbances smaller than those discussed above, that have the potential to adversely affect state surface waters, are subject to the conditions of an AoT General Permit by Rule (Env-Wq 1503.03).
- c.** You must determine that any excavation dewatering discharges are not contaminated before they will be authorized as an allowable non-stormwater discharge under this permit (see Part 1.2.2 of the Construction General Permit or CGP). In the absence of information demonstrating otherwise, the water is considered uncontaminated if there is no groundwater contamination within 1,000 feet of the groundwater dewatering location. Information on groundwater contamination can be generated over the Internet via the NHDES web site <http://des.nh.gov/> by using the One Stop Data Mapper. For a toxic substance included in the New Hampshire surface water quality standards, see Env-Wq 1703.21 (see <https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/Env-Wg>

1700.pdf). If it is determined that the groundwater to be dewatered is near a remediation or other waste site, you must apply for the Remediation General Permit (see <https://www3.epa.gov/region1/npdes/rgp.html>)

- d.** As a minimum, you must treat any uncontaminated excavation "dewatering" discharges and "stormwater" discharges, as those terms are defined in Appendix A of the CGP, as necessary, to remove suspended solids and turbidity so that the surface waters receiving the construction discharges<sup>95</sup> meet New Hampshire surface water quality standards for turbidity (Env-Wq 1703.11 and Env-Wq 1703.03(c)(1)c), benthic deposits (Env-Wq 1703.03(c)(1)a), and Env-Wq 1703.08) and foam, debris, scum or other visible substances (i.e., plumes or visual turbidity)<sup>96</sup> (Env-Wq 1703.03(c)(1)b).
- i.** For all Construction Activities covered under this CGP, the following shall apply to ensure compliance with the aforementioned regulations for turbidity, benthic deposits and visible substances:
- Unless otherwise specified, site inspection requirements shall comply with Part 4 of the CGP. As a minimum site inspection frequency shall be in accordance with Part 4.2.2 of the CGP (and Part 4.3.2 of the CGP for sites discharging dewatering water). Site inspection frequency may be reduced in accordance with Part 4.4 of the CGP (Reductions in Inspection Frequency). Monitoring of the receiving water for visible turbidity and benthic sediment deposits shall be conducted each site inspection and results reported in the Inspection Report required in Part 4.7 of the CGP. Should visible turbidity or benthic sediment deposits attributable or partly attributable to your construction activities be present in the receiving water, the "Corrective Actions" specified in Part 5 shall be immediately implemented to correct the water quality standard violations. In addition, daily monitoring (including photographs) of the receiving water shall be conducted until there is no visible turbidity or benthic deposits. Inspection Reports required in Part 4.7 of the CGP shall include, but not be limited to, the distance downstream and the percent of the river width<sup>97</sup> where visible turbidity was observed, and the period of time that the visible turbidity persisted. A copy of the Inspection Report(s) shall be made available to NHDES within 24 hours of receiving a written request from NHDES.
- ii.** For Construction Activities, disturbing 5 acres or more of land at any one time (excluding areas that have been completely stabilized in accordance with the final stabilization criteria specified in Part 2.2.14.c of the CGP), the following shall

<sup>95</sup> Construction Discharges include uncontaminated "dewatering" and "stormwater" discharges as those terms are defined in Appendix A of the CGP. Controlled construction discharges are construction discharges where the rate of flow can be regulated such as from a construction settling basin or NHDES approved flocculation system.

<sup>96</sup> For the definition of visual turbidity, see the definition for "Non-Turbid" in Appendix A of the CGP, which states the following: "Non-Turbid" - a discharge that is free from visual turbidity. For the purposes of this permit, visual turbidity refers to a sediment plume or other cloudiness in the water caused by sediment that can be identified by an observer." [EPA interprets the text of this footnote as intending to reference the Appendix A definitions of "visual turbidity" and "non-turbid" in the final permit.]

<sup>97</sup> The distance downstream and the percent of river width where visible turbidity (i.e., plume) is observed is required to determine the extent of the river affected and to determine if there was a "zone of passage" (i.e., a portion of the receiving water where there was no visible turbidity where mobile organisms could pass without being adversely impacted). The percent of river width affected is equal 100 multiplied by the width of the plume (in feet) divided by the width of the receiving water (in feet).

apply to ensure compliance with the aforementioned regulations for turbidity, benthic deposits and visible substances.

Item 9.1.1.d.i) above shall apply to all construction discharges and the minimum site inspection frequency shall comply with Part 4.3.1 of the CGP (and Part 4.3.2 of the CGP for sites discharging dewatering water). Site inspection frequency may be reduced in accordance with Part 4.4 of the CGP (Reductions in Inspection Frequency).

With regards to controlled construction discharges, if there is no visible turbidity (i.e., plumes) or benthic deposits, and, in the absence of information demonstrating otherwise, turbidity measurements of less than or equal to 50 nephelometric turbidity units (NTU) in the controlled construction discharges at the outlet prior to mixing with the receiving surface waters, shall be presumed to meet New Hampshire surface water quality standards for the parameters listed above. As a minimum, the controlled construction discharges must be sampled at each site inspection.

If any controlled construction discharge exceeds 50 NTU, or if visible turbidity or benthic sediment deposits attributable or partly attributable to any construction discharge are observed in the receiving water, then the "Corrective Actions" specified in Part 5 of the CGP shall be immediately implemented.

In addition, should such violation occur, and, in order to determine compliance with surface water quality standards for turbidity (Env-Wq 1703.11 and Env-Wq 1703.03(c)(1)c), benthic deposits (Env-Wq 1703.03(c)(1)a), and Env-Wq 1703.08) and foam, debris, scum or other visible substances (Env-Wq 1703.03(c)(1)b)), turbidity monitoring shall be immediately implemented as specified below:

Turbidity samples of the receiving water shall be immediately taken in the receiving water upstream and beyond the influence of the construction activity, and, unless a mixing zone<sup>98</sup> is approved by NHDES, no more than 75 feet downstream of each controlled construction discharge that exceeded 50 NTU and no more than 75 feet downstream of each construction discharge that caused visible turbidity.

Downstream samples shall be taken at locations in the receiving water that are most likely influenced by the discharge (e.g., if visible turbidity (i.e., a plume) is present, the sample shall be taken in the plume). Samples shall be collected a minimum of 2 times per day during the daylight hours at times when construction activities are most likely to cause turbidity in the receiving water and shall continue until the turbidity water quality standards are met in the receiving water (i.e., the difference between the upstream and downstream turbidity level is no greater than 10 NTU).

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<sup>98</sup> Permittees may request a distance greater than 75 feet downstream of a construction discharge for determining compliance with turbidity standards in Class B surface waters, by submitting a mixing zone request to NHDES that complies with Env-Wq 1707.02. If a mixing zone is approved, NHDES is required to include conditions to ensure that the criteria on which the approval is based are met (Env-Wq 1707.03).

If water quality standards are not met during daylight hours on any day, sampling shall resume the next day and continue no fewer than 2 times per day until water quality standards are met. The date, time, location and results of turbidity measurements, as well as a summary identifying the cause of the violations, corrective actions that were implemented, the period of time that the receiving water exceeded turbidity standards and the distance downstream and the percent of the river width where visible turbidity was observed, and the period of time that the visible turbidity persisted, shall be recorded and included in the Inspection Report required in Part 4.7 of the CGP. Turbidity measurements shall be conducted via a field meter in accordance with the requirements for turbidity specified in Table 1B in 40 CFR 136.3 (see 40 CFR § 136.3 Identification of test procedures - Code of Federal Regulations ecfrio). Field meters shall be calibrated every day sampling is conducted and prior to the first sample.

- e. Construction site owners and operators are encouraged to consider opportunities for post- construction groundwater recharge using infiltration best management practices (BMPs) during site design and preparation of the SWPPP in order to assure compliance with Env-Wq 1703.03 and Env-Wq 1703.11. If your construction site is in a town that is required to obtain coverage under the NPDES General Permit for discharges from Municipal Separate Storm Sewer Systems (MS4) you may be required to use such practices. The SWPPP must include a description of any on-site infiltration that will be installed as a post-construction stormwater management measure or reasons for not employing such measures such as 1) The facility is located in a wellhead protection area as defined in RSA 485- C:2; or 2) The facility is located in an area where groundwater has been reclassified to GAA, GA1 or GA2 pursuant to RSA 485-C and Env-DW 901; or 3) Any areas that would be exempt from the groundwater recharge requirements contained in Env-Wq 1507.04, including all land uses or activities considered to be a "High-load Area" (see Env-Wq 1502.30). For design considerations for infiltration measures see Env-Wq 1508.06. Note that there may be additional local requirements that fall under the NH MS4 permittee's Authorization to Discharge Permit for those regulated areas.
- f. Appendix F of the CGP contains information regarding Tier 2, or high quality waters in the various states. **[EPA notes that this information has now been moved to <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>]** Although there is no official list of tier 2 waters for New Hampshire, it can be assumed that all New Hampshire surface waters are tier 2 for turbidity unless 1) the surface water that you are proposing to discharge into is listed as impaired for turbidity in the states listing of impaired waters (see <https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/>) or 2) sampling upstream of the proposed discharge location shows turbidity values greater than 10 NTU (Env-Wq 1703.11). A single grab sample collected during dry weather (no precipitation within 48 hours) is acceptable.
- g. To ensure compliance with RSA 485-C, RSA 485-A, RSA 485-A:13, I(a), Env-Wq 1700 and Env-Wq 302, the following information may be requested by NHDES. This information must be kept on site unless you receive a written request from NHDES that it be sent to the address shown below in 9.1.1.h.

- i. A list of all non-stormwater discharges that occur at the facility, including their source locations and the control measures being used (see Part 1.2.2 of the CGP).
  - ii. Records of sampling and analysis required for construction dewatering and stormwater discharges (see 9.1.1.d above).
- h.** All required or requested documents must be sent to: NH Department of Environmental Services, Watershed Management Bureau, P.O. Box 95 Concord, NH 03302-0095.

**9.1.2 MAR100000 Commonwealth of Massachusetts (except Indian country)**

- a.** All discharges covered by the Construction General Permit shall comply with the provisions pursuant to 314 CMR 3.00, 314 CMR 4.00, 314 CMR 9.00, including applicable construction stormwater standards and 310 CMR 10.00.
- b.** Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, permittees are prohibited from discharging dewatering water under the CGP from sites that are designated as Superfund/CERCLA or RCRA, and must make accommodations to dispose of the dewatering discharges appropriately, such as coverage under the Remediation General Permit (RGP).
- c.** Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to protect Outstanding Resource Waters under 314 CMR 4.04(3), applicants seeking coverage under the 2022 CGP that propose to carry out construction activities near Outstanding Resource Waters as identified in 314 CMR 4.06, shall submit to MassDEP for review:
- i. a copy of the Stormwater Pollution Prevention Plan (SWPPP),
  - ii. a copy of the EPA NOI, and
  - iii. MassDEP's Stormwater BMP Checklist.

For purposes of this review, the permittee shall submit these documents to MassDEP at the same time they are submitted to EPA. Instructions on how to submit these documents to MassDEP and where to find the MassDEP Stormwater BMP Checklist and obtain authorization to discharge can be found here: <https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent>.

- d.** Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, applicants that propose to dewater under the 2022 CGP and plan to discharge to certain waters as described below, shall determine that any dewatering discharges are not contaminated by testing the proposed discharge as described below as part of the application for WM15 authorization. Unless otherwise specified, testing described in this section should be conducted using the methods in 40 CFR 136.
- i. Applicants for sites that plan to discharge to Outstanding Resource Waters as identified in 314 CMR 4.06 shall test one sample of the proposed dewatering discharge water for pH, E. Coli (for discharges to freshwater), fecal coliform (for



discharges to salt water), Enterococci (for discharges to salt water), total suspended solids, oil and grease, total nitrogen, total phosphorus, and all parameters with numeric criteria listed in the Massachusetts Surface Water Quality Standards at 314 CMR 4.05(e). Results shall be reported to MassDEP as part of the WM15 application. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit.

- ii. Applicants for sites that propose to discharge to Public Water Supplies (314 CMR 4.06(1)(d)1) shall also test one sample of the proposed dewatering discharge water for per- and polyfluoroalkyl substances (PFAS), as outlined in the table below. Results shall be reported to MassDEP as part of the WM15 application. If any PFAS compounds are detected, the applicant shall apply for coverage under the NPDES Remediation General Permit for Massachusetts if required.

<b>PFAS Testing Parameters for Discharges to Public Drinking Water Supplies<sup>99</sup></b>	
Perfluorohexanesulfonic acid (PFHxS), grab	Report ng/L
Perfluoroheptanoic acid (PFHpA), grab	Report ng/L
Perfluorononanoic acid (PFNA), grab	Report ng/L
Perfluorooctanesulfonic acid (PFOS), grab	Report ng/L
Perfluorooctanoic acid (PFOA), grab	Report ng/L
Perfluorodecanoic acid (PFDA), grab	Report ng/L

- iii. Applicants for sites that propose to discharge to an impaired water as identified in the most recent final Massachusetts Integrated List of Waters, shall test one sample of the proposed dewatering discharge water for the parameter(s) for which the waterbody is impaired. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit and shall apply for RGP coverage if required.
- iv. For dewatering discharges to all other waters, if any pollutants are known or believed present in the proposed dewatering discharge water, the applicant shall apply for coverage under the NPDES Remediation General Permit for Massachusetts if required. For the purposes of this condition, a pollutant is "known present" if measured above the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and "believed present" if a pollutant has not been measured in an environmental sample but will be added or generated prior to discharge, such as through a treatment process. Consequently, a pollutant is "known absent" if measured as non-detect relative to the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and "believed absent" if a pollutant has not been measured in an environmental sample but will not be added or generated prior to discharge and is not a parameter that applies to the applicable activity category for a site. If any pollutants are known or believed present in the

<sup>99</sup> PFAS testing shall follow established EPA methods 537 or 537.1 for drinking water until EPA Method 3512 for non-potable water becomes available.

proposed dewatering discharge water, the applicant shall test one sample of the proposed dewatering discharge water for the pollutants known or believed to be present. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit.

- e. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to protect Outstanding Resource Waters under 314 CMR 4.04(3), applicants that propose to dewater under the 2022 CGP and discharge to Outstanding Resource Waters as identified in 314 CMR 4.06, shall submit the SWPPP and associated documents to MassDEP to review. MassDEP shall complete review within 30 days of receipt.
- f. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05 to maintain surface waters free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to the waterbody, permittees that have been authorized to dewater under the 2022 CGP and that discharge to Outstanding Resource Waters as identified in 314 CMR 4.06 shall carry out daily benchmark monitoring for turbidity<sup>100</sup> for the duration of dewatering. Permittees shall compare the weekly average of the turbidity monitoring results with the established benchmark turbidity value of 25 Nephelometric Turbidity Units (NTU). If a permittee's weekly average turbidity results exceed the benchmark, the operator shall conduct follow-up corrective action to determine the source of the problem and to make any necessary repairs or upgrades to the dewatering controls to lower the turbidity levels. The permittee shall document any corrective action taken in its corrective action log. Furthermore, permittees at these sites shall carry out inspections at higher frequency, specifically, daily inspections of the dewatering discharge treatment for the duration of the discharge. The permittee shall inspect the site for sediment plume or whether a hydrocarbon sheen is visible at the point of discharge, estimate the flow rate at the point of discharge, and inspect the site downstream to assess whether sedimentation is attributable to the dewatering discharges.
- g. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05 to maintain surface waters free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to the waterbody, permittees shall store materials outside the Base Flood Elevation<sup>101</sup> when feasible to prevent displacing runoff and erosion.
- h. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to maintain surface waters free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses under 314 CMR 4.05(5)(c), all applicants who apply for coverage under the 2022 CGP shall follow guidelines on fertilizer application, including use of fertilizer containing no phosphorus, in accordance with 330 CMR 31.00 Plant Nutrient Application Requirements for

<sup>100</sup> Applicants shall follow EPA Method 180.1 to monitor for turbidity

<sup>101</sup> Base Flood Elevation (BFE) is the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year. The BFE is shown on the Flood Insurance Rate Map (FIRM) for zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO, V1-V30 and VE. (Source: <https://www.fema.gov/node/404233>).

Agricultural Land and Non-Agricultural Turf and Lawns. Further, fertilizer shall never be applied to a site when a rain event greater than 0.5 inches is forecast in the next 48 hours.

- i. Pursuant to 314 CMR 3.11 (2)(a), all applicants who apply for coverage under the 2022 CGP and elect to carry out site inspections every 14 days shall also inspect sites within 24 hours of 0.25 inches of precipitation events or greater over 24 hours, or within 24 hours of a discharge that occurred due to snowmelt from 3.25 inches or greater of snow accumulation.<sup>102</sup> During the high flow periods in spring (i.e., months of April to June), inspection frequency shall be increased to once per week for all sites.
  - i. To determine whether 3.25 inches or greater of snow accumulation has occurred at a site, snowfall measurements can be taken at the site,<sup>103</sup> or the operator can rely on similar information from a local weather forecast.
- j. Implementing structural improvements, enhanced/resilient pollution prevention measures, and other mitigation measures can help to minimize impacts from stormwater discharges from major storm events such as hurricanes, storm surge, extreme/heavy precipitation,<sup>104</sup> and flood events. Pursuant to 314 CMR 3.11 (2)(a), if such stormwater control measures are already in place due to existing requirements mandated by other state, local or federal agencies, the SWPPP shall include a brief description of the controls and a reference to the existing requirement(s). If the site may be exposed to or has previously experienced such major storm events<sup>105</sup>, additional stormwater control measures that may be considered, and implemented as necessary, include, but are not limited to:
  - i. Reinforce materials storage structures to withstand flooding and additional exertion of force;
  - ii. Prevent floating of semi-stationary structures by elevating to the Base Flood Elevation (BFE) level or securing with non-corrosive device;
  - iii. When a delivery of exposed materials is expected, and a storm is anticipated within 48 hours, delay delivery until after the storm or store materials as appropriate (refer to emergency procedures);

<sup>102</sup> This is the amount of snow that is equivalent to 0.25 inches of rain, based on information from the National Oceanic and Atmospheric Administration (NOAA) indicating that 13 inches of snow is, on average, equivalent to 1 inch of rain. See <https://www.nssl.noaa.gov/education/svrwx101/winter/faq/>.

<sup>103</sup> NOAA's National Weather Service has guidelines on snowfall measurements at [https://www.weather.gov/jkl/snow\\_measurement](https://www.weather.gov/jkl/snow_measurement). These guidelines recommend use of a "snowboard" (a piece of wood about 16 inches by 16 inches) that is placed in an unobstructed part of the site on a hard surface.

<sup>104</sup> Heavy precipitation refers to instances during which the amount of rain or snow experienced in a location substantially exceeds what is normal. What constitutes a period of heavy precipitation varies according to location and season. Heavy precipitation does not necessarily mean the total amount of precipitation at a location has increased— just that precipitation is occurring in more intense or more frequent events.

<sup>105</sup> To determine if your facility is susceptible to an increased frequency of major storm events that could impact the discharge of pollutants in stormwater, you may reference FEMA, NOAA, or USGS flood map products at [https://www.usgs.gov/faqs/where-can-i-find-flood-maps?qt-news\\_science\\_products=0#qtnews\\_science\\_products](https://www.usgs.gov/faqs/where-can-i-find-flood-maps?qt-news_science_products=0#qtnews_science_products).

- iv. Temporarily store materials and waste above the Base Flood Elevation **[EPA notes that it has deleted a footnote reference to the term “Base Flood Elevation” since the same footnote is already included in Part 9.1.2.g, above.]** level;
  - v. Temporarily reduce or eliminate outdoor storage;
  - vi. Temporarily relocate any mobile vehicles and equipment to higher ground;
  - vii. Develop scenario-based emergency procedures for major storms that are complementary to regular stormwater pollution prevention planning and identify emergency contacts for staff and contractors; and
  - viii. Conduct staff training for implementing your emergency procedures at regular intervals.
- k. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, permittees who seek coverage under the 2022 CGP and anticipate to carry out dust control shall limit their dust control methodology to using water only and specifically avoid using other techniques, such as solutions containing calcium chloride.
  - l. If MassDEP requests a copy of the Stormwater Pollution Prevention Plan (SWPPP) for any construction site at any time, the permittee shall submit the SWPPP to MassDEP within 14 days of such a request. MassDEP may conduct an inspection of any site covered by this permit to ensure compliance with state law requirements, including state water quality standards.

### 9.1.3 MTR10F000 Areas in the State of Vermont located at a federal facility

- a. Earth disturbance at any one time is limited to five acres.
- b. All areas of earth disturbance must have temporary or final stabilization within 14 days of the initial disturbance. After this time, disturbed areas must be temporarily or permanently stabilized in advance of any runoff producing event. A runoff producing event is an event that produces runoff from the construction site. Temporary stabilization is not required if precipitation is not forecast and work is to continue in the next 24-hours or if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of two feet or greater (e.g. house foundation excavation, utility trenches). Areas of a construction site that drain to sediment basins are not considered eligible for this exemption, and the exemption applies only to the excavated area itself.
- c. Site inspections on active construction sites shall be conducted daily during the period from October 15 through April 15.
- d. The use of chemical treatments (e.g. polymers, flocculants, and coagulants) for the settling and/or removal of sediment from stormwater runoff associated with construction and construction-related activities requires prior written approval and an approved site and project-specific plan, from the Vermont Agency of Natural Resources. In addition, the use of cationic polymers is prohibited unless approved by the Vermont Agency of Natural Resources under a site and project-specific plan.
- e. Any applicant under EPA's CGP shall allow authorized Vermont Agency of Natural Resources representatives, at reasonable times and upon presentation of credentials, to enter upon the project site for purposes of inspecting the project and determining

compliance with this Certification.

- f. The Vermont Agency of Natural Resources may reopen and alter or amend the conditions of this Certification over the life of the EPA 2022 Construction General Permit when such action is necessary to assure compliance with the VWQS.

## **9.2 EPA REGION 2**

### **9.2.1 NYR10I000 Indian country within the State of New York**

#### **a. Saint Regis Mohawk Tribe**

- i. Any Responsible-Person/Decision-Maker required under the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must concurrently submit an electronic copy of the NOI to the SRMT Environmental Division, Water Resource Program Manager. Additionally, an electronic copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be electronically provided to the following addresses:

Mr. Tieman W. Smith

Water Resources Program Manager Saint Regis Mohawk Tribe

449 Frogtown Road

Akwesasne, NY 13655 Tiernan.Smith@srmt-nsn.gov 518.358.2272 ext. 5073

- ii. Any Responsible-Person/Decision-Maker that is required as part of the CGP to prepare a Discharge Management Plan (OMP) or Storm Water Management Plan (SWMP) and/or Storm Water Pollution Prevention Plan (SWPPP) must submit an electronic copy of the DMP, SWMP and/or SWPPP to the SRMT Environment Division, Water Resources Program Manager IO business days prior to the start of construction of any work to be conducted under the CGP. The applicable documents must be provided to the electronic address listed above.
- iii. Any Responsible-Person/Decision-Maker that is required under the CGP to submit an annual report to EPA must submit an electronic copy of the annual report concurrently to the SRMT Water Resource Program. Additionally, any correspondences between the applicant and EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or an adverse incident must likewise be routed to the SRMT Water Resources Program at the above electronic address.
- iv. An "Authorization to Proceed Letter" with site-specific mitigation requirements may be sent out to the permittee when a review of the NOI and OMP, SWMP and /or SWPPP on a case-by-case basis, is completed by the SRMT Environment Division, Water Resource Program. This approval will allow the application to proceed if all mitigation requirements are met.

#### **b. Seneca Nation**

- i. Under Part 1.1.5 of the CGP, the Seneca Nation requests that an applicant must demonstrate that they meet the eligibility criteria listed in Appendix D (certify in your Notice of Intent (NOI) that you meet one of the eligibility criteria [Criterion A-F]) as well as species and critical habitats that are listed under the Seneca Nation's "Fishing and Conservation Laws" and the "Seneca Nation of Indians Comprehensive Conservation Law".

- ii. The Tribal Historic Preservation Office (THPO) was established in 2000 after the Seneca Nation received a recognition letter from the National Park Service (NPS); therefore under Part 1.1.6 of the CGP (Appendix E) and prior to submitting a Notice of Intent (NOI) operators must complete the Nation's THPO, Project Review Form (<https://sni.org/media/246603/sni-thpo-project-review-form.pdf>) and submit the completed form with associated information to the Tribal Historic Preservation Officer at 90 Ohi:yo' Way, Salamanca, NY 14779. Federal agencies engaging in construction activities must provide for construction review by a certified construction reviewer in accordance with 7 Del. C. §§4010 & 4013 and 7 DE Admin. Code 5101, subsection 6.1.6.
- iii. Under Part 1.2 of the CGP, discharges must also follow the Section 13 of the Guide for Construction (Seneca Nation of Indians Source Water Code) and respectively, Council Resolution, dated April 13, 2013 (CN: R-04-13-13-11) to ensure that the health, safety and welfare of the citizens of the Seneca Nation, and all other within the Lands and Territories of the Seneca Nation of Indians, and to facilitate the adequate provisions of water through the elimination or prevention of ground water contamination in the vicinity of wells that supply drinking water for the Nation. The area is known as the Source Water Protection Area (SWPA) and specified activities are regulated within this SWPA, as cited in Section 13 of the Guide for Construction and Section VI, of CN: R-04-13-13-11.
- iv. Under Part 1.4, any operator who seeks coverage of the CGP, and is required to submit a notice of intent NOI and Notice of Termination (NOT) (as necessary) to the EPA for coverage, under Part 1.4.2 must also submit a copy of the NOI to the Seneca Nation's Environmental Protection Department (EPD) within three business days of submittal to the EPA, (address shown below). Respectively, a copy of the NOT (as described under Part 8.3 of the CGP), which certifies that you have met the requirements of Part 8, must be provided within three business days after electronic confirmation is received from the EPA that the NOT has been accepted. In addition to a NOI and NOT, the Seneca Nation (Environmental Protection Department [EPD]) would require an Environmental Impact Assessment (EA) (Long Form), as shown in Section 2 of the Seneca Nation of Indians Laws, Ordinances & Policies (Guide for Construction), to be completed and submitted to the EPD prior to any project to determine whether the impacts from a project would create significant and detrimental effects to the Nation's lands, water (violate WQS), and environment. The NOI, NOT, and EA must be submitted electronically to [epd@sni.org](mailto:epd@sni.org) and provided to the following address:  
Seneca Nation  
Environmental Protection Department (EPD) Attn: Director of EPD  
12837 Route 438  
Irving, NY 14081
- v. Under Part 3.0 of the CGP, discharges must be controlled as necessary to meet applicable WQS. The Seneca Nation is working actively towards finalizing and implementing the; therefore, the EPD would require an applicant to submit or grant access to the permit to obtain information on the impact of effluents on receiving waters, including the capability of receiving waters to support future designated uses and achieve the WQS of the Nation; and to advise prospective dischargers of discharge requirements, and coordinate with the appropriate

permitting agencies. As stated in the Decision Document, under Section 303(c) of the CWA, 33 U.S.C. § 1313(c), states develop, review, and revise (as appropriate) water quality standards for surface waters of the United States. At a minimum, such standards are to include designated water uses, water quality criteria to protect such uses, and an antidegradation policy. 40 C.F.R. § 131.6. In addition, under Section 401 of the CWA states may grant, condition, or deny "certification" for federally permitted or licensed activities that may result in a discharge to the waters of the United States 33 U.S.C. § 1341.

- vi. Under Part 7.2.8(a)(b)(c) and for Part 9 of the CGP, the following Sections of the Seneca Nation's Guide for Construction shall be considered, in conjunction with the CGP:
  - (a) Section 1. Executive Order - To Establish a Policy for Governing Access to Nation Territories and Facilities by Officials of Foreign Government, dated March 31, 2011
  - (b) Section 3. Natural Resources Committee, Sand and Gravel Law (CN: R-06-24-05-08)
  - (c) Section 4. Fishing and Conservation Laws - Part 1.1.5 of the CGP
  - (d) Section 5. Seneca Nation of Indians Comprehensive Conservation Law, adopted January 14, 2012
  - (e) Section 9. Food is Our Medicine (FIOM) Program/Native Planting Policy (CN: R-03-08-14-14)
  - (f) Section 10. Forestry Management Plan (CN: R-08-14-10-23)
  - (g) Section 11. Timber Ordinance #411-092, dated May 8, 1982
  - (h) Section 14. Flood Damage Prevention Local Law, dated September 27, 1988
  - (i) Section 16. Utilities Ordinance No. 87-100
  - (j) Authorizing Emergency Action and Contingency Plan to Restrain Pollution of Nations Waters, (Council Resolution: R-03-01-18-10), dated March 10, 2018  
Seneca Nation of Indians Permit Application for Construction within Waterways Permit, Form NR98-01.00

### **9.3 EPA REGION 3**

#### **9.3.1 DCR100000 District of Columbia**

- a. Discharges authorized by this permit shall comply with the District of Columbia Water Pollution Control Act of 1984, as amended (DC Official Code § 8-103.01 and § 8-103.06, et seq.) to ensure that District of Columbia waters, waters in adjacent and downstream states, and the beneficial uses of these waters will not be harmed or degraded by the discharges.
- b. Discharges authorized by this permit must comply with §§ 1104.1 and 1104.8 of Chapter 11 and the provisions of Chapter 19 of Title 21 of District of Columbia Municipal Regulations in order to attain and maintain designated uses of the District of Columbia waters.



- c. The permittee shall comply with the District of Columbia Stormwater Management and Soil Erosion and Sediment Control regulations in Chapter 5 of Title 21 of the District of Columbia Municipal Regulations.
- d. The permittee shall comply with the District of Columbia Flood Management Control regulations in Chapter 31 of Title 20 of the District of Columbia Municipal Regulations.
- e. The permittee shall submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Regulatory Review Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002, during the review and approval of the permittee's DOEE Erosion and Sediment Control Plan in accordance with the provisions of Chapter 542 of Title 21 of the District of Columbia Municipal Regulations.
- f. Upon request, the permittee shall submit all inspection and monitoring reports as required by this permit and 40 CFR § 122.41 to the Associate Director, Inspection and Enforcement Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002; telephone (202) 535-2226, or by email at Joshua.Rodriguez@dc.gov.
- g. In the event the permittee intends to discharge dewatering water, groundwater, or groundwater comingled with stormwater from a known contaminated site, the permittee shall contact the Regulatory Review Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002; telephone (202) 535-2600, or by email at MS4DischargeAuthorization@dc.gov to request authorization to discharge dewatering water, groundwater, or groundwater comingled with stormwater to the District's Municipal Separate Storm Sewer System (MS4) or to a surface water body pursuant to §§ 8-103.02, 8-103.06, and 8-103.07 of the District of Columbia Water Pollution Control Act of 1984, as amended.

**9.3.2 DER10F000 Areas in the State of Delaware located at a federal facility (as defined in Appendix A)**

- a. Federal agencies must submit a sediment and stormwater management plan (SSMP) and receive Department approval prior to undertaking any land clearing, soil movement or construction activity unless conducting an exempt activity.
- b. Federal construction activities are required to have a third-party Certified Construction Reviewer (CCR) perform weekly reviews to ensure the adequacy of construction activities pursuant to the approved SSMP and regulations. Implementation of approved SSMPs requires the daily oversight of construction activity by certified responsible personnel.
- c. Implementation of approved SSMPs requires the daily oversight of construction activity by certified responsible personnel.
- d. A current copy of the SSMP must be maintained at the construction site.
- e. Unless authorized by the Department, not more than 20 acres may be disturbed at any one time.

**9.4 EPA REGION 4**

No additional conditions

**9.5 EPA REGION 5****9.5.1 MIR101000 Indian country within the State of Minnesota****a. Fond du Lac Reservation**

- i. New dischargers wishing to discharge to an Outstanding Reservation Resource Water (ORRW)<sup>106</sup> must obtain an individual permit from EPA for storm water discharges from large and small construction activities.
- ii. A copy of the Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Office of Water Protection at least fifteen (15) days in advance of sending the Notice of Intent to EPA. The SWPPP can be submitted electronically to richardgitar@FDLREZ.com or by hardcopy sent to:
  - Fond du Lac Reservation
  - Office of Water Protection
  - 1720 Big Lake Road
  - Cloquet, MN 55720
- iii. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the Fond du Lac Office of Water Protection at the same time they are submitted to EPA. [The condition helps the Office of Water Protection keep track of when a project is about to start and when it has ended. FDL Water Quality Certification Ordinance, Section 204 (a) (2)].
- iv. If the project will entail a discharge to any watercourse or open water body, the turbidity limit shall NOT exceed 10% of natural background within the receiving water(s) as determined by Office of Water Protection staff. For such discharges, turbidity sampling must take place within 24 hours of a ½-inch or greater rainfall event. The results of the sampling must be reported to the Office of Water Protection within 7 days of the sample collection. All sample reporting must include the date and time, location (GPS: UTM/Zone 15), and NTU. CGP applicants are encouraged to work with the Office of Water Protection in determining the most appropriate location(s) for sampling. [This condition helps both the Office of Water Protection and the project proponent in knowing whether or not their erosion control efforts are effective. FDL Water Quality Certification, Section 204 (b) (1)].
- v. Receiving waters with open water must be sampled for turbidity prior to any authorized discharge as determined by Office of Water Protection staff. This requirement only applies to receiving waters which no ambient turbidity data exists. [This condition allows the Office of Water Protection to obtain a baseline turbidity sample in which to compare to other samples. FDL Water Quality Certification Ordinance, Section 204 (b) (2)].
- vi. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Fond du Lac Reservation, Ordinance #12/98, as amended. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Fond du Lac

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<sup>106</sup> Although additional waters may be designated in the future, currently Perch Lake, Rice Portage Lake, Miller Lake, Deadfish Lake, and Jaskari Lake are designated as ORRWs.

Reservation for any of the uses designated in the Water Quality Standards of the Fond du Lac Reservation. These uses include wildlife, aquatic life, warm water fisheries, cold water fisheries, subsistence fishing (netting), primary contact recreation, secondary contact recreation, cultural, wild rice areas, aesthetic waters, agriculture, navigation, commercial and wetlands. It also includes the designated uses of wetlands including, but not limited to, baseflow discharge, cultural opportunities, flood flow attenuation, groundwater recharge, indigenous floral and fauna) diversity and abundance, nutrient cycling, organic carbon export/cycling, protection of downstream water quality, recreation, resilience against climactic effects, sediment/shoreline stabilization, surface water storage, wild rice, and water dependent wildlife. [In addition to listing the designated uses of waters of the Fond du Lac Reservation, this condition also limits the project proponent to discharges that will not violate our Water Quality Standards. FDL Water Quality Certification Ordinance, Section 204 (a) (7)].

- vii.** Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Fond du Lac Reservation. All spills must be reported to the appropriate emergency management Agency (National Response Center AND the State Duty Officer), and measures shall be taken immediately to prevent the pollution of waters of the Fond du Lac Reservation, including groundwater. The Fond du Lac Office of Water Protection must also be notified immediately of any spill regardless of size. [This condition helps protect water quality and also reminds project proponents of their responsibility in reporting spill events. FDL Water Quality Certification Ordinance, Section 204 (b) (3)].
- viii.** All seed mixes, whether used for temporary stabilization or permanent seeding, shall NOT contain any annual ryegrass (*Lolium* species). Wild rye (*Elymus* species) or Oats (*Avena* species) may be used as a replacement in seed mixes. [This condition prevents the use of annual ryegrass on the Reservation. Annual ryegrass is allelopathic, which means it produces biochemical in its roots that inhibit the growth of native plants. If used in seed mixes, annual ryegrass could contribute to erosion, especially on slopes. However, the condition also specifies substitute grasses that germinate almost as fast as annual ryegrass for use as a cover crop to help prevent erosion. FDL Water Quality Certification Ordinance, Section 204 (t) (1)].
- ix.** To prevent the introduction of invasive species, ALL contractors and subcontractors MUST disclose information stating prior equipment location(s) and ALL known invasive species potentially being transported from said location(s). All equipment MUST undergo a high pressure wash (including any equipment mats) BEFORE ENTERING the Fond du Lac Reservation. Personal equipment such as work boots, gloves, vest, etc. MUST be clean of debris, dirt and plant and animal material BEFORE ENTERING the Fond du Lac Reservation. Equipment being transported from known infested areas MUST undergo a high pressure wash as soon as possible after leaving the infested site and again BEFORE ENTERING the Fond du Lac Reservation, to avoid transport of invasive species into areas surrounding the Reservation. Written certification of equipment cleaning MUST be provided to the Fond du Lac Office of Water Protection. Upon arrival, ALL contractor and subcontractor equipment will be inspected by appointed Fond du Lac staff. If equipment is deemed unsatisfactory, the equipment MUST

undergo a high pressure washing until the equipment is cleared by the inspector, until such time, minimal travel will be allowed through the Reservation. The contractor shall be held responsible for the control of any invasive species introduced as a result of their project. [This condition requires the project proponent to prevent the inadvertent introduction of invasive species by taking an active role in cleaning all vehicles, equipment, and equipment mats before entering the Reservation. This condition has been placed in certifications since 2012, due to the introduction of Wild Parsnip in 2011 from a pipeline contractor. It is much easier to prevent the introduction of an invasive species than it is to eradicate it once it has been introduced. Many invasive plant species form monocultures, preventing native plants from growing. This situation often leads to cases of erosion, which in turn effects water quality. FOL Water Quality Certification Ordinance, Section 204 (g) (1)].

- x. A copy of this certification MUST be kept by the contractor on-site at all times and be available for viewing by all personnel, including inspectors. [This condition ensures that the information contained in the certification, especially the conditions, is readily available onsite for reference. FOL Water Quality Certification Ordinance, Section 204 (a) (9)].

**b. The Grand Portage Band of Lake Superior Chippewa**

- i. The CGP authorization is for construction activities that may occur within the exterior boundaries of the Grand Portage Reservation in accordance to the Grand Portage Land Use Ordinance. The CGP regulates stormwater discharges associated with construction sites of one acre or more in size. Only those activities specifically authorized by the CGP are authorized by this certification (the "Certification").
- ii. All construction stormwater discharges authorized by the CGP must comply with the Water Quality Standards and Water Resources Ordinance, as well as Applicable Federal Standards (as defined in the Water Resources Ordinance).
- iii. All appropriate steps must be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the Waters of the Reservation. All spills must be reported to the appropriate emergency-management agency, and measures must be taken to prevent the pollution of the Waters of the Reservation, including groundwater.
- iv. The 2022 CGP requires inspections and monitoring reports of the construction site stormwater discharges by a qualified person. Monitoring and inspection reports must comply with the minimum requirements contained in the 2022 CGP. The monitoring plan must be prepared and incorporated into the Storm Water Pollution Prevention Plan (the "SWPP"). A copy of the SWPP must be submitted to the Board at least 30 days in advance of sending the requisite Notice of Intent to EPA. The SWPP should be sent to:

Grand Portage Environmental Resources Board  
P.O. Box 428  
Grand Portage, MN 55605

Copies of the Notice of Intent and Notice of Termination required under the General Permit must be submitted to the Board at the address above at the same time they are submitted to the EPA.

- v. If requested by the Grand Portage Environmental Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Water Quality Standards and any Applicable Federal Standards. The burden is on the applicant to demonstrate compliance with the Water Quality Standards, the Water Resources Ordinance, and Applicable Federal Standards whether or not the application is ultimately eligible for the CGP.
  - vi. CGP discharges must not cause nuisance conditions as defined in Grand Portage Water Quality Standards.
  - vii. The Board retains full authority to ensure compliance with and to enforce the provisions of the Water Resource Ordinance and Water Quality Standards, Applicable Federal Standards, and these Certification conditions. Nothing herein affects the scope or applicability of other controlling tribal or federal requirements, including but not limited to impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for listing on the National Register of Historic Places under the National Historic Preservation Act, 54 U.S.C. §§ 300101 et seq.
  - viii. Appeals related to Board actions taken in accordance with any of the preceding conditions may be heard by the Grand Portage Tribal Court.
- c. Leech Lake Band of Ojibwe**
- i. The water quality standards that apply to the construction site are the standards at the time the operator submits its Notice of Intent (NOI) to EPA and the LLBO WRP (see conditions # 2 and # 3).
  - ii. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the LLBO WRP at least 30 days in advance of sending the NOI for the project to EPA. See attached LLBO 401 Water Quality Certification Ordinance. Section 304(a)(1). The SWPPP should be submitted electronically to [Jeff.Harper@llojibwe.net](mailto:Jeff.Harper@llojibwe.net) and by hardcopy sent to:  
Leech Lake Band of Ojibwe  
ATTN: Water Resources Program - 401 Cert  
Division of Resource Management  
190 Sailstar Drive NW  
Cass Lake, Minnesota 56633
  - iii. Copies of the NOI and the Notice of Termination (NOT) must be submitted to the LLBO WRP at the same time they are submitted to EPA. See attached LLBO 401 Water Quality Certification Ordinance, Section 304(a)(2). The NOI and NOT should be submitted electronically to [Jeff.Harper@llojibwe.net](mailto:Jeff.Harper@llojibwe.net) and sent by hardcopy to the address cited in condition # 2.
  - iv. Any and all other conditions listed in Section 304 of the attached LLBO 401 Water Quality Certification Ordinance shall be observed unless the LLBO WRP deems that certain conditions therein are not applicable to the project in need of a permit under this certification.
  - v. A copy of this certification MUST be kept by the contractor on-site at all times and be available for viewing by all personnel, including inspectors.

- vi. Upon consideration of the NOI, if the LLBO WRP finds that the discharge will not be controlled as necessary to meet applicable water quality standards, the LLBO WRP may insist, consistent with Part 3.1 of the CGP, that additional controls are installed to meet applicable water quality standards, or recommend to EPA that the operator obtain coverage under an individual permit.

### 9.5.2 WIR10I000 Indian country within the State of Wisconsin

#### a. Bad River Band of Lake Superior Tribe of Chippewa Indians

- i. Only those activities specifically authorized by the CGP are authorized by this Certification. This Certification does not authorize impacts to cultural properties, or historical sites, or properties that may be eligible for listing as such.
- ii. All projects which are eligible for coverage under the CGP and are located within the exterior boundaries of the Bad River Reservation shall be implemented in such a manner that is consistent with the Tribe's Water Quality Standards (WQS). The Tribe's WQS can be viewed at: [http://www.badriver-nsn.gov/wp-content/uploads/2020/01/NRD\\_WaterQualityStandards\\_2011.pdf](http://www.badriver-nsn.gov/wp-content/uploads/2020/01/NRD_WaterQualityStandards_2011.pdf)
- iii. Operators are not eligible to obtain authorization under the CGP for all new discharges to an Outstanding Tribal Resource Water (OTRW or Tier 3 water). OTRWs, or Tier 3 waters, include the following: Kakagon Slough and the lower wetland reaches of its tributaries that support wild rice, Kakagon River, Bad River Slough, Honest John Lake, Bog Lake, a portion of Bad River, from where it enters the Reservation through the confluence with the White River, and Potato River. OTRWs can be viewed at: <https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c7c7c5>
- iv. An operator proposing to discharge to an Outstanding Resource Water (ORW or Tier 2.5 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. ORWs, or Tier 2.5 waters, include the following: a portion of Bad River, from downstream the confluence with the White River to Lake Superior, White River, Marengo River, Graveyard Creek, Bear Trap Creek, Wood Creek, Brunsweller River, Tyler Forks, Bell Creek, and Vaughn Creek. ORWs can be viewed at: <https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c7c7c5>. The antidegradation demonstration materials described in provision E.4.iii., and included on the antidegradation demonstration template found at: <https://www.badriver-nsn.gov/natural-resources/projectreviews/>, must be submitted to the following address:  
 Bad River Tribe's Natural Resources Department  
 Attn: Water Regulatory Specialist  
 P.O. Box 39 Odanah, WI 54861  
 WaterReg@badriver-nsn.gov
- v. An operator proposing to discharge to an Exceptional Resource Water (ERW or Tier 2 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. ERWs, or Tier 2 waters, include the following: any surface water within the exterior boundaries of the Reservation that is not specifically classified as an Outstanding Resource Water (Tier 2.5 water) or an Outstanding Tribal Resource Water (Tier 3 water). ERWs can be viewed at:

<https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c7c7c5>. The antidegradation demonstration materials described in provision E.4.ii., and included on the antidegradation demonstration template found at: <https://www.badriver-nsn.gov/natural-resources/projectreviews/>, must be submitted to the following address:

Bad River Tribe's Natural Resources Department  
Attn: Water Regulatory Specialist  
P.O. Box 39 Odanah, WI 54861  
[WaterReg@badriver-nsn.gov](mailto:WaterReg@badriver-nsn.gov)

- vi.** Projects utilizing cationic treatment chemicals within the Bad River Reservation boundaries are not eligible for coverage under the CGP.
- vii.** A discharge to a surface water within the Bad River Reservation boundaries shall not cause or contribute to an exceedance of the turbidity criterion included in the Tribe's WQS, which states: Turbidity shall not exceed 5 NTU over natural background turbidity when the background turbidity is 50 NTU or less, or turbidity shall not increase more than 10% when the background turbidity is more than 50 NTU.
- viii.** All projects which are eligible for coverage under the CGP within the exterior boundaries of the Bad River Reservation must comply with the Bad River Reservation Wetland and Watercourse Protection Ordinance, or Chapter 323 of the Bad River Tribal Ordinances, including the erosion and sedimentation control, natural buffer, and stabilization requirements. Questions regarding Chapter 323 and requests for permit applications can be directed to the Wetlands Specialist in the Tribe's Natural Resources Department at (715) 682-7123 or [wetlands@badriver-nsn.gov](mailto:wetlands@badriver-nsn.gov).
- ix.** An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must notify the Tribe prior to the commencing earth-disturbing activities. The operator must submit a copy of the Notice of Intent (NOI) to the following addresses at the same time it is submitted to the U.S. EPA:

Bad River Tribe's Natural Resources Department  
Attn: Water Regulatory Specialist  
P.O. Box 39 Odanah, WI 54861  
[WaterReg@badriver-nsn.gov](mailto:WaterReg@badriver-nsn.gov)

Bad River Tribe's Natural Resources Department  
Attn: Tribal Historic Preservation Officer (THPO)  
P.O. Box 39 Odanah, WI 54861  
[THPO@badriver-nsn.gov](mailto:THPO@badriver-nsn.gov)

The operator must also submit a copy of the Notice of Termination (NOT) to the above addresses at the same time it is submitted to the U.S. EPA. Photographs showing the current site conditions must be included as part of the NOT to document the stabilization requirements have been met.

- x.** The THPO must be provided 30 days to comment on the project.



- xi.** The operator must obtain THPO concurrence in writing. This written concurrence will outline measures to be taken to prevent or mitigate effects to historic properties. For more information regarding the specifics of the cultural resources process, see 36 CFR Part 800. A best practice for an operator is to consult with the THPO during the planning stages of an undertaking.
- xii.** An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the following address at the same time as submitting the NOI:
  - Bad River Tribe's Natural Resources Department
  - Attn: Water Regulatory Specialist
  - P.O. Box 39 Odanah, WI 54861
  - [WaterReg@badriver-nsn.gov](mailto:WaterReg@badriver-nsn.gov)
- xiii.** Any corrective action reports that are required under the CGP must be submitted to the following address within one (1) working day of the report completion:
  - Bad River Tribe's Natural Resources Department
  - P.O. Box 39 Odanah, WI 54861
  - [WaterReg@badriver-nsn.gov](mailto:WaterReg@badriver-nsn.gov)
- xiv.** An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copies of the inspection reports (including photographs) to the following address within 24 hours of completing any site inspection required:
  - Bad River Tribe's Natural Resources Department Attn: Water Regulatory Specialist
  - P.O. Box 39 Odanah, WI 54861
  - [WaterReg@badriver-nsn.gov](mailto:WaterReg@badriver-nsn.gov)
- xv.** An operator shall be responsible for meeting any additional permit requirements imposed by the U.S. EPA necessary to comply with the Tribe's antidegradation policies if the discharge point is located upstream of waters designated by the Tribe.

## **9.6 EPA REGION 6**

### **9.6.1 NMR100000 State of New Mexico, except Indian country**

- a.** In Outstanding National Resource Waters (ONRWs) in New Mexico, no degradation is permitted except in limited, specifically defined instances. Therefore, Operators are not eligible to obtain authorization under this general permit for stormwater discharges to waters classified as ONRWs listed in Paragraph D of 20.6.4.9 New Mexico Administrative Code (NMAC), also referred to as "Tier 3 waters" as defined in Appendix A of this permit. Exception: When construction activities are in response to a public emergency (e.g., wildfire, extreme flooding, etc.) and the related work requires immediate authorization to avoid a threat to public health or safety.
  - i.** Operators who conduct construction activities in response to a public emergency to mitigate an immediate threat to public health or safety shall

adhere to the requirements in 20.6.4.8(A)(3)(c) NMAC, including notifying the New Mexico Environment Department (NMED) within seven days of initiation of the emergency action and providing NMED with a summary of the action taken within 30 days of initiation of the emergency action.

- ii. For all other scenarios, Operators with proposed discharges to ONRWs in New Mexico shall obtain coverage from EPA under an NPDES Individual Permit and will comply with the additional standards and regulations related to discharges to ONRWs in 20.6.4.8(A) NMAC. Additional information is available from:
  - New Mexico Environment Department Surface Water Quality Bureau
  - P.O. Box 5469
  - Santa Fe, NM 87502-5469 Telephone: 505-827-0187
  - <https://www.env.nm.gov/surface-water-quality/wqs/>
  - <https://gis.web.env.nm.gov/oem/?map=swqb>
- b. If construction dewatering activities are anticipated at a construction site and non-stormwater discharges of groundwater, subsurface water, spring water, and/or other dewatering water are anticipated, the Operators/Permittees must complete the following steps:
  1. Review the state's Ground Water Quality Bureau Mapper (<https://gis.web.env.nm.gov/GWQB/>) and Petroleum Storage Tank Bureau Mapper (<https://gis.web.env.nm.gov/GWQB/>).

Check if the following sources are located within the noted distance from the anticipated construction dewatering activity. At a minimum, a list of the following potential sources of contaminants and pollutants at the noted distance is to be kept in the SWPPP.

Source of Potential Contamination or Pollutants*	Constituents likely to be required for testing*
Within 0.5 mile of an open Leaking Underground Storage Tank (LUST) site	BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) plus additional parameters depending on site conditions**
Within 0.5 mile of an open Voluntary Remediation site	All applicable parameters or pollutants listed in 20.6.4.13, 20.6.4.52, 20.6.4.54, 20.6.4.97 thru 20.6.4.99, 20.6.4.101 through 20.6.4.899, and 20.6.4.900 NMAC (or an alternate list approved by the NMED-SWQB)*
Within 0.5 mile of an open RCRA Corrective Action Site	
Within 0.5 mile of an open Abatement Site	
Within 0.5 mile of an open Brownfield Site	
Within 1.0 mile or more of a Superfund site or National Priorities List (NPL) site with associated groundwater contamination.	
Construction activity contaminants and/or natural water pollutants	Additional parameters depending on site activities and conditions (Contact NMED- SWQB for an alternate list)*

\*For further assistance determining whether dewatering may encounter contaminated sources, please contact the NMED Ground Water Quality Bureau at 505-827-2965 or NMED Surface Water Quality Bureau (SWQB) at 505-827-0187.

\*\* EPA approved sufficiently sensitive methods must be used. For known PCB sources and analysis, EPA Method 1668C must be used (see <https://www.epa.gov/cwa-methods>).

2. If dewatering activities are anticipated, information on the flow rate and potential to encounter contaminated groundwater, subsurface water, spring water, or dewatering water must be provided directly to NMED at the following address:

NMED Surface Water Quality Bureau  
 Program Manager, Point Source Regulation  
 Section PO Box 5469, Santa Fe, NM 87502

*Please call the SWQB to obtain the appropriate email address (505-827-0187).*

3. In addition, the Operator/Permittee must characterize the quality of the groundwater and subsurface water, spring water, or dewatering water being considered for discharge according to the table above and including dissolved hardness and pH. Considering the contaminant sources listed in the table above, water quality data may already be available. For further assistance, contact the



loss prediction tools). Qualifications of the preparer (e.g., professional certifications, description of appropriate training) must be documented in the SWPPP. The Operator(s) must design, implement, and maintain BMPs in the manner specified in the SWPPP.

NMED supports the use of EPA's small residential lot template if a site qualifies to use it as explained in the permit, as long as it is consistent with the above requirements. NMED's requirement does not preclude small residential sites from using the template, but it may require an additional short paragraph to justify the selection of specific BMPs for the site.

- d. Operators must notify NMED when discharges of toxic or hazardous substances or oil from a spill or other release occurs - see Emergency Spill Notification Requirements, Part 2.3.6 of the permit. For emergencies, Operators can call 505-827-9329 at any time. For non-emergencies, Operators can call 866-428-6535 (voice mail 24-hours per day) or 505-476-6000 during business hours from 8am-5pm, Monday through Friday. Operators can also call the NMED Surface Water Quality Bureau directly at 505-827-0187.
- e. Operators of small construction activities (i.e., 1-5 acres) are not eligible to qualify for a waiver in lieu of needing to obtain coverage under this general permit based on Item C.3 of Appendix C (Equivalent Analysis Waiver) in the State of New Mexico.

**9.6.2 NMR10I000 Indian country within the State of New Mexico, except Navajo Reservation Lands that are covered under Arizona permit AZR10000I and Ute Mountain Reservation Lands that are covered under Colorado permit COR10000I.**

**a. Nambe Pueblo**

- i. The operator must provide a copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Nambe Pueblo Governor's Office at the same time it is provided to the US Environmental Protection Agency. The NOI and NOT should be provided to the following address:
  - Office of the Governor Nambe Pueblo
  - ISA NPI02 WEST
  - Nambe Pueblo, New Mexico 87506
- ii. The operator must provide a copy of the Storm Water Pollution Prevention Plan (SWPPP) to Nambe Pueblo at the same time it is submitted to the EPA, either by email to [governor@nambepueblo.org](mailto:governor@nambepueblo.org) or mailed to the above address.
- iii. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings, upon request by the Nambe Pueblo Department of Environmental and Natural Resources or Nam be Governor.

**b. Ohkay Owingeh Tribe**

- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Ohkay Owingeh Office of Environmental Affairs, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Naomi L. Archuleta - Environmental Programs Manager Ohkay Owingeh  
Office of Environmental Affairs  
P.O. Box 717  
Ohkay Owingeh, NM 87566  
[naomi.archuleta@ohkay.org](mailto:naomi.archuleta@ohkay.org)

Noah Kaniatobe - Environmental Specialist Ohkay Owingeh, Office of  
Environmental Affairs  
P.O. Box 717  
Ohkay Owingeh, NM 87566  
[noah.kaniatohe@ohkay.org](mailto:noah.kaniatohe@ohkay.org)

- ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Storm Water Pollution Prevention Plan (SWPPP) to Ohkay Owingeh Office of Environmental Affairs at the same time that the NOI is submitted to the tribe (see contact information listed above).
- iii. Following each incident where the operator takes a corrective action the operator must provide the corrective action log to the Ohkay Owingeh Office of Environmental Affairs.
- iv. The operator must notify Ohkay Owingeh Office of Environmental Affairs within 24 hours, in the event of an emergency spill in addition to the notification requirements at Part 2.3.6 of the CGP. Please contact: Ohkay Owingeh Tribal Police Department at 505.852.2757.

*Please contact:  
Ohkay Owingeh  
Tribal Police Department  
505.852.2757*

**c. Pueblo of Isleta**

- i. All operators obtaining permit coverage under the EPA CGP must submit a copy of the certified Notice of Intent (NOI) to the Pueblo of Isleta at the same time it is submitted to EPA for projects occurring within the exterior boundaries of the Pueblo of Isleta. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The Notices must be provided to the following address:  
Water Quality Control Officer Pueblo of Isleta  
Environment Department PO Box 1270  
Isleta NM 87022  
505-869-7565  
[WQCO@isletapueblo.com](mailto:WQCO@isletapueblo.com)
- ii. The operator must notify the Pueblo of Isleta's Dispatch at 505-869-3030 as soon as possible and the Pueblo of Isleta Water Quality Control Officer within 10 hours, in the event of a spill of hazardous or toxic substances or if health or the

environment become endangered in addition to the notification requirements at Part 2.3.6 and at I.12.6.1 of the CGP.

- iii. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Isleta Water Quality Control Officer at the above address, 30 days prior to submitting the certified NOI to EPA. If the electronic file is too large to send through e-mail, a zip file or flash drive may be submitted.
  - iv. All operators obtaining permit coverage under the EPA CGP must give 2 days advance notice to the Pueblo of Isleta Water Quality Control Officer of any planned changes in the permitted activity which may result in noncompliance with permit requirements.
  - v. All operators obtaining permit coverage under the EPA CGP must post a sign or other notice of permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so that it is visible from the public road or tribal road that is nearest to the active part of the construction site. The sign must be maintained on-site from the time construction activities begin until final stabilization is met.
  - vi. Erosion and sediment controls shall be designed to retain sediment on-site and project-generated waste materials that have the potential to discharge pollutants shall not be placed on open soil or on a surface that is not stabilized. Volumes of sediment over five (5) cubic yards must be removed from the active construction site; additionally, if sediment is placed for disposal within the exterior boundaries of the Pueblo of Isleta, disposal must be within a tribally approved sediment disposal site.
- d. Pueblo of Laguna**
- i. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Laguna's Environmental & Natural Resources Department (ENRD) within three business days of submittal to the EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after the EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be electronically submitted to [info.environmental@pol-nsn.gov](mailto:info.environmental@pol-nsn.gov).
  - ii. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Laguna's ENRD 14 days prior to the submittal of the NOI (see contact information listed above).
  - iii. The operator must provide copies of corrective actions logs and modifications made to the SWPPP as a result of inspection findings to the Pueblo of Laguna ENRD (see contact information above).
  - iv. In addition to the notification requirements of Part 2.3.6 of the CPG **[EPA interprets this intending to refer to the CGP]**, the operator must notify the Pueblo of Laguna ENRD at 505-552-7512 in the event of an emergency spill as soon as possible.
- e. Pueblo of Sandia. The following conditions apply only to discharges on the Pueblo of Sandia Reservation:**



- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Sandia Environment Department concurrently with submittal to the EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided concurrently with submittal to the EPA. The NOI and NOT must be provided electronically to the following addresses:  
Electronic Addresses:  
  
Amy Rosebrough (Water Quality Manager): [rosebrough@sanidapueblo.nsn.us](mailto:rosebrough@sanidapueblo.nsn.us)  
Greg Kaufman (Environment Director): [gkaufman@sandiapueblo.nsn.us](mailto:gkaufman@sandiapueblo.nsn.us)
  - ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Sandia Environment Department at least 14 days prior to submittal of the NOI to the Pueblo (see contact information listed above).
  - iii. If requested by the Pueblo of Sandia Environment Department, the permittee must provide additional information necessary on a case-by-case basis to assure compliance with the Pueblo of Sandia Water Quality Standards and/or applicable Federal Standards.
  - iv. An "Authorization to Proceed Letter" with site specific mitigation requirements may be sent out to the permittee when a review of the NOI and SWPPP, on a case-by-case basis, is completed by the Pueblo of Sandia Environment Department. This approval will allow the application to proceed if all mitigation requirements are met.
  - v. The Pueblo of Sandia will not allow Small Construction Waivers (Appendix C) to be granted for any small construction activities.
  - vi. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings to the Pueblo of Sandia Environment Department upon request. An inspection report and corrective action log must be submitted to the Pueblo within 3 days of any inspection that results in corrective action (see contact information listed above).
  - vii. The operator must notify the Pueblo of Sandia within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the COP (see contact information listed above).
  - viii. Before submitting a Notice of Termination (NOT) to the EPA, permittees must clearly demonstrate to the Pueblo of Sandia Environment Department through a site visit or documentation that requirements for site stabilization have been met and any temporary erosion control structures have been removed. A short letter stating that the NOT is acceptable and all requirements have been met will be sent to the permittee to add to the permittee's NOT submission to the EPA.
- f. Pueblo of Santa Ana. The following conditions apply only to discharges on the Pueblo of Santa Ana Reservation:**
- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo's Department of Natural Resources within three business days of submittal to EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be

provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Regular U.S. Delivery Mail:

Pueblo of Santa Ana  
Department of Natural Resources Water Resources Division  
Attn: Andrew Sweetman 02 Dove Rd  
Santa Ana Pueblo, NM 87004

Electronically:

Andrew Sweetman  
Water Resources Division Manager Andrew.Sweetman@santaana-nsn.gov  
Tammy Montoya Hydrologist  
Tammy.Montoya@santaana-nsn.gov

- ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo's Department of Natural Resources at the same time that the NOI is submitted to the tribe (see contact information listed above).
  - iii. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings, upon request by the Pueblo's Department of Natural Resources.
  - iv. The operator must notify the Pueblo's Department of Natural Resources within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP.
- g. Pueblo of Taos**
- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Taos Pueblo Environmental Office and Taos Pueblo Governor's Office within three business days of submittal to EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following addresses:  

Honorable Governor of Taos Pueblo PO Box 1846  
Taos, New Mexico 87571

Taos Pueblo Environmental Office PO Box 1846  
Taos, New Mexico 87571
  - ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Taos Pueblo Environmental Office when the NOI is submitted to the tribe. Electronic copy of SWPPP downloaded on flash drive may be sent to the above address for the Taos Pueblo Environmental Office.
  - iii. The operator must provide a copy of the corrective action log following each corrective action undertaken and modifications made to the SWPPP as a result of

a corrective action to the Taos Pueblo Environmental Office at address listed above.

**h. Pueblo of Tesuque.**

- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Tesuque Department of Environment and Natural Resources (DENR) and the Pueblo's Governor within three business days of submittal to EPA. Additionally, a copy of any NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Governor Mark Mitchell Pueblo of Tesuque  
20 TP 828  
Santa Fe, NM 87506 governor@pueblooftesuque.org

Sage Mountain.flower Pueblo of Tesuque  
Department of Environment and Natural Resources Director  
20 TP 828

- ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to Pueblo of Tesuque DENR and the Pueblo's Governor at the same time that the NOI is submitted to the EPA (see contact information listed above).
- iii. The operator must provide a copy of the corrective action log, and any modifications made to the SWPPP as a result of inspection findings, or upon request by the Pueblo of Tesuque DENR.
- iv. The operator must notify the Pueblo of Tesuque DENR within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP (see contact information listed above).

**i. Santa Clara Indian Pueblo.**

- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Santa Clara Pueblo Office of Environmental Affairs at the same time the NOI is submitted to the U.S. EPA. Additionally, a copy of the NOI modifications and the Notice of Termination (NOT), must be provided at the same time after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT shall be provided to the following address in electronic format:

Dino Chavarria,  
Santa Clara Pueblo  
Office of Environmental Affairs  
dinoc@santaclarapueblo.org

- ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan to the Santa Clara Pueblo Office of Environmental Affairs at the same time the NOI is submitted to the U.S. EPA (see contact information listed above).

- iii. The operator must notify the Santa Clara Pueblo Office of Environmental Affairs at the address above within 24 hours, in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP

**9.6.3 OKR10I000 Indian country within the State of Oklahoma, except areas of Indian country covered by an extension of state program authority pursuant to Section 10211 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA).**

**a. Pawnee Nation. The following conditions apply only to discharges within Pawnee Indian country:**

- i. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be provided to the Pawnee Nation at the same time it is submitted to the Environmental Protection Agency to the following address:  
 Pawnee Nation Department of Environmental Conservation and Safety  
 P.O. Box 470  
 Pawnee, OK 74058  
 Or email to [dners@pawneenation.org](mailto:dners@pawneenation.org)
- ii. An electronic copy of the Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Pawnee Nation Department of Environmental Conservation and Safety at the same time the NOI is submitted.
- iii. The operator must provide access to the site for inspections and for copies of inspection reports, copy of the corrective action log and modifications, made to the SWPPP because of inspection findings, upon request by the Pawnee Nation DECS.
- iv. The Pawnee Nation Department of Environmental Conservation and Safety must be notified at 918.762.3655 immediately upon discovery of any noncompliance with any provision of the permit conditions.

**9.6.4 OKR10F000 Discharges in the State of Oklahoma that are not under the authority of the Oklahoma Department of Environmental Quality, or the Oklahoma Department of Agriculture and Forestry including activities associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171), and point source discharges associated with agricultural production, services, and silviculture (includes SIC Groups 01, 02, 07, 08, 09).**

- a. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, this permit may only be used to authorize discharges from temporary construction activities. Certification is denied for any on-going activities such as sand and gravel mining or any other mineral mining.
- b. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, certification is denied for any discharges originating from support activities, including, but not limited to, concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, or borrow areas.

- c. Dewatering discharges into sediment or nutrient-impaired waters, and waters identified as Tier 2, Tier 2.5, or Tier 3 (OAC 785:46-13) shall be controlled to meet water quality standards for turbidity in those waters as follows:
  - i. Cool Water Aquatic Community/Trout Fisheries: 10 NTUs (OAC 785: 45-5-12(f)(7)(A)(i))
  - ii. Lakes: 25 NTUs (OAC 785: 45-5-12(f)(7)(A)(ii))
  - iii. In waters where background turbidity exceeds these values, turbidity from dewatering discharges should be restricted to not exceed ambient levels (OAC 785: 45-5-12(f)(7)(B))

## 9.7 EPA REGION 7

No additional conditions.

## 9.8 EPA REGION 8

### 9.8.1 MTR10I000 Indian country within the State of Montana

#### a. Blackfeet Nation.

- i. The Applicant and applicants for projects authorized under the NWP's should obtain all other permits, licenses, and certifications that may be required by federal, state, or tribal authority. Primary relevant tribal permit will be ALPO (Ordinance 117). Others may apply. It is the applicant's responsibility to know the tribal and local ordinances and complete all necessary permissions before they can commence work.
- ii. If a project is unable to meet the enclosed conditions, or if certification is denied for an applicable NWP, the Applicant may request an individual certification from Blackfeet. An individual certification request must follow the requirements outlined in 40 CFR 121.5 of EPA's CWA § 401 Certification Rule, effective September 11, 2020.
- iii. Copies of this certification should be kept on the job site and readily available for reference.
- iv. If the project is constructed and/or operated in a manner not consistent with the applicable NWP, general conditions, or regional conditions, the permittee may be in violation of this certification.
- v. Blackfeet and EPA representatives may inspect the authorized activity and any mitigation areas to determine compliance with the terms and conditions of the NWP.
- vi. This NWP Reissuance does not reduce Tribal authority under any other rule.
- vii. The project, including any stream relocations and restoration, must be built as shown and as otherwise described in the application, the construction plans, cross sections, mitigation plans and other supporting documents submitted to this office. Impacts to aquatic systems and restoration efforts will be monitored by an appropriate aquatic resource professional to ensure that disturbed areas are restored to at least their original condition.
- viii. All existing water uses will be fully maintained during and after the completion of the project. (If applicable)

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- ix.** Where practicable, perform all in-channel and wetland work during periods of low flow or drawn—down or when dry
  - x.** Equipment staging areas must be located out of all delineated wetlands
  - xi.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during and immediately after construction, and all exposed soil and other fills, as well as any work below the ordinary high-water mark or in a wetland, must be permanently stabilized as soon as possible
  - xii.** Materials such as piling, culverts, sandbags, fabric, mats, timbers used for temporary facilities in wetlands or below the high- water mark of Waters of the US must be free from oil, gas, excess dirt, loose paint and other pollutants.
  - xiii.** Equipment staging areas in wetlands or in stream or river channels must be placed on mats, or other measures must be taken to minimize soil disturbance and compaction.
  - xiv.** Clearing of riparian or wetland vegetation for the sole purpose of constructing work bridges, detours, staging areas or other temporary facilities must be limited to the absolute minimum necessary. When temporary impacts to native riparian or wetland vegetation are unavoidable, it must be mowed or cut above ground with the topsoil and root mass left intact.
  - xv.** Remove all temporary fills and structures in the entirety when they are no longer needed. Restore affected areas to the appropriate original and planned contours where possible. Re-vegetate disturbed areas with appropriate native species when native species are impacted.
  - xvi.** Construction methods and best management practices (BMPs) must minimize aquatic resource impacts to the maximum extent possible. Any BMPs described in the Joint Application must be followed. BMPs should include installation and maintenance of sediment control measures; separation, storage and reuse of any topsoil; and recovery of all disturbed areas where possible. All best management practices must in place prior to the onset of construction or as soon as practicable during the construction process.
  - xvii.** Best available technology and/or best management practices must be utilized to protect existing water uses and maintain turbidity and sedimentation at the lowest practical level.
  - xviii.** Applicant/contractor should manage disturbed streambank topsoil in a manner that optimizes plant establishment for the site.
  - xix.** When operating equipment or otherwise undertaking construction in wetlands and water bodies the following conditions apply:
    - (a) Work should be done in dry conditions if possible.
    - (b) All equipment is to be inspected for oil, gas, diesel, anti-freeze, hydraulic fluid or other petroleum leaks. All such leaks will be properly repaired and equipment cleaned prior to being allowed on the project site. Leaks that occur after the equipment is moved to the project site will be fixed the same day or the next day or removed from the project area. The equipment is not allowed to continue operation once a leak is discovered.

- (c) All equipment is to be inspected and cleaned before and after use to minimize the spread or introduction of invasive or undesirable species.
- (d) Construction equipment shall not operate below the existing water surface except as follows:
- Impacts from construction should be minimized through the use of best management practices submitted in the permit application.
  - Essential work below the waterline shall be done in a manner to minimize impacts to aquatic system and water quality.
- (e) Containment booms and/or absorbent material must be available onsite. Any spills of petroleum products must be reported to the Army Corps, Blackfeet Nation BEO Office and the US EPA within 24 hours.
- xx.** Upland, riparian and in-stream vegetation should be protected except where its removal is necessary for completion of work. Revegetation should be completed as soon as possible. Applicant/contractor should revegetate disturbed soil in a manner that optimizes plant establishment for the site. Revegetation must include topsoil replacement, planting, seeding, fertilization, liming and weed-free mulching as necessary. Applicant must use native plant material and soils where appropriate and feasible. This certification does not allow for the introduction of non-native flora and fauna. All disturbed surface areas must be restored to pre-construction contours and elevation.
- xxi.** Spoils piles should not be placed or stored within the delineated wetlands or streams unless protected by a temporary structure designed to divert and handle high flows that can be anticipated during permit activity. Spoils piles should be placed on landscaping fabric or some other material to separate spoils material and allow retrieval of spoils material with minimal impact.
- xxii.** Impacts to wetlands shall not exceed 4.92 acres.
- xxiii.** Any unexpected and additional impacts to waters of the US should be reported to the
- xxiv.** Army Corps, Blackfeet Environmental Office Water Quality Coordinator and the US EPA.
- xxv.** All instream and stream channel reconstruction work must be completed before the stream is diverted into the new channel.
- xxvi.** Any temporary crossings, bridge supports, cofferdams, or other structures that are necessary during permit activity should be designed to handle high flows that can be anticipated during permit activity. All temporary structures should be completely removed from the water body at the conclusion of the permitted activity and the area restored to a natural function and appearance.
- xxvii.** The certification does not authorize any unconfined discharge of liquid cement into the waters of the United States. Grouting riprap must occur under dry conditions with no exposure of wet concrete to the water body.
- xxviii.** BMPs shall include application of certified weed-free straw or hay across all disturbed wetland areas that are temporarily impacted; installation and maintenance of sediment control measures during construction and if necessary, after construction is completed; use of heavy mud mats if necessary; separation,



storage and reuse of all streambank topsoil and wetland topsoil, as appropriate; and recovery of all disturbed wetland and streambank areas where possible. All conditions set by the Blackfeet Tribe and US Army Corps must be followed.

- xxix.** All applicants, including federal agencies, must notify EPA and the Blackfeet Environmental Office of the use of all NWP for which certification has been granted prior to commencing work on the project. Notifications must include:
- (a) project location (lat. Long., exact point on map);
  - (b) NWP that will be used and the specific activity that will be authorized under the NWP;
  - (c) amount of permanent and temporary fills;
  - (d) a short summary of the proposed activity, and all other federal, state, tribal or local permits or licenses required for the project;
  - (e) complete contact information of both the applicant and contractor (name, name of the company or property if applicable, telephone, mobile, and email); and,
  - (f) Summary of best management practices that will be used.
  - (g) A summary of communications with the affected Tribe's water quality staff regarding the project, including any concerns or issues.
  - (h) Notify Blackfeet and EPA at least 7 days before the completion of construction and operations begin.
- xxx.** Point source discharges may not occur: (1) in fens, bogs or other peatlands; (2) within 100 feet of the point of discharge of a known natural spring source; or (3) hanging gardens.
- xxxi.** Except as specified in the application, no debris, silt, sand, cement, concrete, oil or petroleum, organic material, or other construction related materials or wastes shall be allowed to enter into or be stored where it may enter into waters of the U.S.
- xxxii.** Silt fences, straw wattles, and other techniques shall be employed as appropriate to protect waters of the U.S. from sedimentation and other pollutants.
- xxxiii.** Water used in dust suppression shall not contain contaminants that could violate water quality standards.
- xxxiv.** Erosion control matting that is either biodegradable blankets or loose-weave mesh must be used to the maximum extent practicable.
- xxxv.** All equipment used in waters of the U.S. must be inspected for fluid leaks and invasive species prior to use on a project. All fluid leaks shall be repaired and cleaned prior to use or when discovered, or if the fluid leak can't be repaired, the equipment shall not be used on site. Equipment used in waters with the possibility of aquatic nuisance species infestation must be thoroughly cleaned and effectively decontaminated before they are used on the project.

- xxxvi.** Vegetation should be protected except where its removal is necessary for completion of the work. Locations disturbed by construction activities should be revegetated with appropriate native vegetation in a manner that optimizes plant establishment for the specific site.
- xxxvii.** Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary. Where practical, stockpile weed- seed-free topsoil and replace it on disturbed areas. All revegetation materials, including plants and plant seed shall be on site or scheduled for delivery prior to or upon completion of the earth moving activities.
- xxxviii.** Activities may not result in any unconfined discharge of liquid cement into waters of the U.S. Grouting riprap must occur under dry conditions with no exposure of wet concrete to the waterbody.
- xxxix.** Activities that may result in a point source discharge shall occur during seasonal low flow or no flow periods to the extent practicable.
- xl.** The placement of material (discharge) for the construction of new dams is not certified, except for stream restoration projects.
- xli.** Any decision-maker that is required under 7.0 of the CGP to prepare a Stormwater Pollution Prevention Plan (SWPPP), must submit an electronic copy of the SWPPP to the Blackfeet Environmental Office at least 30 days before construction starts for review and approval. Any modifications to the SWPPP should be submitted to the Blackfeet Environmental Office.
- xlii.** Any Decision-maker required under Part 1.4 of the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must submit a copy of the NOI to the Blackfeet Environmental Office within three business days of submittal to EPA. Additionally, a copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be provided to the following address Gerald Wagner, Blackfeet Environmental Office Director.  
62 Hospital Drive, Browning, MT 59417  
[beo.director@gmail.com](mailto:beo.director@gmail.com)
- b. Fort Peck Tribes.**
- i.** Any Decision-maker required under Part 1.4 of the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must submit a copy of the NOI to the Fort Peck Tribes Office of Environmental Protection within three business days of submittal to EPA. Additionally, a copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be provided to the following address:  
Martina Wilson, Office of Environmental Protection Director  
501 Medicine Bear Rd Poplar, MT 59255  
[martinawilson@fortpecktribes.net](mailto:martinawilson@fortpecktribes.net)
- ii.** Any Decision-maker that is required under Part 7.0 of the CGP to prepare a Stormwater Pollution Prevention Plan (SWPPP), must submit an electronic copy of the SWPPP to the Fort Peck Tribes Office of Environmental Protection at least 30 days before construction starts for review and approval. Any modifications to the

SWPPP should be submitted to the Fort Peck Tribes Office of Environmental Protection.

- iii. Any Decision-maker that is required under Part 8.0 of the CGP to submit a weekly, bi-weekly, and/or annual report to EPA, must submit an electronic copy of the annual report to the Fort Peck Tribes Office of Environmental Protection within three business days after submittal to EPA.

## 9.9 EPA REGION 9

### 9.9.1 CAR10I000 Indian country within the State of California

#### a. Morongo Band of Mission Indians

- i. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted (either mailed or electronically) to the MEPD no less than thirty (30) days before commencing construction activities:
  - Morongo Band of Mission Indians
  - Environmental Protection Department
  - 12700 Pumarra Road
  - Banning, CA 92220
  - Email: epd@morongo-nsn.gov
- ii. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the MEPD at the same time they are submitted to EPA.
- iii. Operators of an "emergency-related project" must submit notice to the MEPD within twenty- four (24) hours after commencing construction activities.
- iv. Spills, leaks, or unpermitted discharges must be reported to the MEPD within twenty-four (24) hours of the incident, in addition to the reporting requirements of the CGP.
- v. Projects utilizing cationic treatment chemicals (as defined in Appendix A of the CGP) within the Morongo Reservation are not eligible for coverage under this certification of the CGP.
- vi. Facilities covered under the CGP will be subject to compliance inspections by MEPD staff, including compliance with final site stabilization criteria prior to submitting an NOI **[EPA assumes this intended to refer to an NOT]**.

### 9.9.2 GUR100000 Island of Guam

- a. For purposes of this Order, the term "Project Proponent" shall mean U.S. Environmental Protection Agency, and its agents, assignees, and contractors.
- b. For purposes of this Order, the permit "Operator" shall mean any party associated with a construction project that meets either of the following two criteria:
  - i. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications (e.g. in most cases this is the owner of the site); or
  - ii. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit; in most cases this is the general contractor of the project).

Subcontractors generally are not considered operators for the purposes of this permit.

- c. The Project Proponent shall enforce the proposed 2022 CGP and ensure that the Operator complies with the conditions of the permit at all times.<sup>107</sup> (40 CFR §121.11(c))
- d. All submittals required by this Order shall be sent to the Guam Environmental Protection Agency Attn: 401 Federal Permit Manager, Non-Point Source Program, EMAS Division, 3304 Mariner Avenue, Bldg. 17-3304, Barrigada, Guam 96913, AND via email to jesse.cruz@epa.guam.gov. The submittals shall be identified with WQC Order #2021- 04 and include the COP Permit Number, certifying representative's name, title, mailing address and phone number. (§51060)(4) 2017 GWQS)
- e. A copy of the Operator's signed Stormwater Pollution Prevention Plan (SWPPP) and signed Notice of Intent (NOI) and Notice of Termination (NOT) submitted to EPA for review and approval, shall concurrently be submitted to Guam EPA, consistent with condition A4. Coordination with Guam EPA is encouraged when the receiving water(s) for the proposed discharge is/are being identified. (§10105.B.5.d.) GSESCR; (§51060)(4) 2017 GWQS)
- f. The Operator must comply with the conditions and requirements set forth in 22 GAR 10, Guam Soil Erosion and Sediment Control Regulations (GSESCR).
- g. Before submitting the NOT to EPA, Operators shall comply with GSESCR regulations at §10105.B10. (Stabilization of Affected Areas) and §10107.B. (Final Inspection and Approval)
- h. All operators/owners shall comply with the general design criteria for best management practices (BMPs) acceptable for meeting the Construction and Post-construction stormwater criteria in the 2006 CNMI and Guam Stormwater Management Manual. (E.O. 2012-02)
- i. Operating reports and monitoring and analytical data (e.g. Discharge Monitoring Reports (DMRs), follow-up monitoring reports, Exceedance Reports for Numerical Effluent Limits, etc.) submitted to EPA shall be concurrently submitted to Guam EPA, consistent with condition A4. §51060)(4) 2017 GWQS
- j. The Operators who install a sediment basin or similar impoundment shall maintain the storage capacity of five thousand cubic feet {5,000 cu. ft.) per acre of project area tributary to the basin. (§10105.B.5.i.) GSESCR
- k. (1) This Order does not authorize EPA to qualify Rainfall Erosivity Waivers to stormwater discharges associated with small construction activities (i.e. 1-5 acres). Operators are required to apply for an NOI for those projects eligible for coverage under the proposed 2022 CGP. An Erosion and Sediment Control Plan is required for every site that would be covered by the proposed 2022 CGP. (22 GAR §10104) The average annual rainfall for Guam and the CNMI exceeds 100 inches per year in many locations. These climatic conditions combined with the region's unique limestone, volcanic geologic formations, sensitive water resources and significant land

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<sup>107</sup> By incorporating this condition into the permit, EPA acknowledges receipt of Guam's certification conditions.

development forces make stormwater discharges a very significant environmental and economic issue. (2006 CNMJ/Guam Stormwater Management Manual) E.O. 2012-02

(2) This Order does not authorize EPA to approve a Sediment TMDL Waiver for the Ugum River. Operators of construction activities eligible for a TMDL Waiver in lieu of coverage under the proposed 2022 CGP, shall submit a complete and accurate waiver certification as described in C.2., Appendix C - (Small Construction Waivers) to Guam EPA per condition A4., prior to notifying EPA of its intention to obtain a waiver. §51060)(4) 2017 GWQS

- l.** The Project Proponent shall submit to Guam EPA a signed Statement of Understanding of Water Quality Certification Conditions.<sup>108</sup> (see Attachment A for an example) per condition A4. §51060)(4) 2017 GWQS
- m.** The Operator shall comply with applicable provisions of the Guam Pesticides Act of 2007 (10 GCA Chapter 50) and implementing regulations at Title 22 GAR Chapter 15 for any use and application of pesticides.
- n.** Point source discharge(s) to waterbodies under the jurisdiction of Guam EPA must be consistent with the antidegradation policy in 22 GAR §5101(b).
- o.** The operator shall carry out construction activities in such a manner that will not violate Guam Water Quality Standards (GWQS). Proposed 2022 CGP discharges are prohibited as follows:
  - i.** In Marine Waters, Category M-1 Excellent 22 GAR Chapter 5 §5102(b)(I); and
  - ii.** In Surface Waters, Category S-1 High 22 GAR Chapter 5 §5102(c)(I)
- p.** In addition to complying with construction dewatering requirements in Part 2.4 and site inspection requirements for all areas where construction dewatering is taking place in Part 4 of the proposed 2022 CGP, Operators shall comply with all dewatering conditions and requirements set forth in 22 GAR 7, Water Resources Development and Operating Regulations, to include securing Guam EPA permits prior to any dewatering activities.
- q.** The Operator shall develop and implement a Spill Prevention and Containment Plan.
- r.** The Operator shall have adequate and appropriate spill response materials on hand to respond to emergency release of oil, petroleum or any other material into waters of the territory.
- s.** Any unpermitted discharge into territorial waters or onto land with a potential for entry into territorial waters, is prohibited. If this occurs, the Operator shall immediately take the following actions:
  - i.** Cease operations at the location of the violation or spill.
  - ii.** Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.
  - iii.** Notify Guam EPA of the failure to comply. All petroleum spills shall be reported immediately to:

<sup>108</sup> By incorporating this condition into the permit, EPA acknowledges receipt of Guam's certification conditions.

- (a) Guam's Emergency 911 system
  - (b) Guam EPA's 24-Hour Spill Response Team at (671) 888-6488 or during working hours (671) 300-4751
  - (c) US Coast Guard Sector Guam (671) 355-4824
  - (d) National Response Center 1-800-424-8802
- iv.** Submit a detailed written report to Guam EPA within five days of noncompliance that describes the nature of the event corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.
- f.** Compliance with this condition does not relieve the Operator from responsibility to maintain continuous compliance with the terms and conditions of this Order or the resulting liability from failure to comply.
- u.** Submittal or reporting of any of this information does not provide relief from any subsequent enforcement actions for unpermitted discharges to waters of the United States.
- v.** This Order is valid for five (5) Years from Date of Certification, unless otherwise approved by the Guam EPA Administrator.
- w.** The Operator shall be required to adhere to the current Guam Coral Spawning Moratorium dates for both hard and soft corals where in-water activities and/or construction activity in close proximity with marine waters may impair water quality. These dates can be obtained from the Guam Department of Agriculture, Division of Aquatic and Wildlife Resources, or the NOAA NMFS Pacific Islands Regional Office Habitat Conservation Division.
- x.** The Operator shall provide notice to Guam EPA consistent with Condition A4:
- (a) Immediately upon discovery of noncompliance with the provisions of this Order.
- y.** A Notice of Violation/Work Stop Order will be issued if certification conditions are not adhered to or when significant or sustained water quality degradation occurs. Work or discharge shall be suspended or halted until the Operator addresses environmental problems/concerns to Guam EPA's satisfaction. Guam EPA may also levy penalties and fines (10 GCA §47111). Invalidity or enforceability of one or more provisions of this certification shall not affect any other provision of this certification.

## **9.10 EPA REGION 10**

### **9.10.1 IDR10I000 Indian country within the State of Idaho, except Duck Valley Reservation lands (see Region 9)**

#### **a. Shoshone-Bannock Tribes**

- i.** Copies of the following information must be sent to the SBT-WRD:
  - (a) Notice of Intents (NOI)

The Notice of Intent shall be forwarded to the SBT-WRD within thirty (30) days of receipt of submitting NOI to the USEPA.

Shoshone-Bannock Tribes Water Resources Department  
 PO Box 306 Pima Drive  
 Fort Hall, ID 83203 Phone: (208) 239-4582  
 Fax: (208) 239-4592  
 Or Email ctanaka@sbtribes.com

- b. If requested by the SBT-WRD, the permittee must submit a copy of the SWPPP to SBT-WRD within fourteen (14) days of the request.

**9.10.2 ORR10I000 Indian country within the State of Oregon, except Fort McDermitt Reservation lands (see Region 9)**

**a. Confederated Tribes of Coos, Lower Umpqua, and Siuslaw**

- i. No activities allowed under the CGP shall result in the degradation of any Tribal waters or affect resident aquatic communities or resident or migratory wildlife species at any life stage.
- ii. The operator shall be responsible for achieving compliance with CTCLUSI Water Quality Standards and all other tribal codes, regulations, and laws as they exist at the time that the permit is submitted.
- iii. The operator shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to the CTCLUSI Water Quality Program before, or at the same time as, it is submitted to EPA.
- iv. The operator shall be responsible for submitting all Stormwater Pollution Prevention Plans (SWPPP) required under this general permit to the CTCLUSI Water Quality Program for review and determination that the SWPPP is sufficient to meet Tribal Water Quality Standards, prior to the beginning of any discharge activities taking place.
- v. The operator shall be responsible for reporting an exceedance to Tribal Water Quality Standards to the CTCLUSI Water Quality Program at the same time it is reported to EPA.
- vi. The THPO will be provided 30 days to comment on the APE as defined in the permit application.
- vii. If the project is an undertaking, a cultural resource assessment must occur. All fieldwork must be permitted by the THPO (as appropriate), conducted by qualified personnel (as outlined by the Secretary of Interior's Standards and Guidelines; [http://www.nps.gov/history/local-law/arch\\_stnds\\_O.htm](http://www.nps.gov/history/local-law/arch_stnds_O.htm)) and documented according to Oregon Reporting Standards (Reporting\_Guidelines.pdf) ([oregon.gov](http://oregon.gov)). The resulting report must be submitted to the THPO and the THPO must concur with the finding of effect and recommendations before any ground disturbing work can occur. The THPO requires 30 days to review all reports.
- viii. The operator must obtain THPO concurrence in writing. If historic properties are present, this written concurrence will outline measures to be taken to prevent or mitigate adverse effects to historic properties.

**b. Confederated Tribes of the Umatilla Indian Reservation**

- i. The operator shall be responsible for achieving compliance with the



Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) Water Quality Standards.

- ii. The operator shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to the CTUIR Water Resources Program at the address below, at the same time it is submitted to EPA.
- iii. The operator shall be responsible for submitting all Stormwater Pollution Prevention Plans (SWPPP) required under this general permit to the CTUIR Water Resources Program for review and determination that the SWPPP is sufficient to meet Tribal Water Quality Standards, prior to the beginning of any discharge activities taking place.
- iv. The operator shall be responsible for reporting an exceedance to Tribal Water Quality Standards to the CTUIR Water Resources Program at the same time it is reported to EPA.

Confederated Tribes of the Umatilla Indian Reservation  
Water Resources Program  
46411 Timíne Way  
Pendleton, OR 97801  
(541) 429-7200

- v. The THPO will be provided 30 days to comment on the APE as defined in the permit application.
- vi. If the project is an undertaking, a cultural resource assessment must occur. All fieldwork must be permitted by the Tribal Historic Preservation Office (as appropriate), conducted by qualified personnel (as outlined by the Secretary of Interior's Standards and Guidelines; [http://www.nps.gov/history/local-law/arch\\_stnds\\_0.htm](http://www.nps.gov/history/local-law/arch_stnds_0.htm)) and documented according to Oregon Reporting Standards (Reporting\_Guidelines.pdf (oregon.gov)). The resulting report must be submitted to the THPO and the THPO must concur with the finding of effect and recommendations before any ground disturbing work can occur. The THPO requires 30 days to review all reports.
- vii. The operator must obtain THPO concurrence in writing. If historic properties are present, this written concurrence will outline measures to be taken to prevent or mitigate adverse effects to historic properties.

**9.10.3 WAR10F000 Areas in the State of Washington, except those located on Indian country, subject to construction activity by a Federal Operator**

- a. For purposes of this Order, the term "Project Proponent" shall mean those that are seeking coverage under this permit, and its agents, assignees and contractors.
- b. The Federal Agency shall mean the US Environmental Protection Agency. The Federal Agency shall enforce the permit and ensure that the Project Proponent complies with the conditions of the permits at all times.
- c. Failure of any person or entity to comply with this Certification may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Certification.
- d. The Certification conditions within this Order must be incorporated into EPA's final NPDES permit. Per 40 CFR 121.10(a), all certification conditions herein that satisfy the

requirements of 40 CFR 121.7(d) must be incorporated into the permit. Per 40 CFR 121.10(b), the permit must clearly identify all certification conditions.

- e. This Certification does not authorize exceedances of water quality standards established in chapter 173-201A WAC.
- f. Discharges from construction activity must not cause or contribute to violations of the Water Quality Standards for Surface Water of the State of Washington (chapter 173-201A WAC), Ground Water Quality Standards (chapter 173-200 WAC), Sediment Management Standards (chapter 173-204 WAC), and standards in the EPA's Revision of certain Federal water quality criteria applicable to Washington (40 CFR 131.45). Discharges that do not comply with these standards are prohibited.
- g. Prior to discharge of stormwater and non-stormwater to waters of the State, the Permittee must apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). This includes the preparation and implementation of an adequate Stormwater Pollution Prevention Plan (SWPPP), with all appropriate Best Management Practices (BMPs) installed and maintained in accordance with the SWPPP and the terms and conditions of the permit.
  - i. BMPs must be consistent with:
    - (a) The Stormwater Management Manual for Western Washington (most current approved edition at the time this permit was issued), for sites west of the crest of the Cascade Mountains; or
    - (b) The Stormwater Management Manual for Eastern Washington (most current approved edition at the time this permit was issued), for sites east of the crest of the Cascade Mountains; or
    - (c) Revisions to either manual, or other stormwater management guidance documents or manuals which provide equivalent level of pollution prevention, that are approved by Ecology and incorporated into this permit in accordance with the permit modification requirements of WAC 173-226-230. (For purposes of this section, the stormwater manuals listed in Appendix 10 of the Phase I Municipal Stormwater Permit are approved by Ecology); or
    - (d) Documentation in the SWPPP that the BMPs selected provided an equivalent level of pollution prevention, compared to the applicable stormwater management manuals, including:
      - The technical basis for the selection of all stormwater BMPs (scientific, technical studies, and/or modeling) that support the performance claims for the BMPs being selected.
      - An assessment of how the selected BMP will satisfy AKART requirements and the applicable federal technology-based treatment requirements under 40 CFR part 125.3.
  - ii. An adequate SWPPP must include a narrative and drawings. All BMPs must be clearly referenced in the narrative and marked on the drawings. The SWPPP

The Stormwater Management Manuals for Eastern and Western Washington can be found at: <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals>.

narrative must include documentation to explain and justify the pollution prevention decisions made for the project. Documentation must include:  
 (a) Information about existing site conditions (topography, drainage, soils, vegetation, etc.).

(b) Potential erosion problem areas.

(c) The 13 elements of a SWPPP, including BMPs used to address each element. Unless site conditions render the element unnecessary and the exemption is clearly justified in the SWPPP, the 13 elements are as follows:

- Preserve Vegetation/Mark Clearing Limits
- Establish Construction Access
- Control Flow Rates
- Install Sediment Controls
- Stabilize Soils
- Protect Slopes
- Protect Drain Inlets
- Stabilize Channels and Outlets
- Control Pollutants
- Control Dewatering
- Maintain BMPs
- Manage the Project
- Protect Low Impact Development (LID) BMPs

**h.** Discharges of stormwater and authorized non-stormwater must be monitored for turbidity (or transparency) and, in the event of significant concrete work or engineered soils, pH must also be monitored. As applicable based on project specifics, monitoring, benchmarks, and reporting requirements contained in Condition S.4. (pp.10-16) of the Washington State Construction Stormwater General Permit, effective January 1, 2021, shall apply.

**i.** Discharges to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, phosphorus, or pH must comply with the following numeric effluent limits:

Parameter identified in 303(d) listing	Parameter Sampled	Unit	Analytical Method	Numeric Effluent Limit
<ul style="list-style-type: none"> <li>• Turbidity</li> <li>• Fine Sediment</li> <li>• Phosphorus</li> </ul>	Turbidity	NTU	SM2130	25 NTUs at the point where the stormwater is discharged from the site.
High pH	pH	su	pH meter	In the range of 6.5 – 8.5

All references and requirements associated with Section 303(d) of the Clean Water Act mean the most current EPA-approved listing of impaired waters that exists on the

effective date of the permit, or the date when the operator's complete permit application is received by EPA, whichever is later.

The EPA approved WQ Assessment can be found at: <https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d>

- j.** Discharges to a waterbody that is subject to a Total Maximum Daily Load (TMDL) for turbidity, fine sediment, high pH, or phosphorus must be consistent with the TMDL.
  - i.** Where an applicable TMDL sets specific waste load allocations or requirements for discharges covered by this permit, discharges shall be consistent with any specific waste load allocations or requirements established by the applicable TMDL.
  - ii.** Where an applicable TMDL has established a general waste load allocation for construction stormwater discharges, but no specific requirements have been identified, compliance with this permit will be assumed to be consistent with the approved TMDL.
  - iii.** Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharges, but has not excluded these discharges, compliance with this permit will be assumed to be consistent with the approved TMDL.
  - iv.** Where an applicable TMDL specifically precludes or prohibits discharges from construction activity, the operator is not eligible for coverage under this permit.

Applicable TMDL means a TMDL for turbidity, fine sediment, high pH, or phosphorus which has been completed and approved by EPA as of the effective date of the permit, or prior to the date of the operator's complete application for permit coverage is received by EPA, whichever is later.

- k.** Discharges to waters of the state from the following activities are prohibited:
  - i.** Concrete wastewater.
  - ii.** Wastewater from washout and clean-up of stucco, paint, form release oils, curing compounds and other construction materials.
  - iii.** Process wastewater as defined by 40 Code of Federal Regulations (CFR) 122.2.
  - iv.** Slurry materials and waste from shaft drilling, including process wastewater from shaft drilling for construction of building, road, and bridge foundations unless managed to prevent discharge to surface water.
  - v.** Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.
  - vi.** Soaps or solvents used in vehicle and equipment washing.
  - vii.** Wheel wash wastewater, unless managed to prevent discharge to surface water.
  - viii.** Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, unless managed according to appropriate controls described within the permit.
- l.** This Certification is valid until the expiration date including any administrative extension or termination date of the NPDES 2022 Construction General Permit. (40 CFR § 122.46)

- m. The Federal Agency shall enforce and the Project Proponent must comply with all the reporting and notification conditions of the NPDES 2022 Construction General Permit in order to comply with this Order and the certification conditions herein (40 CFR § 121.11).
- n. You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

**ADDRESS AND LOCATION INFORMATION**

Street Addresses	Mailing Addresses
<p><b>Department of Ecology</b>                      Attn: Appeals Processing Desk                      300 Desmond Drive SE                      Lacey, WA 98503</p> <p><b>Pollution Control Hearings Board</b>                      1111 Israel RD SW                      STE 301                      Tumwater, WA 98501</p>	<p><b>Department of Ecology</b>                      Attn: Appeals Processing Desk                      PO Box 47608                      Olympia, WA 98504-7608</p> <p><b>Pollution Control Hearings Board</b>                      PO Box 40903                      Olympia, WA 98504-0903</p>

**CONTACT INFORMATION**

Please direct all questions about this Order to:

Noel Tamboer  
 Department of Ecology  
 P.O. Box 47600  
 Olympia, WA 98503-7600  
 (360) 701-6171  
[noel.tamboer@ecy.wa.gov](mailto:noel.tamboer@ecy.wa.gov)

**9.10.4 WAR10I000 Indian country within the State of Washington**

**a. Lummi Nation**

- i. This certification does not exempt and is provisional upon compliance with other applicable statutes and codes administered by federal and Lummi tribal agencies. Pursuant to Lummi Code of Laws (LCL) 17.05.020(a), the operator must also obtain a land use permit from the Lummi Planning Department as provided in Title 15 of the Lummi Code of Laws and regulations adopted thereunder.
  - ii. Pursuant to LCL 17.05.020(a), each operator shall develop and submit a Storm Water Pollution Prevention Plan to the Lummi Water Resources Division for review and approval by the Water Resources Manager prior to beginning any discharge activities.
  - iii. Pursuant to LCL Title 17, each operator shall be responsible for achieving compliance with the Water Quality Standards for Surface Waters of the Lummi
  - iv. Indian Reservation (Lummi Administrative Regulations [LAR] 17 LAR 07.010 through 17 LAR 07.210 together with supplements and amendments thereto).
  - v. Each operator shall submit a signed copy of the Notice of Intent (NOI) to the Lummi Water Resources Division at the same time it is submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Lummi Water Resources Division the acknowledgement of receipt of the NOI from the EPA and the associated NPDES tracking number provided by the EPA within 7 calendar days of receipt from the EPA.
  - vi. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the Lummi Water Resources Division at the same time it is submitted electronically to the EPA and shall provide the Lummi Water Resources Division the EPA acknowledgement of receipt of the NOT.
  - vii. Storm Water Pollution Prevention Plans, Notice of Intent, Notice of Termination and associated correspondence with the EPA shall be submitted to:
    - Lummi Natural Resources Department
    - ATTN: Water Resources Manager 2665 Kwina Road
    - Bellingham, WA 98226-9298
- b. Port Gamble S'Klallam Tribe**
- i. No discharge from the project site shall cause exceedances of Port Gamble S'Klallam Surface Water Quality Standards narrative or numeric criteria in Tribal waters. This includes activities outside of Tribal lands that occur upstream of Tribal waters.
    - (a) If any exceedance of these water quality standards occurred, the Natural Resources Department shall be notified immediately.
      - The Department shall additionally be provided a complete draft of the proposed corrective action within a reasonable timeframe and its approval will be required before any corrective action may be taken.
  - ii. Operators performing activities under the CGP that may affect Tribal waters will require a permit and shall submit their plans to the Port Gamble S'Klallam Natural Resources Department for review.
    - The Department has the right to require conditions outside of this Water Quality Certification prior to permit approval.

- iii. No activities allowed under the CGP shall result in the degradation of any Tribal waters or change in designated uses.
  - iv. No activities allowed under the CGP shall affect resident aquatic communities or resident/migratory wildlife species at any life stage.
    - Biological assessment methods used to determine the effect of an activity allowed under the CGP shall be approved by the PGST Natural Resources Department.
  - v. No activities allowed under the CGP shall be conducted within wetland and stream buffer zones, nor shall said activities affect in any way wetland or stream buffers, as defined by *PGST Law and Order Code 24.08.01(c)*.
  - vi. Concentrations for substances listed within the table in *Water Quality Standards for Surface Waters* sec. 7(7) shall not be exceeded by activities allowed under the CGP.
- c. Spokane Tribe of Indians**
- i. Pursuant to Tribal Law and Order Code (TLOC) Chapter 30 each operator shall be responsible for achieving compliance with the Surface Water Quality Standards of the Spokane Tribe. The operator shall notify the Spokane Tribe, Water Control Board (WCB) of any spills of hazardous material and;
  - ii. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the WCB at the same time it is submitted to EPA.
  - iii. The permittee shall allow the Tribal Water Control Board or its designee to inspect and sample at the construction site as needed.
  - iv. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the WCB at the same time it is submitted to EPA
- The correspondence address for the Spokane Tribe Water Control Board is:
- Water Control Board c/o Brian Crossley PO Box 480  
Wellpinit WA 99040  
(509) 626-4409  
crossley@spokanetribe.com
- d. Swinomish Tribe**
- i. Owners and operators seeking coverage under this permit must submit a copy of the Notice of Intent (NOI) to the DEP at the same time the NOI is submitted to EPA.
  - ii. Owners and operators must also submit to the DEP changes in NOI and/or Notices of Termination at the same time they are submitted to EPA.
  - iii. Owners and operators seeking coverage under this permit must also submit a Stormwater Pollution Prevention Plan to the DEP for review and approval by DEP prior to beginning any discharge activities.
- e. Tulalip Tribes**
- i. Submission of NOI: Copies of the Notice of Intent (NOI), Certification shall be submitted to the Tribe's Natural Resources Department to notify the Tribes of the



pending project and in order for the Tribes to review the projects potential impacts to endangered or threatened species.

- ii.** Submission of SWPPP: A copy of the Stormwater Pollution Plans (SWPPPs) shall be submitted to the Tribe's Natural Resources Department along with the NOI during the 30 day waiting period.
- iii.** Submission of Monitoring Data and Reports: The results of any monitoring required by this permit and reports must be sent to the Tribe's Natural Resources Department,
- iv.** The Tulalip Tribes are federally recognized successors in the interest to the Snohomish, Snoqualmie, Skykomish, and other allied tribes and bands signatory to the Treaty of Point Elliott.
- v.** including a description of the corrective actions required and undertaken to meet effluent limits or benchmarks (as applicable).
- vi.** Authorization to Inspect: The Tribe's Natural Resources Department may conduct an inspection of any facility covered by this permit to ensure compliance with tribal water quality standards. The Department may enforce its certification conditions.
- vii.** Submission of Inspection Reports: Inspection reports must be sent to the Tribe's Natural Resources Department, including a description of the corrective actions required and undertaken to meet effluent limits or benchmarks (as applicable).
- viii.** Permits on-site: A copy of the permit shall be kept on the job site and readily available for reference by the construction supervisor, construction managers and foreman, and Tribal inspectors.
- ix.** Project Management: The applicant shall ensure that project managers, construction managers and foreman, and other responsible parties have read and understand conditions of the permit, this certification, and other relevant documents, to avoid violations or noncompliance with this certification.
- x.** Emergency Spill Notification Requirements: In the event of a spill or the contractor shall immediately take action to stop the violation and correct the problem, and immediately report spill to the Tulalip Tribes Police Department (425) 508-1565. Compliance with this condition does not relieve the applicant from responsibility to maintain continuous compliance with the terms and conditions of this certification or the resulting liability from failure to comply.
- xi.** Discharges to CERCLA Sites: This permit does not authorize direct stormwater discharges to certain sites undergoing remedial cleanup actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) unless first approved by the appropriate EPA Regional office. In the case of the Tulalip Landfill site (WAD980639256), the Tulalip Tribes also requests notification by the facility and consultation with EPA prior to discharge. Contaminants at this site may include but are not limited to: dioxins, furans, arsenic, copper, lead, zinc, 4- methyl-phenol, Hex-CB, HPAHs, PCBs, PCE, cadmium, mercury, and LPAHs.
- xii.** Discharge-related Activities that have Potential to Cause an Adverse Effect on Historic Properties: Installation of stormwater controls that involve subsurface disturbances may potentially have an adverse impact on historic properties.

- xiii.** Procedures detailed in the permit shall be completed. Richard Young, of the Tulalip Tribe's Cultural Resources Department shall be contacted prior to initiating discharge-related activities that may have an impact on historic properties. His contact information is (360) 716-2652, ryoung@tulaliptribes-nsn.gov.
  - xiv.** Invalidation: This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the project description contained in
  - xv.** the permit. This certification will also cease to be valid and the applicant must reapply with an updated application if information contained in the permit is voided by subsequent submittals.
  - xvi.** Modification: Nothing in this certification waives the Tulalip Tribes of Washington's authority to issue modifications to this certification if additional impacts due to operational changes are identified, or if additional conditions are necessary to protect water quality or further protect the Tribal Communities interest.
  - xvii.** incorporation by reference: This certification does not exempt the applicant from compliance with other statutes and codes administered by the Tribes, county, state and federal agencies.
  - xviii.** Compliance with Tribe's 1996 Water Quality Standards: Each permittee shall be responsible for controlling discharges and achieving compliance with the Tribe's Water Quality Standards.
  - xix.** Compliant with Tulalip Tribes Tidelands Management Policy: Permittee shall be responsible for achieving compliance with applicable sections of the Tulalip Tribe's Tidelands Management Policy. (Tulalip Tribal Code Title 8 Chapter 8.30).
  - xx.** Compliant with Tulalip Tribes Environmental Infractions: Permittee shall be responsible for achieving compliance with applicable sections of the Tulalip Tribe's Environmental Infractions. (Tulalip Tribal Code Title 8 Chapter 8.20).
  - xxi.** Where to Submit information and for further Coordination: All requested documents should be sent to the: Tulalip Tribes Natural Resources Environmental Department c/o Kurt Nelson and Valerie Streeter, 6704 Marine Drive, Tulalip, Washington 98271. For further 401 Certification coordination with the Tulalip Tribes Natural Resources Department, please contact Mr. Kurt Nelson (360) 716-4617 knelson@tulaliptribes-nsn.gov. 6406 Marine Dr., Tulalip WA 98271.
- f. Makah Tribe**
- i.** The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Makah Tribe's Water Quality Standards if the discharge point is located within the Makah's U&A treaty reserved areas.
  - ii.** Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Makah Fisheries Management, Water Quality Department at the address listed below at the same time it is submitted to the EPA.

Makah Water Quality  
Makah Fisheries Management (MFM)  
ray.colby@makah.com

PO Box 115  
Neah bay, WA 98357

- iii. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to the Tribe's Habitat programs for their review.
  - iv. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Assistant Fisheries Director, ray.colby@makah.com.
  - v. The permittee shall submit all Stormwater Pollution Prevention plan (SWPP) to MFM for review and approval prior to beginning any activities resulting in a discharge to Makah tribal waters.
  - vi. The permittee shall notify Ray Colby, ray.colby@makah.com (360) 645-3150 prior to conducting inspections at construction sites generating stormwater discharges to tribal waters.
  - vii. The operator shall treat dewatering discharges with controls necessary to minimize discharges of pollutants to surface waters, or ground waters, and from stormwater runoff onsite from excavations, trenches, foundations, or storage areas. To the extent feasible, at all points where dewatering is discharged, comply with the velocity dissipation using check dams, sediment traps, and grouted outlets.
- g. Puyallup Tribe of Indians**
- i. The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Puyallup Tribe's antidegradation procedures.
  - ii. Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Char Naylor, Tribal Water Quality Manager at the following e-mail address: ([char.naylor@puyalluptribe-nsn.gov](mailto:char.naylor@puyalluptribe-nsn.gov)) at the same time it is submitted to EPA.
  - iii. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to Char Naylor, Tribal Water Quality Manager/Assistant Fisheries Director ([char.naylor@puyalluptribe-nsn.gov](mailto:char.naylor@puyalluptribe-nsn.gov)) for review.
  - iv. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Char Naylor at the email address listed above.
  - v. The permittee shall submit all stormwater pollution prevention plans to Char Naylor for review and approval prior to beginning any activities resulting in a discharge to Puyallup tribal waters.
  - vi. The permittee shall contact Brandon Reynon ([Brandon.reynon@puyalluptribe-nsn.gov](mailto:Brandon.reynon@puyalluptribe-nsn.gov)), Tribe's Historic Preservation Officer or Jennifer Keating ([Jennifer.keating@puyalluptribe-nsn.gov](mailto:Jennifer.keating@puyalluptribe-nsn.gov)), Tribe's Assistant Historic Preservation Officer regarding historic properties and cultural resources.
  - vii. To minimize the discharge of pollutants to groundwater or surface waters from stormwater that is removed from excavations, trenches, foundations, vaults, or

other storage areas, treat dewatering discharges with controls necessary to minimize discharges of pollutants. Examples of appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, and filtration systems (e.g., bag or sand filters) that are designed to remove sediment.

To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. At all points where dewatering water is discharged, utilize velocity dissipation controls. Examples of velocity dissipation devices include check dams, sediment traps, riprap, and grouted riprap at outlets.

- viii.** The permittee shall provide and maintain natural buffers to the maximum extent possible (and/or equivalent erosion and sediment controls) when tribal waters are located within 100 feet of the boundaries. If infeasible to provide and maintain an undisturbed 100 foot natural buffer, erosion and sediment controls to achieve the sediment load reduction equivalent to a 100-foot undisturbed natural buffer shall be required.

## **Appendix C**

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2022 CGP NOI and EPA Authorization Email

**PLACEHOLDER**

Electronic Notice of Intent to be Inserted Upon Submittal

**PLACEHOLDER**

EPA Authorization Email to be Inserted Upon Receipt



## **Appendix D**

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Site Inspection Form and Dewatering Inspection Form

**SITE INSPECTION FORM**  
**VETERANS MEMORIAL PARK AND SOUTH RIVER IMPROVEMENT PROJECT**  
**TOWN OF MARSHFIELD**  
**870 MORaine STREET**  
**MARSHFIELD, MA**  
**Stormwater Pollution Prevention Plan**

<b>Section A – General Information</b> (If necessary, complete additional inspection reports for each separate inspection location.)	
<b>Inspector Information</b>	
<b>Inspector Name:</b>	<b>Title:</b>
<b>Company Name:</b>	<b>Email:</b>
<b>Address:</b>	<b>Phone Number:</b>
<b>Inspection Details</b>	
<b>Inspection Date:</b>	<b>Inspection Location:</b>
<b>Inspection Start Time:</b>	<b>Inspection End Time:</b>
<b>Current Phase of Construction:</b>	<b>Weather Conditions During Inspection:</b>
<p><b>Did you determine that any portion of your site was unsafe for inspection per CGP Part 4.5?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>If “Yes,” provide the following information:</b></p> <p>Location of unsafe conditions:</p> <p>The conditions that prevented you inspecting this location:</p>	
<p><b>Indicate the required inspection frequency:</b> (Check all that apply. You may be subject to different inspection frequencies in different areas of the site.)</p>	
<p><b>Standard Frequency (CGP Part 4.2):</b></p> <p><input type="checkbox"/> At least once every 7 calendar days; <b>OR</b></p> <p><input type="checkbox"/> Once every 14 calendar days <i>and</i> within 24 hours of the occurrence of either:</p> <ul style="list-style-type: none"> <li>• A storm event that produces 0.25 inches or more of rain within a 24-hour period, or</li> <li>• A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period</li> </ul>	
<p><b>Increased Frequency (CGP Part 4.3.1)</b> (If site discharges to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3):</p> <p><input type="checkbox"/> Once every 7 calendar days <i>and</i> within 24 hours of the occurrence of either:</p> <ul style="list-style-type: none"> <li>• A storm event that produces 0.25 inches or more of rain within a 24-hour period, or</li> <li>• A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period</li> </ul>	

**Reduced Frequency (CGP Part 4.4):**

- For stabilized areas: Twice during first month, no more than 14 calendar days apart; then once per month after first month until permit coverage is terminated
- For stabilized areas on "linear construction sites": Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of the occurrence of either:
  - A storm event that produces 0.25 inches or more of rain within a 24-hour period, or
  - A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period
- For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought: Once per month and within 24 hours of the occurrence of either:
  - A storm event that produces 0.25 inches or more of rain within a 24-hour period, or
  - A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period
- For frozen conditions where construction activities are being conducted: Once per month

**Was this inspection triggered by a storm event producing 0.25 inches or more of rain within a 24-hour period?**  Yes  No

**If "Yes," how did you determine whether the storm produced 0.25 inches or more of rain?**

- On-site rain gauge
- Weather station representative of site.  
Weather station location:

**Total rainfall amount that triggered the inspection (inches):**

**Was this inspection triggered by a snowmelt discharge from a storm event producing 3.25 inches or more of snow within a 24-hour period?**  Yes  No

**If "Yes," how did you determine whether the storm produced 3.25 inches or more of snow?**

- On-site rain gauge
- Weather station representative of site.  
Weather station location:

**Total snowfall amount that triggered the inspection (inches):**

Section B – Condition and Effectiveness of Erosion and Sediment (E&S) Controls (CGP Part 2.2) (Insert additional rows if needed)					
Type and Location of E&S Control	Conditions Requiring Routine Maintenance? <sup>1</sup>	If “Yes,” How Many Times (Including This Occurrence) Has This Condition Been Identified?	Conditions Requiring Corrective Action? <sup>2, 3</sup>	Date on Which Condition First Observed (If Applicable)?	Description of Conditions Observed
1.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
2.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
3.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
4.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
5.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
<p><b>If the same routine maintenance was found to be necessary three or more times for the same control at the same location (including this occurrence), follow the corrective action requirements and record the required information in your corrective action log, or describe here why you believe the specific condition should still be addressed as routine maintenance:</b></p>					

<sup>1</sup> Routine maintenance includes minor repairs or other upkeep performed to ensure that the site’s stormwater controls remain in effective operating condition, not including significant repairs or the need to install a new or replacement control. Routine maintenance is also required for specific conditions: (1) for perimeter controls, whenever sediment has accumulated to half or more the above-ground height of the control (CGP Part 2.2.3.c.i); (2) where sediment has been tracked-out from the site onto paved roads, sidewalks, or other paved areas (CGP Part 2.2.4.d); (3) for inlet protection measures, when sediment accumulates, the filter becomes clogged, and/or performance is compromised (CGP Part 2.2.10.b); and (4) for sediment basins, as necessary to maintain at least half of the design capacity of the basin (CGP Part 2.2.12.f)

<sup>2</sup> Corrective actions are triggered only for specific conditions (CGP Part 5.1):

1. A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with Part 2.1.4.c, you find it necessary to repeatedly (i.e., three (3) or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under Part 4.7.1.c that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under 2.1.4); or
2. A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
3. Your discharges are not meeting applicable water quality standards; or
4. A prohibited discharge has occurred (see CGP Part 1.3); or
5. During the discharge from site dewatering activities:
  - a. The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to Part 3.3.2.b); or
  - b. You observe or you are informed by EPA, State, or local authorities of the presence of the conditions specified in Part 4.6.3.e.

<sup>3</sup> If a condition on your site requires a corrective action, you must also fill out a corrective action log found at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>. See CGP Part 5.4 for more information.

Section C – Condition and Effectiveness of Pollution Prevention (P2) Practices and Controls (CGP Part 2.3)					
(Insert additional rows if needed)					
Type and Location of P2 Practices and Controls	Conditions Requiring Routine Maintenance? <sup>1</sup>	If “Yes,” How Many Times (Including This Occurrence) Has This Condition Been Identified?	Conditions Requiring Corrective Action? <sup>2, 3</sup>	Date on Which Condition First Observed (If Applicable)?	Description of Conditions Observed
1.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
2.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
3.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
4.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
5.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		
<p>If the same routine maintenance was found to be necessary three or more times for the same control at the same location (including this occurrence), follow the corrective action requirements and record the required information in your corrective action log, or describe here why you believe the specific condition should still be addressed as routine maintenance:</p>					

Section D – Stabilization of Exposed Soil (CGP Part 2.2.14) (Insert additional rows if needed)					
Specific Location That Has Been or Will Be Stabilized	Stabilization Method and Applicable Deadline	Stabilization Initiated?	Final Stabilization Criteria Met?	Final Stabilization Photos Taken?	Notes
1.		<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date initiated:	<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date criteria met:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.		<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date initiated:	<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date criteria met:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3.		<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date initiated:	<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date criteria met:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4.		<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date initiated:	<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date criteria met:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5.		<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date initiated:	<input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," date criteria met:	<input type="checkbox"/> Yes <input type="checkbox"/> No	

**Section E – Description of Discharges (CGP Part 4.6.2)**  
*(Insert additional rows if needed)*

**Was a discharge (not including dewatering) occurring from any part of your site at the time of the inspection?<sup>4</sup>**     Yes     No

**If “Yes,” for each point of discharge, document the following:**

- The visual quality of the discharge.
- The characteristics of the discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants.
- Signs of the above pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.

Discharge Location	Observations
1.	
2.	
3.	
4.	
5.	

<sup>4</sup> If a dewatering discharge was occurring, you must conduct a dewatering inspection pursuant to CGP Part 4.3.2 and complete a separate dewatering inspection report.



**Section F – Signature and Certification (CGP Part 4.7.2)**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**MANDATORY: Signature of Operator or "Duly Authorized Representative:"**

<b>Signature:</b>	<b>Date:</b>
<b>Printed Name:</b>	<b>Affiliation:</b>

**OPTIONAL: Signature of Contractor or Subcontractor**

<b>Signature:</b>	<b>Date:</b>
<b>Printed Name:</b>	<b>Affiliation:</b>

## **General Tips for Using This Template**

This Site Inspection Report Template is provided to assist you in preparing site inspection reports for EPA's 2022 Construction General Permit (CGP). If you are covered under the 2022 CGP, you can use this template to create a site inspection report form that is customized to the specific circumstances of your site and that complies with the minimum reporting requirements of Part 4.7 of the permit. Note that the use of this form is optional; you may use your own site inspection report form provided it includes the minimum information required in Part 4.7 of the CGP.

This template does not address the CGP's inspection reporting requirements related to dewatering activities. A separate inspection template has been developed specifically for dewatering activities and is available at <https://www.epa.gov/npdcs/construction-general-permit-resources-tools-and-templates>.

Keep in mind that this document is a template and not an "off-the-shelf" inspection report that is ready to use without some modification. You must first customize this form to include the specifics of your project in order for it to be useable for your inspection reports. Once you have entered all of your site-specific information into the blank fields, you may use this form to complete inspection reports.

The following tips for using this template will help you ensure that the minimum permit requirements are met:

- **Review the inspection requirements.** Before you start developing your inspection report form, read the CGP's Part 4 inspection requirements. This will ensure that you have a working understanding of the permit's underlying inspection requirements.
- **Complete all required blank fields.** Fill out all blank fields. Only by filling out all fields will the template be compliant with the requirements of the permit. (Note: Where you do not need the number of rows provided in the template form for your inspection, you may delete these or cross them off as you see fit. Or, if you need more space to document your findings, you may insert additional rows in the electronic version of this form or use the bottom of the page in the field version of this form.)
- **Use your site map to document inspection findings.** In several places in the template, you are directed to specify the location of certain features of your site, including where stormwater controls are installed and where you will be stabilizing exposed soil. You are also asked to fill in location information for unsafe conditions and the locations of any discharges occurring during your inspections. Where you are asked for location information, EPA encourages you to reference the point on your SWPPP site map that corresponds to the requested location on the inspection form. Using the site map as a tool in this way will help you conduct efficient inspections, will assist you in evaluating problems found, and will ensure proper documentation.
- **Complete the inspection report within 24 hours of completing a site inspection.** You must complete an inspection report in accordance with Part 4.7.1 of the CGP.
- **Include the inspection form with your SWPPP.** Once your form is complete, make sure to include a copy of the inspection form in your SWPPP in accordance with Part 7.2.7.e of the CGP.
- **Retain copies of all inspection reports with your records.** You must also retain in your records copies of all inspection reports in accordance with the requirements in Part 4.7.3 of the CGP. These reports must be retained for at least 3 years from the date your permit coverage expires or is terminated in accordance with the requirements in Part 4.7.4 of the CGP.

## **Instructions for Section A**

### **Inspector Name**

Enter the name of the person that conducted the inspection. Include the person's contact information (title, affiliated company name, address, email, and phone number).

### **Inspection Date and Time**

Enter the date you performed the inspection and the time you started and ended the inspection.

### **Weather Conditions During Inspection**

Enter the weather conditions occurring during the inspection, e.g., sunny, overcast, light rain, heavy rain, snowing, icy, windy.

### **Current Phase of Construction**

If this project is being completed in more than one phase, indicate which phase it is currently in.

### **Inspection Location**

If your project has multiple locations where you conduct separate inspections, specify the location where this inspection is being conducted. If only one inspection is conducted for your entire project, enter "Entire Site." If necessary, complete additional inspection report forms for each separate inspection location.

### **Unsafe Conditions for Inspection (CGP Part 4.5.7)**

Inspections are not required where a portion of the site or the entire site is subject to unsafe conditions. These conditions should not regularly occur and should not be consistently present on a site. Generally, unsafe conditions are those that render the site (or a portion of it) inaccessible or that would pose a significant probability of injury to applicable personnel. Examples could include severe storm or flood conditions, high winds, and downed electrical wires.

If your site, or a portion of it, is affected by unsafe conditions during the time of your inspection, provide a description of the conditions that prevented you from conducting the inspection and what parts of the site were affected. If the entire site was considered unsafe, specify the location as "Entire Site."

### **Inspection Frequency**

Check all the inspection frequencies that apply to your project. Note that you may be subject to different inspection frequencies in different areas of your site.

### **Inspection Triggered by a Storm Event**

If you were required to conduct this inspection because of a storm event that produced 0.25 inches or more of rain within a 24-hour period, indicate whether you relied on an on-site rain gauge or a nearby weather station (and where the weather station is located). Also, specify the total amount of rainfall for this specific storm event.

If you were required to conduct this inspection because of a snowmelt discharge from a storm event that produced 3.25 inches or more of snow within a 24-hour period, then indicate whether you relied on an on-site measurement or a nearby weather station (and where the weather station is located). Also, specify the total amount of snowfall for this specific storm event.

## **Instructions for Section B**

### **Type and Location of Erosion and Sediment (E&S) Controls**

Provide a list of all erosion and sediment (E&S) controls that your SWPPP indicates will be installed and implemented at your site. This list must include at a minimum all E&S controls required by CGP Part 2.2. Include also any natural buffers established under CGP Part 2.2.1. Buffer requirements apply if your project's earth-disturbing activities will occur within 50 feet of a discharge to receiving water. You may group your E&S controls on your form if you have several of the same type of controls (e.g., you may group "Inlet Protection Measures," "Perimeter Controls," and "Stockpile Controls" together on one line), but if there are any problems with a specific control, you must separately identify the location of the control, whether routine maintenance or corrective action is necessary, and in the notes section you must describe the specifics about the problem you observed.

### **Conditions Requiring Routine Maintenance?**

Answer "Yes" if the E&S control requires routine maintenance as defined in footnote 1 of this template. Note that in many cases, "Yes" answers are expected and indicate a project with an active operation and maintenance program. You should also answer "Yes" if work to fix the problem is still ongoing from the previous inspection, though necessary work must be initiated immediately and completed by the end of the next business day or within seven calendar days if documented in accordance with CGP Part 2.1.4.b.

### **If "Yes," How Many Times (Including this Occurrence) Has this Condition Been Identified?**

Indicate how many times the routine maintenance has been required for the same control at the same location.

### **Conditions Requiring Corrective Action?**

Answer "Yes" if you found any of the conditions listed in footnote 2 in this template to be present during your inspection (CGP Part 5.1). If you answer "Yes," you must take corrective action and complete a corrective action log, found at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>. You should also answer "Yes" if work to fix the problem from a previous inspection is still ongoing, though the operator must comply with the corrective action deadlines in CGP Part 5.2.

### **Date on Which Condition First Observed (If Applicable)?**

Provide the date on which the condition that triggered the need for routine maintenance or corrective action was first identified. If the condition was just discovered during this inspection, enter the inspection date. If the condition is a carryover from a previous inspection, enter the original date of the condition's discovery.

### **Description of Conditions Observed**

For each E&S control and the area immediately surrounding it, describe whether the control is properly installed and whether it appears to be working to minimize sediment discharge. Indicate also whether a new or modified control is necessary to comply with the permit. Describe any problem condition(s) you observed such as the following:

1. Failure to install or to properly install a required E&S control
2. Damage or destruction to an E&S control caused by vehicles, equipment, or personnel, a storm event, or other event
3. Mud or sediment deposits found downslope from E&S controls, including in receiving waters, or on nearby streets, curbs, or open conveyance channels
4. Sediment tracked out onto paved areas by vehicles leaving construction site
5. Noticeable erosion or sedimentation at discharge outlets or at adjacent streambanks or channels
6. Erosion of the site's sloped areas (e.g., formation of rills or gullies)
7. E&S control is no longer working due to lack of maintenance
8. Other incidents of noncompliance

Describe also why you think the problem condition(s) occurred as well as actions (e.g., routine maintenance or corrective action) you will take or have taken to fix the problem.

For buffer areas, make note of whether they are marked off as required, whether there are signs of construction disturbance within the buffer, which is prohibited under the CGP, and whether there are visible signs of erosion resulting from discharges through the area.

If routine maintenance or corrective action is required, briefly note the reason. If routine maintenance or corrective action has been completed, make a note of the date it was completed and what was done. *If corrective action is required, note that you will need to complete a separate corrective action log describing the condition and your work to fix the problem.*

### **Routine Maintenance Need Has Been Found to be Necessary Three (3) or More Times for the Same Control at the Same Location (Including this Occurrence)**

If routine maintenance has been required three (3) or more times for the same control at the same location, the permit requires (CGP Part 2.1.4.c) you to fix the problem using the corrective action procedures in CGP Part 5 or to document why you believe the reoccurring problem can be addressed as a routine maintenance fix. If you believe the problem can continue to be fixed as routine maintenance, describe why you believe the specific condition should still be addressed as routine maintenance.

### **Instructions for Section C**

#### **Type and Location of Pollution Prevention (P2) Practices and Controls**

Provide a list of all pollution prevention (P2) practices and controls that are implemented at your site. This list must include all P2 practices and controls required by CGP Part 2.3 and those that are described in your SWPPP.

### **Conditions Requiring Routine Maintenance?**

Answer "Yes" if the P2 practice or control requires routine maintenance as defined in footnote 1 of this template. Note that in many cases, "Yes" answers are expected and indicate a project with an active operation and maintenance program. You should also answer "Yes" if work to fix the problem is still ongoing

from the previous inspection, though necessary work must be initiated immediately and completed by the end of the next business day or within seven calendar days if documented in accordance with CGP Part 2.1.4.b.

**If “Yes,” How Many Times (Including this Occurrence) Has this Condition Been Identified?**

Indicate how many times the routine maintenance has been required for the same practice or control at the same location.

**Conditions Requiring Corrective Action?**

Answer “Yes” if you found any of the conditions listed in footnote 2 in this template to be present during your inspection (CGP Part 5.1). If you answer “Yes,” you must take corrective action and complete a corrective action log, found at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>. You should also answer “Yes” if work to fix the problem from a previous inspection is still ongoing, though the operator must comply with the corrective action deadlines in CGP Part 5.2.

**Date on Which Condition First Observed (If Applicable)?**

Provide the date on which the condition that triggered the need for maintenance or corrective action was first identified. If the condition was just discovered during this inspection, enter the inspection date. If the condition is a carryover from a previous inspection, enter the original date of the condition's discovery.

**Description of Conditions Observed**

For each P2 control and the area immediately surrounding it, describe whether the control is properly installed, and whether it appears to be working to minimize or eliminate pollutant discharges. Indicate also whether a new or modified control is necessary to comply with the permit. Describe any problem condition(s) you observed such as the following:

1. Failure to install or to properly install a required P2 control
2. Damage or destruction to a P2 control caused by vehicles, equipment, or personnel, or a storm event
3. Evidence of a spill, leak, or other type of pollutant discharge, or failure to have properly cleaned up a previous spill, leak, or other type of pollutant discharge
4. Spill response supplies are absent, insufficient, or not where they are supposed to be located
5. Improper storage, handling, or disposal of chemicals, building materials or products, fuels, or wastes
6. P2 control is no longer working due to lack of maintenance
7. Other incidents of noncompliance

Describe also why you think the problem condition(s) occurred as well as actions (e.g., routine maintenance or corrective action) you will take or have taken to fix the problem.

If routine maintenance or corrective action is required, briefly note the reason. If routine maintenance or corrective action has been completed, make a note of the date it was completed and what was done. *If corrective action is required, note that you will need to complete a separate corrective action log describing the condition and your work to fix the problem.*

**Routine Maintenance Need Was Found to be Necessary Three (3) or More Times for the Same Control at the Same Location (Including this Occurrence)**

If routine maintenance has been required three (3) or more times for the same control at the same location, the permit requires (CGP Part 2.1.4.c) you to fix the problem using the corrective action procedures in CGP Part 5 or to document why you believe the reoccurring problem can be addressed as a routine maintenance fix. If you believe the problem can continue to be fixed as routine maintenance, describe why you believe the specific condition should still be addressed as routine maintenance.

**Instructions for Section D**

**Specific Location That Has Been or Will Be Stabilized**

List all areas where soil stabilization is required to begin because construction work in that area has permanently stopped or temporarily stopped (i.e., work will stop for 14 or more days), and all areas where stabilization has been implemented (CGP Part 2.2.14).

**Stabilization Method and Applicable Deadline**

For each area, specify the method of stabilization (e.g., hydroseed, sod, planted vegetation, erosion control blanket, mulch, rock).

Specify also which of the following stabilization deadlines apply to this location:

1. 5 acres or less of land disturbance occurring at any one time at site: Complete no later than 14 calendar days after stabilization initiated.
2. More than 5 acres of land disturbance occurring at any one time at site: Complete no later than 7 calendar days after stabilization initiated.
3. Arid, semi-arid, and drought-stricken areas: See CGP Part 2.2.14.b.i.
4. Unforeseen circumstances: See CGP Part 2.2.14.b.ii.
5. Discharges to a sediment- or nutrient-impaired water or to a water identified as Tier 2, 2.5, or 3 for antidegradation purposes: Complete no later than 7 days after stabilization initiated.

**Stabilization Initiated?**

For each area, indicate whether stabilization has been initiated. If "Yes," then enter the date stabilization was initiated.

**Final Stabilization Criteria Met?**

For each area, indicate whether the final stabilization criteria in CGP Part 2.2.14.c have been met. If "Yes," then enter the date final stabilization criteria were met.

**Final Stabilization Photos Taken?**

Answer "Yes" if you have taken photos before and after meeting the stabilization criteria as required in CGP Part 8.2.1.a.

**Notes**

For each area where stabilization has been initiated, describe the progress that has been made and what additional actions are necessary to complete stabilization. Note the effectiveness of stabilization in preventing erosion. If stabilization has been initiated but not completed, make a note of the date it is to be completed. If stabilization has been completed, make a note of the date it was completed. If stabilization has not yet been initiated, make a note of the date it is to be initiated and the date it is to be completed.

**Instructions for Section E**

You are only required to complete this section if a discharge is occurring at the time of the inspection (CGP Part 4.6.2).

**Was a discharge (not including dewatering) occurring from any part of your site at the time of the inspection?**

During your inspection, examine all points of discharge from your site, and determine whether a discharge is occurring. If a dewatering discharge was occurring, you must conduct a dewatering inspection pursuant to CGP Part 4.3.2. If there is a discharge, answer "Yes" and complete the questions below regarding the specific discharge. If there is not a discharge, answer "No" and skip to the next page.

**Discharge Location** (Repeat as necessary if there are multiple points of discharge.)

Specify the location on your site where the discharge is occurring. The location may be an outlet from a stormwater control or constructed stormwater channel, a discharge into a storm sewer inlet, or a specific point on the site. Be as specific as possible; it is recommended that you refer to a precise point on your site map.

**Observations**

Document the visual quality of the discharge and take note of the characteristics of the stormwater discharge, including color; odor; floating, settled, or suspended solids; foam; oily sheen; and other indicators of stormwater pollutants. Also, document signs of these same pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.

## **Instructions for Section F**

Each inspection report must be signed and certified to be considered complete (CGP Part 4.7.2).

### **Operator or “Duly Authorized Representative” – MANDATORY** (CGP Appendix G Part G.11.2 and CGP Appendix H Section X)

At a minimum, the site inspection report must be signed by either (1) the person who signed the NOI, or (2) a duly authorized representative of that person. The following requirements apply:

If the signatory will be the person who signed the NOI for permit coverage, as a reminder, that person must be one of the following types of individuals:

- *For a corporation:* By a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- *For a partnership or sole proprietorship:* By a general partner or the proprietor, respectively.
- *For a municipality, State, Federal, or other public agency:* By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

If the signatory will be a duly authorized representative, the following requirements must be met:

- The authorization is made in writing by the person who signed the NOI (see above);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

Sign, date and print your name and affiliation.

### **Contractor or Subcontractor - OPTIONAL**

Where you rely on a contractor or subcontractor to complete the site inspection report, you should consider requiring the individual(s) to sign and certify each report. Note that this does not relieve you, the permitted operator, of the requirement to sign and certify the site inspection report as well. If applicable, sign, date, and print your name and affiliation.

### **Note**

While EPA has made every effort to ensure the accuracy of all instructions contained in this template, it is the permit, not this template, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between this template and any corresponding provision of the CGP, you must abide by the requirements in the permit. EPA welcomes comments on this Site Inspection Report Template at any time and will consider those comments in any future revision. You may contact EPA for CGP-related inquiries at [cgp@epa.gov](mailto:cgp@epa.gov)



**DEWATERING INSPECTION FORM**  
**VETERANS MEMORIAL PARK AND SOUTH RIVER IMPROVEMENT PROJECT**  
**TOWN OF MARSHFIELD**  
**870 MORaine STREET**  
**MARSHFIELD, MA**  
**Stormwater Pollution Prevention Plan**

<p><b>Section A – Dewatering Discharges (CGP Part 4.6.3)</b>                  Complete this section within 24 hours of completing the inspection.                  (If necessary, complete additional inspection reports for each separate inspection location.)</p>	
<b>Inspector Information</b>	
<b>Inspector Name:</b>	<b>Title:</b>
<b>Company Name:</b>	<b>Email:</b>
<b>Address:</b>	<b>Phone Number:</b>
<b>Inspection Details</b>	
<b>Inspection Date:</b>	<b>Inspection Location:</b>
<b>Discharge Start Time:</b>	<b>Discharge End Time:</b>
<b>Rate of Discharge (gallons per day):</b>	<b>Corrective Action Required?<sup>1</sup> <input type="checkbox"/> Yes <input type="checkbox"/> No</b>
<b>Describe Indicators of Pollutant Discharge at Point of Dewatering Discharge:<sup>1</sup></b>	
<p><b>Attach Photographs of:</b></p> <ol style="list-style-type: none"> <li>1. Dewatering water prior to treatment by a dewatering control(s) and the final discharge after treatment; and</li> <li>2. Dewatering control(s); and</li> <li>3. Point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features, storm drain inlets, and other conveyances to receiving waters.</li> </ol>	

<sup>1</sup> If you observe any of the following indicators of pollutant discharge, you are required to take corrective action under Part 5.1.5.b:

- a sediment plume, suspended solids, unusual color, presence of odor, decreased clarity, or presence of foam; or
- a visible sheen on the water surface or visible oily deposits on the bottom or shoreline of the receiving water.

**Section B – Signature and Certification (CGP Part 4.7.2)**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**MANDATORY: Signature of Operator or "Duly Authorized Representative:"**

<b>Signature:</b>	<b>Date:</b>
<b>Printed Name:</b>	<b>Affiliation:</b>

**OPTIONAL: Signature of Contractor or Subcontractor**

<b>Signature:</b>	<b>Date:</b>
<b>Printed Name:</b>	<b>Affiliation:</b>

## **General Tips for Using This Template**

This Dewatering Inspection Report Template is provided to assist you in preparing dewatering inspection reports for EPA's 2022 Construction General Permit (CGP). If you are covered under the 2022 CGP, you can use this template to create a dewatering inspection report form that complies with the minimum reporting requirements of Part 4.6.3 of the permit. Note that the use of this form is optional; you may use your own inspection report form provided it includes the minimum information required in Part 4.6.3 of the CGP.

This template is for dewatering inspections only. A separate site inspection report template that does not include dewatering inspections and complies with the minimum reporting requirements of Part 4.7 of the permit is available at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>.

If you are covered under a State CGP, this template may be helpful in developing a report that can be used for that permit; however, it will need to be modified to meet the specific requirements of that permit. If your permitting authority requires you to use a specific inspection report form, you should not use this form.

The following tips for using this template will help you ensure that the minimum permit requirements are met:

- **Review the inspection requirements.** Before you start developing your inspection report form, read the CGP's Part 4 inspection requirements. This will ensure that you have a working understanding of the permit's underlying inspection requirements.
- **Complete all required blank fields.** Fill out all blank fields. Only by filling out all fields will the template be compliant with the requirements of the permit. (Note: Where you do not need the number of rows provided in the template form for your inspection, you may delete these as you see fit. Or, if you need more space to document your findings, you may insert additional rows in the electronic version of this form or use the bottom of the page in the field version of this form.)
- **Use your site map to document inspection findings.** In several places in the template, you are directed to specify the location of certain features of your site, including where stormwater controls are installed and where you will be stabilizing exposed soil. You are also asked to fill in location information for unsafe conditions and the locations of any discharges occurring during your inspections. Where you are asked for location information, EPA encourages you to reference the point on your SWPPP site map that corresponds to the requested location on the inspection form. Using the site map as a tool in this way will help you conduct efficient inspections, will assist you in evaluating problems found, and will ensure proper documentation.
- **Include the inspection form with your SWPPP.** Once your form is complete, make sure to include a copy of the inspection form in your SWPPP in accordance with Part 7.2.7.e of the CGP.
- **Retain copies of all inspection reports with your records.** You must also retain copies of all inspection reports in your records in accordance with the requirements in Part 4.7.3 of the CGP. These reports must be retained for at least 3 years from the date your permit coverage expires or is terminated in accordance with the requirements in Part 4.7.4 of the CGP.

## **Instructions for Section A**

### **Inspector Name**

Enter the name of the person that conducted the inspection. Include the person's contact information (title, affiliated company name, address, email, and phone number).

### **Inspection Date**

Enter the date you performed the inspection.

### **Inspection Location**

If your project has multiple locations where you conduct separate dewatering inspections, specify the location where this inspection is being conducted. Otherwise, you can enter "dewatering operation."

### **Discharge Start and End Times**

Enter the approximate time the dewatering discharge started and ended on the day of the inspection.

### **Rate of Discharge**

Enter the rate of discharge in gallons per day on the day of inspection.

To estimate the approximate discharge rate on the day of dewatering inspection, one approach is to use the manufacturer's design pump rating for the pump model in use. For example, a pump rated at 164 gpm (gallons per minute) by the manufacturer can be assumed to be discharging at 164 gpm in most cases. To convert to gallons per day, multiply the rate in gpm by the ratio of minutes in one-day (1,440 minutes per day), resulting in a discharge rate of 236,160 gallons per day.

In cases where the dewatering discharge is being pumped over long distances or a substantial distance uphill, which will result in a reduced pump rate relative to manufacturer's specification, the operator may improve the accuracy of the estimate by estimating the time required to fill a container of a known volume. For example, if it takes 60 seconds to fill an empty 55-gallon barrel, the estimated discharge rate is 55 gpm, or 79,200 gallons per day.

### **Indicators of Pollutant Discharge**

For the point of discharge, describe any observed sediment plume, suspended solids, unusual color, presence of odor, decreased clarity, or presence of foam; and/or a visible sheen on the water surface or visible oily deposits on the bottom or shoreline of the receiving water.

### **Corrective Action Required?**

Answer "Yes" if during your inspection you found any of the conditions listed above in the instructions for the Indicators of Pollutant Discharge section. If you answer "Yes," you must take corrective action and complete a corrective action log, found at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>. Answer "No" if you did not observe any of the listed pollutant indicators.

### **Photographs**

As required in CGP Part 8.2.1.a, attach photos of: (1) dewatering water prior to treatment by a dewatering control(s) and the final discharge after treatment; (2) the dewatering control(s); and (3) the point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features, storm drain inlets, and other conveyances to receiving waters.

### **Instructions for Section B**

Each inspection report must be signed and certified to be considered complete (CGP Part 4.7.2).

### **Operator or "Duly Authorized Representative" – MANDATORY (CGP Appendix G Part G.11.2 and CGP Appendix H Section X)**

At a minimum, the dewatering inspection report must be signed by either (1) the person who signed the NOI, or (2) a duly authorized representative of that person. The following requirements apply:

If the signatory will be the person who signed the NOI for permit coverage, as a reminder, that person must be one of the following types of individuals:

- *For a corporation:* By a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- *For a partnership or sole proprietorship:* By a general partner or the proprietor, respectively.

- *For a municipality, State, Federal, or other public agency:* By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

If the signatory will be a duly authorized representative, the following requirements must be met:

- The authorization is made in writing by the person who signed the NOI (see above);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

Sign, date and print your name and affiliation.

#### **Contractor or Subcontractor - OPTIONAL**

Where you rely on a contractor or subcontractor to complete the dewatering inspection report, you should consider requiring the individual(s) to sign and certify each report. Note that this does not relieve you, the permitted operator, of the requirement to sign and certify the dewatering inspection report as well. If applicable, sign, date, and print your name and affiliation.

#### **Note**

While EPA has made every effort to ensure the accuracy of all instructions contained in this template, it is the permit, not this template, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between this template and any corresponding provision of the CGP, you must abide by the requirements in the permit. EPA welcomes comments on this Dewatering Inspection Report Template at any time and will consider those comments in any future revision. You may contact EPA for CGP-related inquiries at [cgp@epa.gov](mailto:cgp@epa.gov)

## **Appendix E**

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Corrective Action Log

2022 CGP Corrective Action Log  
 VETERANS MEMORIAL PARK AND SOUTH RIVER IMPROVEMENT PROJECT  
 TOWN OF MARSHFIELD  
 870 MORaine STREET  
 MARSHFIELD, MA  
 Stormwater Pollution Prevention Plan

NPDES ID Number: \_\_\_\_\_

Section A – Individual Completing this Log	
Name:	Title:
Company Name:	Email:
Address:	Phone Number:
Section B – Details of the Problem (CGP Part 5.4.1.a)	
Complete this section <u>within 24 hours</u> of discovering the condition that triggered corrective action.	
Date problem was first identified:	Time problem was first identified:
<p>What site conditions triggered this corrective action? <i>(Check the box that applies. See instructions for a description of each triggering condition (1 thru 6).)</i></p> <p style="text-align: center;"> <input type="checkbox"/> 1             <input type="checkbox"/> 2             <input type="checkbox"/> 3             <input type="checkbox"/> 4             <input type="checkbox"/> 5a             <input type="checkbox"/> 5b             <input type="checkbox"/> 6         </p>	
Specific location where problem identified:	
Provide a description of the specific condition that triggered the need for corrective action and the cause (if identifiable):	
Section C – Corrective Action Completion (CGP Part 5.4.1.b)	
Complete this section <u>within 24 hours</u> after completing the corrective action.	
For site condition # 1, 2, 3, 4, or 6 (those not related to a dewatering discharge) confirm that you met the following deadlines (CGP Part 5.2.1):	
<input type="checkbox"/> Immediately took all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events. <b>AND</b>	
<input type="checkbox"/> Completed corrective action by the close of the next business day, unless a new or replacement control, or significant repair, was required. <b>OR</b>	
<input type="checkbox"/> Completed corrective action within seven (7) calendar days from the time of discovery because a new or replacement control, or significant repair, was necessary to complete the installation of the new or modified control or complete the repair. <b>OR</b>	



- It was infeasible to complete the installation or repair within 7 calendar days from the time of discovery. Provide the following additional information:

Explain why 7 calendar days was infeasible to complete the installation or repair:

Provide your schedule for installing the stormwater control and making it operational as soon as feasible after the 7 calendar days:

**For site condition # 5a, 5b, or 6 (those related to a dewatering discharge), confirm that you met the following deadlines:**

- Immediately took all reasonable steps to minimize or prevent the discharge of pollutants until a solution could be implemented, including shutting off the dewatering discharge as soon as possible depending on the severity of the condition taking safety considerations into account.
- Determined whether the dewatering controls were operating effectively and whether they were causing the conditions.
- Made any necessary adjustments, repairs, or replacements to the dewatering controls to lower the turbidity levels below the benchmark or remove the visible plume or sheen.

Describe any modification(s) made as part of corrective action: (Insert additional rows below if applicable)	Date of completion:	SWPPP update necessary?	If yes, date SWPPP was updated:
1.		<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.		<input type="checkbox"/> Yes <input type="checkbox"/> No	

**Section D - Signature and Certification (CGP Part 5.4.2)**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**MANDATORY: Signature of Operator or "Duly Authorized Representative:"**

<b>Signature:</b>	<b>Date:</b>
<b>Printed Name:</b>	<b>Affiliation:</b>

**OPTIONAL: Signature of Contractor or Subcontractor**

<b>Signature:</b>	<b>Date:</b>
<b>Printed Name:</b>	<b>Affiliation:</b>

## **General Instructions**

This Corrective Action Log Template is provided to assist you creating a corrective action log that complies with the minimum reporting requirements of Part 5.4 of the EPA's Construction General Permit (CGP). For each triggering condition on your site, you will need to fill out a separate corrective action log.

The entire form must be completed to be compliant with the requirements of the permit. (Note: In Section C, if you do not need the number of rows provided in the corrective action log, you may delete these or cross them off. Alternatively, if you need more space to describe any modifications, you may insert additional rows in the electronic version of this form or use the bottom of the page in the field version of this form.)

If you are covered under a State CGP, this template may be helpful in developing a log that can be used for that permit; however, you will likely need to modify this form to meet the specific requirements of any State-issued permit. If your permitting authority requires you to use a specific corrective action log, you should not use this template.

## **Instructions for Section A**

**Individual completing this form** Enter the name of the person completing this log. Include the person's contact information (title, affiliated company name, address, email, and phone number).

## **Instructions for Section B**

You must complete Section B within 24 hours of discovering the condition that triggered corrective action. (CGP Part 5.4)

### **When was the problem first discovered?**

Specify the date and time when the triggering condition was first discovered.

### **What site conditions triggered this corrective action? (CGP Parts 5.1 and 5.3)**

Check the box corresponding to the numbered triggering condition below that applies to your site.

1. A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with Part Error! Reference source not found., you find it necessary to repeatedly (i.e., 3 or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under Part Error! Reference source not found. that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under Part Error! Reference source not found.);
2. A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly;
3. Your discharges are not meeting applicable water quality standards;
4. A prohibited discharge has occurred (see Part 1.3);
5. During discharge from site dewatering activities:
  - a. The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to Part **Error! Reference source not found.**); or
  - b. You observe or you are informed by EPA, State, or local authorities of the presence of any of the following at the point of discharge to a receiving water flowing through or immediately adjacent to your site and/or to constructed or natural site drainage features or storm drain inlets:
    - sediment plume
    - suspended solids
    - unusual color
    - presence of odor
    - decreased clarity
    - presence of foam
    - visible sheen on the water surface or visible oily deposits on the bottom or shoreline of the receiving water
6. EPA requires corrective action as a result of permit violations found during an inspection carried out under Part 4.8.

**Provide a description of the problem (CGP Part 5.4.1.a)**

Provide a summary description of the condition you found that triggered corrective action, the cause of the problem (if identifiable), and the specific location where it was found. Be as specific as possible about the location; it is recommended that you refer to a precise point on your site map.

**Instructions for Section C**

You must complete Section C within 24 hours after completing the correction action. (CGP Part 5.4)

**Deadlines for completing corrective action for condition # 1, 2, 3, 4, or 6 (if not relating to a dewatering discharge) (CGP Part 5.2.1)**

Check the box to confirm that you met the deadlines that apply to each triggering condition. You are always required to check the first box (i.e., Immediately took all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events.). Only one of the next three boxes should be checked depending on the situation that applies to this corrective action.

Check the second box if the corrective action for this particular triggering condition does not require a new or replacement control, or a significant repair. These actions must be completed by the close of the next business day from the time of discovery of the condition.

Check the third box if the corrective action for this particular triggering condition requires a new or replacement control, or a significant repair. These actions must be completed by no later than seven calendar days from the time of discover of the condition.

Check the fourth box if the corrective action for this particular triggering condition requires a new or replacement control, or a significant repair, and if it is infeasible to complete the work within seven calendar days. Additionally, you will need to fill out the table below the checkbox that requires:

1. An explanation as to why it was infeasible to complete the installation or repair within seven calendar days of discovering the condition.
2. Provide the schedule you will adhere to for installing the stormwater control and making it operational as soon as feasible after the seventh day following discovery.

Note: Per Part 5.2.1.c, where these actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within seven calendar days of completing this work.

**Deadlines for completing corrective action for condition # 5a, 5b, or 6 related to a dewatering discharge (CGP Part 5.2.2)**

These deadlines apply to conditions relating to construction dewatering activities. Check the box to confirm that you met the deadlines that apply to each triggering condition. You are required to check all of the boxes in this section to indicate your compliance with the corrective action deadlines.

**List of modification(s) to correct problem**

Provide a list of modifications you completed to correct the problem.

**Date of completion**

Enter the date you completed the modification. The work must be completed by the deadline you indicated above.

**SWPPP update necessary?**

Check "Yes" or "No" to indicate if a SWPPP update is necessary consistent with Part 7.4.1.a in order to reflect changes implemented at your site. If "Yes," then enter the date you updated your SWPPP. The SWPPP updates must be made within seven calendar days of completing a corrective action. (CGP Part 5.2.1.c)

**Instructions for Section D**

Each corrective action log entry must be signed and certified following completion of Section D to be considered complete. (CGP Part 5.4.2)

**Operator or "Duly Authorized Representative" – MANDATORY (CGP Appendix G Part G.11.2 and CGP Appendix H Section X)**

At a minimum, the corrective action log must be signed by either (1) the person who signed the NOI, or (2) a duly authorized representative of that person. The following requirements apply:

If the signatory will be the person who signed the NOI for permit coverage, as a reminder, that person must be one of the following types of individuals:

- *For a corporation:* By a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- *For a partnership or sole proprietorship:* By a general partner or the proprietor, respectively.
- *For a municipality, State, Federal, or other public agency:* By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

If the signatory will be a duly authorized representative, the following requirements must be met:

- The authorization is made in writing by the person who signed the NOI (see above);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

Sign, date and print your name and affiliation.

#### **Contractor or Subcontractor - OPTIONAL**

Where you rely on a contractor or subcontractor to complete this log and the associated corrective action, you should consider requiring the individual(s) to sign and certify each log entry. Note that this does not relieve you, the permitted operator, of the requirement to sign and certify the log as well. If applicable, sign, date, and print your name and affiliation.

#### **Recordkeeping**

Logs must be retained for at least 3 years from the date your permit coverage expires or is terminated. (CGP Part 5.4.4)

Keep copies of your signed corrective action log entries at the site or at an easily accessible location so that it can be made immediately available at the time of an on-site inspection or upon request by EPA. (CGP Part 5.4.3) Include a copy of the corrective action log in your SWPPP. (CGP Part 7.2.7.e)

#### **Note**

While EPA has made every effort to ensure the accuracy of all instructions contained in this template, it is the permit, not this template, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between this template and any corresponding provision of the CGP, you must abide by the requirements in the permit. EPA welcomes comments on this Corrective Action Log Template at any time and will consider those comments in any future revision. You may contact EPA for CGP-related inquiries at [cgp@epa.gov](mailto:cgp@epa.gov)

## Appendix F

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SWPPP Amendment Log



## **Appendix G**

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Subcontractor Certifications/Agreement



**SUBCONTRACTOR CERTIFICATION**

**VETERANS MEMORIAL PARK AND SOUTH RIVER IMPROVEMENT PROJECT  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA  
Stormwater Pollution Prevention Plan**

Project Number: \_\_\_\_\_

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

Operator(s): \_\_\_\_\_

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

**I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.**

This certification is hereby signed in reference to the above named project:

Company: \_\_\_\_\_

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

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

Type of construction service to be provided: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

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

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

## **Appendix H**

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### Grading and Stabilization Activities Log



## **Appendix I**

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Training Documentation

# TRAINING LOG

VETERANS MEMORIAL PARK AND SOUTH RIVER IMPROVEMENT PROJECT  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA  
**Stormwater Pollution Prevention Plan**

Project Name: \_\_\_\_\_

Project Location: \_\_\_\_\_

Instructor's Name(s): \_\_\_\_\_

Instructor's Title(s): \_\_\_\_\_

Course Location: \_\_\_\_\_ Date: \_\_\_\_\_

Course Length (hours): \_\_\_\_\_

Stormwater Training Topic: *(check as appropriate)*

- Sediment and Erosion Controls**
- Emergency Procedures**
- Stabilization Controls**
- Inspections/Corrective Actions**
- Pollution Prevention Measures**

Specific Training Objective: \_\_\_\_\_

\_\_\_\_\_

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

## Appendix J

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Delegation of Authority

**DELEGATION OF AUTHORITY**

**VETERANS MEMORIAL PARK AND SOUTH RIVER IMPROVEMENT PROJECT  
TOWN OF MARSHFIELD  
870 MORaine STREET  
MARSHFIELD, MA  
Stormwater Pollution Prevention Plan**

I, \_\_\_\_\_ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the \_\_\_\_\_ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

\_\_\_\_\_ (name of person or position)  
\_\_\_\_\_ (company)  
\_\_\_\_\_ (address)  
\_\_\_\_\_ (city, state, zip)  
\_\_\_\_\_ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's Construction General Permit (CGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

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

**Name:** \_\_\_\_\_

**Company:** \_\_\_\_\_

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

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

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



## **Appendix K**

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Endangered Species Documentation



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Ecological Services Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5094  
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:

January 30, 2023

Project Code: 2023-0039225

Project Name: Veterans Memorial Park and South River Improvement Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

*Updated 12/27/2022 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.*

### **About Official Species Lists**

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

### **Endangered Species Act Project Review**

Please visit the “**New England Field Office Endangered Species Project Review and Consultation**” website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

<https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review>

**\*NOTE\*** Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

**Northern Long-eared Bat - (Updated 12/27/2022)** Please visit our New England Field Office Project Review webpage at the link above for updated northern long-eared bat consultation guidance. The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule will go into effect on **January 30, 2023**. After that date, the current 4(d) rule for NLEB will no longer be in effect, and the 4(d) determination key will no longer be available. New compliance tools will be available by mid- to late-January, and information will be posted on our New England Field Office Project Review webpage in January, so please check this site often for updates.

Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project may result in incidental take of NLEB after the new listing goes into effect, this will need to be addressed in an updated consultation that includes an Incidental Take Statement. Many of these situations will be addressed through the new compliance tools. If your project may require re-initiation of consultation, please wait for information on the new tools to appear on our website or contact our office at **newengland@fws.gov** for additional guidance.

#### *Additional Info About Section 7 of the Act*

Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/service/section-7-consultations>

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

**Candidate species** that appear on the enclosed species list have no current protections under the

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ESA. The species' occurrence on an official species list does not convey a requirement to consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

### **Migratory Birds**

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

<https://www.fws.gov/program/migratory-bird-permit>

<https://www.fws.gov/library/collections/bald-and-golden-eagle-management>

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List
-

## **Official Species List**

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

### **New England Ecological Services Field Office**

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

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## Project Summary

Project Code: 2023-0039225

Project Name: Veterans Memorial Park and South River Improvement Project

Project Type: Fish Passage Barrier Removal

Project Description: The Project includes removing the dam's spillway and fish ladder, constructing a nature-like fishway and constructing other improvements to preserve and protect the lagoon and allow continued operation of the lagoon's fountain.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@42.0945501,-70.71859954672831,14z>



Counties: Plymouth County, Massachusetts

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## Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

### Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Endangered

### Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

### Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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## **IPaC User Contact Information**

Agency: Fuss & O'Neill, Inc.  
Name: Kenneth Berchielli  
Address: 317 Iron Horse Way  
City: Providence  
State: RI  
Zip: 02908  
Email: kberchielli@fando.com  
Phone: 8606085573

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## **Appendix L**

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DEP Release Notification Form



RELEASE NOTIFICATION & NOTIFICATION  
RETRACTION FORM

Release Tracking Number

-

Pursuant to 310 CMR 40.0335 and 310 CMR 40.0371 (Subpart C)

A. RELEASE OR THREAT OF RELEASE LOCATION:

- 1. Release Name/Location Aid: \_\_\_\_\_
- 2. Street Address: \_\_\_\_\_
- 3. City/Town: \_\_\_\_\_ 4. ZIP Code: \_\_\_\_\_
- 5. UTM Coordinates: a. UTM N: \_\_\_\_\_ b. UTM E: \_\_\_\_\_

B. THIS FORM IS BEING USED TO: (check one)

- 1. Submit a **Release Notification**
- 2. Submit a **Revised Release Notification**
- 3. Submit a **Retraction of a Previously Reported Notification** of a release or threat of release including supporting documentation required pursuant to 310 CMR 40.0335 (Section C is not required)

(All sections of this transmittal form must be filled out unless otherwise noted above)

C. INFORMATION DESCRIBING THE RELEASE OR THREAT OF RELEASE (TOR):

- 1. Date and time of Oral Notification, if applicable: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM  
mm/dd/yyyy hh:mm
- 2. Date and time you obtained knowledge of the Release or TOR: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM  
mm/dd/yyyy hh:mm
- 3. Date and time release or TOR occurred, if known: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM  
mm/dd/yyyy hh:mm

Check all Notification Thresholds that apply to the Release or Threat of Release:  
(for more information see 310 CMR 40.0310 - 40.0315)

- |  |  |  |
|--|--|--|
| <p>4. 2 HOUR REPORTING CONDITIONS</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> a. Sudden Release</li> <li><input type="checkbox"/> b. Threat of Sudden Release</li> <li><input type="checkbox"/> c. Oil Sheen on Surface Water</li> <li><input type="checkbox"/> d. Poses Imminent Hazard</li> <li><input type="checkbox"/> e. Could Pose Imminent Hazard</li> <li><input type="checkbox"/> f. Release Detected in Private Well</li> <li><input type="checkbox"/> g. Release to Storm Drain</li> <li><input type="checkbox"/> h. Sanitary Sewer Release (Imminent Hazard Only)</li> </ul> | <p>5. 72 HOUR REPORTING CONDITIONS</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> a. Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/2 Inch</li> <li><input type="checkbox"/> b. Underground Storage Tank (UST) Release</li> <li><input type="checkbox"/> c. Threat of UST Release</li> <li><input type="checkbox"/> d. Release to Groundwater near Water Supply</li> <li><input type="checkbox"/> e. Release to Groundwater near School or Residence</li> <li><input type="checkbox"/> f. Substantial Release Migration</li> </ul> | <p>6. 120 DAY REPORTING CONDITIONS</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> a. Release of Hazardous Material(s) to Soil or Groundwater Exceeding Reportable Concentration(s)</li> <li><input type="checkbox"/> b. Release of Oil to Soil Exceeding Reportable Concentration(s) and Affecting More than 2 Cubic Yards</li> <li><input type="checkbox"/> c. Release of Oil to Groundwater Exceeding Reportable Concentration(s)</li> <li><input type="checkbox"/> d. Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/8 Inch and Less than 1/2 Inch</li> </ul> |
|--|--|--|



RELEASE NOTIFICATION & NOTIFICATION  
RETRACTION FORM

Release Tracking Number

-

Pursuant to 310 CMR 40.0335 and 310 CMR 40.0371 (Subpart C)

C. INFORMATION DESCRIBING THE RELEASE OR THREAT OF RELEASE (TOR): (cont.)

7. List below the Oils (O) or Hazardous Materials (HM) that exceed their Reportable Concentration (RC) or Reportable Quantity (RQ) by the greatest amount.

O or HM Released	CAS Number, if known	O or HM	Amount or Concentration	Units	RCs Exceeded, if Applicable (RCS-1, RCS-2, RCGW-1, RCGW-2)

8. Check here if a list of additional Oil and Hazardous Materials subject to reporting is attached.

D. PERSON REQUIRED TO NOTIFY:

1. Check all that apply:  a. change in contact name  b. change of address  c. change in the person notifying

2. Name of Organization: \_\_\_\_\_

3. Contact First Name: \_\_\_\_\_ 4. Last Name: \_\_\_\_\_

5. Street: \_\_\_\_\_ 6. Title: \_\_\_\_\_

7. City/Town: \_\_\_\_\_ 8. State: \_\_\_\_\_ 9. ZIP Code: \_\_\_\_\_

10. Telephone: \_\_\_\_\_ 11. Ext.: \_\_\_\_\_ 12. FAX: \_\_\_\_\_

13. Check here if attaching names and addresses of owners of properties affected by the Release or Threat of Release, other than an owner who is submitting this Release Notification (required).

E. RELATIONSHIP OF PERSON TO RELEASE OR THREAT OF RELEASE:

1. RP or PRP  a. Owner  b. Operator  c. Generator  d. Transporter

e. Other RP or PRP Specify: \_\_\_\_\_

2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

4. Any Other Person Otherwise Required to Notify Specify Relationship: \_\_\_\_\_



**RELEASE NOTIFICATION & NOTIFICATION  
RETRACTION FORM**

Release Tracking Number

-

Pursuant to 310 CMR 40.0335 and 310 CMR 40.0371 (Subpart C)

**F. CERTIFICATION OF PERSON REQUIRED TO NOTIFY:**

1. I, \_\_\_\_\_, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: \_\_\_\_\_ 3. Title: \_\_\_\_\_  
Signature

4. For: \_\_\_\_\_ 5. Date: \_\_\_\_\_  
(Name of person or entity recorded in Section D) mm/dd/yyyy

6. Check here if the address of the person providing certification is different from address recorded in Section D.

7. Street: \_\_\_\_\_

8. City/Town: \_\_\_\_\_ 9. State: \_\_\_\_\_ 10. ZIP Code: \_\_\_\_\_

11. Telephone: \_\_\_\_\_ 12. Ext.: \_\_\_\_\_ 13. FAX: \_\_\_\_\_

**YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.**

Date Stamp (DEP USE ONLY:)

**EXHIBIT C**  
**GEO TECHNICAL DATA**

# SOIL BORING LOG

**Project:** Veterans Memorial Lagoon and South River Improvement Project  
**Location:** Mansfield, MA  
**Client:** Town of Marshfield  
**Drilling Co.:** GeoLogic-Earth Exploration Inc.  
**Driller:** Paul Fisher

**Project No.:** 20180319.A23  
**Project Mgr:** Nils Wiberg  
**Field Eng. Staff:** Derek Newhall  
**Date Started:** September 27, 2021  
**Date Finished:** September 27, 2021

<b>Elevation:</b> 9.46 ft.		<b>Vertical Datum:</b> NAVD88		<b>Boring Location:</b> See Plan		<b>Coord.:</b> N: 2860547.58 E: 868159.63	
<b>Item</b>	<b>Casing</b>	<b>Sampler</b>	<b>Core Barrel</b>	<b>Rig Make &amp; Model:</b> Acker Soil Scout		<b>Hammer Type</b>	<b>Horizontal Datum:</b> NAD83
<b>Type</b>	HW	SS	NQ	<input type="checkbox"/> Truck <input type="checkbox"/> Tripod <input type="checkbox"/> Cat-Head <input type="checkbox"/> Safety <input type="checkbox"/> Rubber Tire <input type="checkbox"/> Geoprobe <input type="checkbox"/> Winch <input checked="" type="checkbox"/> Doughnut <input checked="" type="checkbox"/> Track <input type="checkbox"/> Air Track <input checked="" type="checkbox"/> Roller Bit <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Skid <input type="checkbox"/> Cutting Head <input type="checkbox"/>		<b>Drilling Fluid</b>	<b>Drill Rod Size:</b>
<b>Length (ft)</b>	5	2	5			<input type="checkbox"/> Bentonite <input type="checkbox"/> Polymer <input checked="" type="checkbox"/> Water <input type="checkbox"/> None	<b>Casing Advance</b>
<b>Inside Dia. (in.)</b>	4	1.375	1.875			4" FW casing with roller bit & 6" casing to install MW	
<b>Hammer Wt. (lb.)</b>	140	140	-				
<b>Hammer Fall (in.)</b>	30	30	-				

Depth/ Elev. (ft)	Sample No. / Interval (ft)	Rec / Pen. (in)	Sample Blows per 6"	Stratum Graphic	USCS Symbol Group	Visual - Manual Identification & Description* (density/consistency, color, Group Name & Symbol, maximum particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Field Tests				Remarks
							Dilatancy	Toughness	Plasticity	Dry Strength	
	S-1 0.0'- 2.0'	4/24	1 1/12"		ML	Very loose, Dark Brown, SILT, trace Organics, trace Sand, trace Gravel, Moist	-	-	-	-	
5	S-2 4.0'- 6.0'	13/24	1 1/12"	. . . . .	SW	Very loose, Gray, fine to coarse SAND, trace Silt, trace Gravel, Wet - Bottom 4" Organics	-	-	-	-	
	S-3 6.0'- 8.0'	13/24	34 25 46 100/12"	. . . . .	SW	Very dense, Yellow to Brown, fine to coarse SAND and fine to coarse Gravel, Wet	-	-	-	-	
10	R-1 10.0'- 15.0'	59/60	4 4 4 4 5	/ / / / /		GRANITE, Moderate to slightly fractured, Medium hard, Moderately weathered, gray to white with red hue on the inside, Medium grained, Thin Lamination, Close Joints	-	-	-	-	Roller bit refusal at 10 feet, advanced rock core from 10 to 15 feet
15						Boring terminated at 15 feet upon completion of rock core	-	-	-	-	RQD = 65%

Water Level Data					Minor Constituent Proportions		Soil Density		Soil Consistency		Sample Type		Notes:
Date	Well	Time	Depth in feet		And	Some	Very Loose	Loose	Very Soft	Soft	SS	ST	
			Bottom of Hole	Water	Little	Trace	Medium Dense	Dense	Medium Stiff	Stiff	GS	ET	
9/29/21	MW-1	11:00	9.0	0.35	10 - 20%	<10%	10 - 30	30 - 50	4 - 8	8 - 15			
									15 - 30	>30	C	Rock Core	

**Field Test Legend:** Dilatancy: N - None S - Slow R - Rapid Plasticity: NP - Non-Plastic L - Low M - Medium H - High  
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High VH - Very High

NOTES: Soil identifications and field tests based on visual-manual methods per ASTM D2488 and using the modified Burmister System



# SOIL BORING LOG

**Project:** Veterans Memorial Lagoon and South River Improvement Project  
**Location:** Mansfield, MA  
**Client:** Town of Marshfield  
**Drilling Co.:** GeoLogic-Earth Exploration Inc.  
**Driller:** Paul Fisher

**Project No.:** 20180319.A23  
**Project Mgr:** Nils Wiberg  
**Field Eng. Staff:** Derek Newhall  
**Date Started:** September 28, 2021  
**Date Finished:** September 28, 2021

<b>Elevation:</b> 9.83 ft.		<b>Vertical Datum:</b> NAVD88		<b>Boring Location:</b> See Plan		<b>Coord.:</b> N: 2860504.5 E: 868132.68	
<b>Item</b>	<b>Casing</b>	<b>Sampler</b>	<b>Core Barrel</b>	<b>Rig Make &amp; Model:</b> Acker Soil Scout		<b>Horizontal Datum:</b> NAD83	
<b>Type</b>	HW	SS	-	<b>Hammer Type</b>		<b>Drilling Fluid</b>	
<b>Length (ft)</b>	5	2	5	<input type="checkbox"/> Truck	<input type="checkbox"/> Tripod	<input type="checkbox"/> Cat-Head	<input type="checkbox"/> Safety
<b>Inside Dia. (in.)</b>	4	1.375	1.875	<input type="checkbox"/> Rubber Tire	<input type="checkbox"/> Geoprobe	<input type="checkbox"/> Winch	<input type="checkbox"/> Doughnut
<b>Hammer Wt. (lb.)</b>	140	140	-	<input checked="" type="checkbox"/> Track	<input type="checkbox"/> Air Track	<input checked="" type="checkbox"/> Roller Bit	<input checked="" type="checkbox"/> Water
<b>Hammer Fall (in.)</b>	30	30	-	<input type="checkbox"/> Skid	<input type="checkbox"/>	<input type="checkbox"/> Cutting Head	<input type="checkbox"/> None
						<b>Drill Rod Size:</b>	
						<b>Casing Advance</b>	
						4" FW casing with roller bit & 6" casing to install MW	

Depth/ Elev. (ft)	Sample No. / Interval (ft)	Rec / Pen. (in)	Sample Blows per 6"	Stratum Graphic	USCS Symbol Group	Visual - Manual Identification & Description* (density/consistency, color, Group Name & Symbol, maximum particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Field Tests				Remarks
							Dilatancy	Toughness	Plasticity	Dry Strength	
5	S-1 0.0' - 2.0'	7/24	1 2 1 2		SP	Very loose, Dark Brown, fine SAND, little Silt, trace Gravel, trace Organics, Moist 2.0	-	-	-	-	Roller bit refusal at depth of 11 feet
	S-2 2.0' - 4.0'	11/24	1 1 1 1		ML	Very loose, Dark Brown, SILT, little fine SAND, trace Organics, Wet 4.0	-	-	-	-	
S-3 4.0' - 6.0'	1/24	WOH/18"	1		GP	Very loose, Dark Brown, fine GRAVEL, trace fine SAND, trace Silt, trace Organics, Wet	-	-	-	-	
S-4 6.0' - 8.0'	7/24	1 2 1 5			GP	Very loose, Dark Brown, fine GRAVEL, trace fine SAND, trace Silt, trace Organics, Wet 7.0	-	-	-	-	
S-5 8.0' - 10.0'	9/24	21 10 11 14			GP	Medium dense, Gray to Brown, fine to coarse GRAVEL, some fine to coarse Sand, Wet 10.0	-	-	-	-	
S-6 10.0' - 11.0'	12/24	10 10 100/11"			SP	Very dense, Light Brown, fine SAND, trace Silt, trace Gravel, wet 11.0 Boring terminated with refusal on probable bedrock at 11 feet	-	-	-	-	

Water Level Data					Minor Constituent Proportions		Soil Density		Soil Consistency		Sample Type		Notes:
Date	Well	Time	Depth in feet		And	Some	Very Loose	Loose	Very Soft	Soft	SS	ST	
9/29/21	MW-1	11:10	Bottom of Hole	Water	Little	Trace	Medium Dense	Dense	Medium Stiff	Stiff	GS	ET	
							Very Dense		Hard	>30	C	Rock Core	

**Field Test Legend:** Dilatancy: N - None S - Slow R - Rapid Plasticity: NP - Non-Plastic L - Low M - Medium H - High  
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High VH - Very High

NOTES: Soil identifications and field tests based on visual-manual methods per ASTM D2488 and using the modified Burmister System

**EXHIBIT D**  
**SEDIMENT TEST DATA**

June 10, 2019

Nils Wiberg  
Fuss & O'Neill - Providence  
317 Iron Horse Way, Suite 204  
Providence, RI 02908

Project Location: Marshfield, MA  
Client Job Number:  
Project Number: 20180319.A20  
Laboratory Work Order Number: 19E1341

Enclosed are results of analyses for samples received by the laboratory on May 23, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Jessica Hoffman", is displayed on a light blue rectangular background. The signature is written in a cursive, flowing style.

Jessica L. Hoffman  
Project Manager

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Chain of Custody/Sample Receipt

55

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Fuss & O'Neill - Providence  
 317 Iron Horse Way, Suite 204  
 Providence, RI 02908  
 ATTN: Nils Wiberg

REPORT DATE: 6/10/2019

PURCHASE ORDER NUMBER: 156420180319.A20

PROJECT NUMBER: 20180319.A20

**ANALYTICAL SUMMARY**

WORK ORDER NUMBER: 19E1341

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Marshfield, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
01564190522-01	19E1341-01	Sediment		-	MA M-MA071/CT PH-0520
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SW 846 9060A	
				SW-846 6010D	
				SW-846 6020B	
				SW-846 7471B	
				SW-846 8081B SW-846 8270D	
01564190522-02	19E1341-02	Sediment		-	MA M-MA071/CT PH-0520
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SW 846 9060A	
				SW-846 6010D	
				SW-846 6020B	
				SW-846 7471B	
				SW-846 8081B SW-846 8270D	
01564190522-03	19E1341-03	Sediment		-	MA M-MA071/CT PH-0520
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SW 846 9060A	
				SW-846 6010D	
				SW-846 6020B	
				SW-846 7471B	
				SW-846 8081B SW-846 8270D	
01564190522-04	19E1341-04	Sediment		-	MA M-MA071/CT PH-0520
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASH TO
				SW 846 9060A	
				SW-846 6010D	
				SW-846 6020B	
				SW-846 7471B	
				SW-846 8081B SW-846 8270D	

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Fuss & O'Neill - Providence  
317 Iron Horse Way, Suite 204  
Providence, RI 02908  
ATTN: Nils Wiberg

REPORT DATE: 6/10/2019

PURCHASE ORDER NUMBER: 156420180319.A20

PROJECT NUMBER: 20180319.A20

**ANALYTICAL SUMMARY**

---

WORK ORDER NUMBER: 19E1341

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Marshfield, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
01564190522-05	19E1341-05	Sediment		SM D 422-63	GAI-LAP-20-1996/AASH TO
01564190522-06	19E1341-06	Sediment		SM D 422-63	GAI-LAP-20-1996/AASH TO



**CASE NARRATIVE SUMMARY**

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

For method 8270, only PAHs were requested and reported.

**SW 846 9060A****Qualifications:****MS-11**

Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

**Analyte & Samples(s) Qualified:****Total Organic Carbon**

B232199-MS1

**SW-846 8081B****Qualifications:****DL-03**

Elevated reporting limit due to matrix interference.

**Analyte & Samples(s) Qualified:**

19E1341-01[01564190522-01], 19E1341-02[01564190522-02], 19E1341-03[01564190522-03], 19E1341-04[01564190522-04]

**V-20**

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

**Analyte & Samples(s) Qualified:****Heptachlor Epoxide**

B232144-BSD1

**Hexachlorobenzene**

B232144-BS1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington  
Technical Representative

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	ND	0.13	0.13	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Acenaphthylene (SIM)	ND	0.13	0.13	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Anthracene (SIM)	ND	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(a)anthracene (SIM)	0.22	0.026	0.026	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(a)pyrene (SIM)	0.24	0.039	0.039	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(b)fluoranthene (SIM)	0.37	0.026	0.026	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(g,h,i)perylene (SIM)	ND	0.22	0.22	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Benzo(k)fluoranthene (SIM)	0.12	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Chrysene (SIM)	0.32	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Dibenz(a,h)anthracene (SIM)	ND	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Fluoranthene (SIM)	0.47	0.22	0.22	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Fluorene (SIM)	ND	0.39	0.039	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Indeno(1,2,3-cd)pyrene (SIM)	0.21	0.091	0.091	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
2-Methylnaphthalene (SIM)	ND	0.39	0.39	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Naphthalene (SIM)	ND	0.39	0.39	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Phenanthrene (SIM)	0.21	0.026	0.026	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Pyrene (SIM)	0.47	0.39	0.39	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 11:43	CLA
Surrogates		% Recovery	Recovery Limits			Flag/Qual				
Nitrobenzene-d5 (SIM)		71.4	30-130						6/4/19 11:43	
2-Fluorobiphenyl (SIM)		44.5	30-130						6/4/19 11:43	
p-Terphenyl-d14 (SIM)		44.8	30-130						6/4/19 11:43	

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Sample Flags: DL-03

**Organochloride Pesticides by GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aldrin [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
alpha-BHC [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
beta-BHC [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
delta-BHC [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
gamma-BHC (Lindane) [1]	ND	0.055	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Chlordane [1]	ND	0.55	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
4,4'-DDD [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
4,4'-DDE [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
4,4'-DDT [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Dieldrin [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endosulfan I [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endosulfan II [1]	ND	0.22	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endosulfan sulfate [1]	ND	0.22	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endrin [1]	ND	0.22	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Endrin ketone [1]	ND	0.22	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Heptachlor [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Heptachlor epoxide [1]	ND	0.14	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Hexachlorobenzene [1]	ND	0.17	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG
Methoxychlor [1]	ND	1.4	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 1:32	PJG

Surrogates	% Recovery	Recovery Limits	Flag/Qual
Decachlorobiphenyl [1]	78.4	30-150	6/5/19 1:32
Decachlorobiphenyl [2]	73.9	30-150	6/5/19 1:32
Tetrachloro-m-xylene [1]	86.4	30-150	6/5/19 1:32
Tetrachloro-m-xylene [2]	83.9	30-150	6/5/19 1:32

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	4.9	0.48	0.078	mg/Kg dry	5		SW-846 6020B	5/31/19	6/3/19 12:32	MJH
Cadmium	0.56	0.48	0.29	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Chromium	11	0.95	0.59	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Copper	12	0.95	0.81	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Lead	72	1.4	0.84	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Mercury	0.046	0.069	0.021	mg/Kg dry	1	J	SW-846 7471B	6/3/19	6/4/19 9:59	AJL
Nickel	6.3	0.95	0.76	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH
Zinc	53	1.9	1.3	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:53	MJH

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	34.8		% Wt	1		SM 2540G	6/2/19	6/3/19 11:48	VLH
Total Organic Carbon	42000	100	mg/Kg	1		SW 846 9060A	5/30/19	5/31/19 10:33	KMV

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-01

Sampled: 5/22/2019 10:06

Sample ID: 19E1341-01

Sample Matrix: Sediment

Miscellaneous Test

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
%Moisture	66.9	0.1	%	1		%Moisture		5/28/19 0:00	SAL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	ND	0.069	0.069	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Acenaphthylene (SIM)	ND	0.069	0.069	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Anthracene (SIM)	ND	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(a)anthracene (SIM)	0.089	0.014	0.014	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(a)pyrene (SIM)	0.095	0.021	0.021	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(b)fluoranthene (SIM)	0.13	0.014	0.014	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(g,h,i)perylene (SIM)	ND	0.12	0.12	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Benzo(k)fluoranthene (SIM)	ND	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Chrysene (SIM)	0.13	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Dibenz(a,h)anthracene (SIM)	ND	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Fluoranthene (SIM)	0.18	0.12	0.12	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Fluorene (SIM)	ND	0.21	0.021	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Indeno(1,2,3-cd)pyrene (SIM)	0.078	0.048	0.048	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
2-Methylnaphthalene (SIM)	ND	0.21	0.21	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Naphthalene (SIM)	ND	0.21	0.21	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Phenanthrene (SIM)	0.14	0.014	0.014	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Pyrene (SIM)	0.21	0.21	0.21	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 12:42	CLA
Surrogates		% Recovery	Recovery Limits			Flag/Qual				
Nitrobenzene-d5 (SIM)		80.1	30-130						6/4/19 12:42	
2-Fluorobiphenyl (SIM)		48.3	30-130						6/4/19 12:42	
p-Terphenyl-d14 (SIM)		53.9	30-130						6/4/19 12:42	

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Sample Flags: DL-03

**Organochloride Pesticides by GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aldrin [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
alpha-BHC [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
beta-BHC [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
delta-BHC [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
gamma-BHC (Lindane) [1]	ND	0.015	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Chlordane [1]	ND	0.15	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
4,4'-DDD [1]	ND	0.030	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
4,4'-DDE [1]	ND	0.030	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
4,4'-DDT [1]	ND	0.030	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Dieldrin [1]	ND	0.030	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endosulfan I [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endosulfan II [1]	ND	0.059	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endosulfan sulfate [1]	ND	0.059	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endrin [1]	ND	0.059	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Endrin ketone [1]	ND	0.059	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Heptachlor [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Heptachlor epoxide [1]	ND	0.037	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Hexachlorobenzene [1]	ND	0.045	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG
Methoxychlor [1]	ND	0.37	mg/Kg dry	5		SW-846 8081B	5/31/19	6/5/19 1:59	PJG

Surrogates	% Recovery	Recovery Limits	Flag/Qual
Decachlorobiphenyl [1]	80.1	30-150	6/5/19 1:59
Decachlorobiphenyl [2]	77.1	30-150	6/5/19 1:59
Tetrachloro-m-xylene [1]	85.4	30-150	6/5/19 1:59
Tetrachloro-m-xylene [2]	81.3	30-150	6/5/19 1:59

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	2.7	0.24	0.040	mg/Kg dry	5		SW-846 6020B	5/31/19	6/3/19 12:35	MJH
Cadmium	0.19	0.24	0.15	mg/Kg dry	1	J	SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Chromium	5.6	0.49	0.30	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Copper	2.8	0.49	0.42	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Lead	11	0.73	0.43	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Mercury	0.012	0.040	0.012	mg/Kg dry	1	J	SW-846 7471B	6/3/19	6/4/19 10:01	AJL
Nickel	3.2	0.49	0.39	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH
Zinc	14	0.97	0.67	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 13:58	MJH

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	65.7		% Wt	1		SM 2540G	6/2/19	6/3/19 11:48	VLH
Total Organic Carbon	7200	100	mg/Kg	1		SW 846 9060A	5/30/19	5/31/19 11:25	KMV

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/PHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-02

Sampled: 5/22/2019 09:11

Sample ID: 19E1341-02

Sample Matrix: Sediment

Miscellaneous Test

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
%Moisture	27.27	0.1	%	1		%Moisture		5/28/19 0:00	SAL

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	ND	0.11	0.11	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Acenaphthylene (SIM)	0.22	0.11	0.11	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Anthracene (SIM)	0.32	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(a)anthracene (SIM)	0.91	0.022	0.022	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(a)pyrene (SIM)	0.89	0.034	0.034	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(b)fluoranthene (SIM)	1.0	0.022	0.022	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(g,h,i)perylene (SIM)	0.48	0.19	0.19	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Benzo(k)fluoranthene (SIM)	0.37	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Chrysene (SIM)	1.1	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Dibenz(a,h)anthracene (SIM)	0.15	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Fluoranthene (SIM)	1.2	0.19	0.19	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Fluorene (SIM)	0.079	0.34	0.034	mg/Kg dry	1	J	SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Indeno(1,2,3-cd)pyrene (SIM)	0.57	0.079	0.079	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
2-Methylnaphthalene (SIM)	ND	0.34	0.34	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Naphthalene (SIM)	ND	0.34	0.34	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Phenanthrene (SIM)	0.32	0.022	0.022	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Pyrene (SIM)	1.7	0.34	0.34	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:40	CLA
Surrogates		% Recovery	Recovery Limits			Flag/Qual				
Nitrobenzene-d5 (SIM)		68.6	30-130						6/4/19 13:40	
2-Fluorobiphenyl (SIM)		42.4	30-130						6/4/19 13:40	
p-Terphenyl-d14 (SIM)		48.0	30-130						6/4/19 13:40	



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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Sample Flags: DL-03

**Organochloride Pesticides by GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aldrin [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
alpha-BHC [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
beta-BHC [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
delta-BHC [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
gamma-BHC (Lindane) [1]	ND	0.051	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Chlordane [1]	ND	0.51	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
4,4'-DDD [1]	ND	0.10	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
4,4'-DDE [1]	ND	0.10	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
4,4'-DDT [1]	ND	0.10	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Dieldrin [1]	ND	0.10	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endosulfan I [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endosulfan II [1]	ND	0.20	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endosulfan sulfate [1]	ND	0.20	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endrin [1]	ND	0.20	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Endrin ketone [1]	ND	0.20	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Heptachlor [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Heptachlor epoxide [1]	ND	0.13	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Hexachlorobenzene [1]	ND	0.15	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Methoxychlor [1]	ND	1.3	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:26	PJG
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		68.2	30-150					6/5/19 2:26	
Decachlorobiphenyl [2]		64.6	30-150					6/5/19 2:26	
Tetrachloro-m-xylene [1]		73.5	30-150					6/5/19 2:26	
Tetrachloro-m-xylene [2]		71.6	30-150					6/5/19 2:26	

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	2.6	0.42	0.069	mg/Kg dry	5		SW-846 6020B	5/31/19	6/3/19 12:38	MJH
Cadmium	0.34	0.42	0.25	mg/Kg dry	1	J	SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Chromium	7.0	0.84	0.52	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Copper	3.7	0.84	0.72	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Lead	11	1.3	0.74	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Mercury	0.024	0.063	0.019	mg/Kg dry	1	J	SW-846 7471B	6/3/19	6/4/19 10:02	AJL
Nickel	2.7	0.84	0.67	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH
Zinc	17	1.7	1.2	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:11	MJH

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	39.2		% Wt	1		SM 2540G	6/2/19	6/3/19 11:48	VLH
Total Organic Carbon	28000	100	mg/Kg	1		SW 846 9060A	5/30/19	5/31/19 11:42	KMV

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-03

Sampled: 5/22/2019 08:35

Sample ID: 19E1341-03

Sample Matrix: Sediment

Miscellaneous Test

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
%Moisture	65.21	0.1	%	1		%Moisture		5/28/19 0:00	SAL

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	ND	0.062	0.062	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Acenaphthylene (SIM)	0.46	0.062	0.062	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Anthracene (SIM)	0.43	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(a)anthracene (SIM)	1.4	0.012	0.012	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(a)pyrene (SIM)	1.4	0.019	0.019	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(b)fluoranthene (SIM)	1.7	0.012	0.012	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(g,h,i)perylene (SIM)	0.81	0.11	0.11	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Benzo(k)fluoranthene (SIM)	0.63	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Chrysene (SIM)	1.7	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Dibenz(a,h)anthracene (SIM)	0.25	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Fluoranthene (SIM)	2.6	0.42	0.42	mg/Kg dry	4		SW-846 8270D	6/3/19	6/4/19 15:17	CLA
Fluorene (SIM)	0.21	0.19	0.019	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Indeno(1,2,3-cd)pyrene (SIM)	0.95	0.044	0.044	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
2-Methylnaphthalene (SIM)	ND	0.19	0.19	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Naphthalene (SIM)	ND	0.19	0.19	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Phenanthrene (SIM)	1.6	0.012	0.012	mg/Kg dry	1		SW-846 8270D	6/3/19	6/4/19 13:11	CLA
Pyrene (SIM)	2.7	0.75	0.75	mg/Kg dry	4		SW-846 8270D	6/3/19	6/4/19 15:17	CLA
Surrogates		% Recovery	Recovery Limits			Flag/Qual				
Nitrobenzene-d5 (SIM)		71.9	30-130						6/4/19 13:11	
Nitrobenzene-d5 (SIM)		69.9	30-130						6/4/19 15:17	
2-Fluorobiphenyl (SIM)		41.9	30-130						6/4/19 13:11	
2-Fluorobiphenyl (SIM)		49.4	30-130						6/4/19 15:17	
p-Terphenyl-d14 (SIM)		45.7	30-130						6/4/19 13:11	
p-Terphenyl-d14 (SIM)		55.8	30-130						6/4/19 15:17	

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Sample Flags: DL-03

**Organochloride Pesticides by GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aldrin [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
alpha-BHC [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
beta-BHC [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
delta-BHC [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
gamma-BHC (Lindane) [1]	ND	0.027	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Chlordane [1]	ND	0.27	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
4,4'-DDD [2]	0.13	0.053	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
4,4'-DDE [1]	ND	0.053	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
4,4'-DDT [1]	ND	0.053	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Dieldrin [1]	ND	0.053	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endosulfan I [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endosulfan II [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endosulfan sulfate [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endrin [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Endrin ketone [1]	ND	0.11	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Heptachlor [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Heptachlor epoxide [1]	ND	0.066	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Hexachlorobenzene [1]	ND	0.080	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG
Methoxychlor [1]	ND	0.66	mg/Kg dry	10		SW-846 8081B	5/31/19	6/5/19 2:53	PJG

Surrogates	% Recovery	Recovery Limits	Flag/Qual
Decachlorobiphenyl [1]	90.1	30-150	6/5/19 2:53
Decachlorobiphenyl [2]	84.5	30-150	6/5/19 2:53
Tetrachloro-m-xylene [1]	89.9	30-150	6/5/19 2:53
Tetrachloro-m-xylene [2]	83.1	30-150	6/5/19 2:53



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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

**Metals Analyses (Total)**

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	2.2	0.22	0.037	mg/Kg dry	5		SW-846 6020B	5/31/19	6/3/19 12:41	MJH
Cadmium	0.35	0.22	0.14	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Chromium	7.9	0.45	0.28	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Copper	10	0.45	0.38	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Lead	180	0.67	0.39	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Mercury	0.017	0.033	0.0098	mg/Kg dry	1	J	SW-846 7471B	6/3/19	6/4/19 10:04	AJL
Nickel	6.7	0.45	0.35	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH
Zinc	81	0.89	0.61	mg/Kg dry	1		SW-846 6010D	5/31/19	6/3/19 15:16	MJH

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	73.1		% Wt	1		SM 2540G	6/2/19	6/3/19 11:48	VLH
Total Organic Carbon	4300	100	mg/Kg	1		SW 846 9060A	5/30/19	5/31/19 12:02	KMV

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Conventional Chemistry Parameters by EPA/PHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-04

Sampled: 5/22/2019 09:15

Sample ID: 19E1341-04

Sample Matrix: Sediment

Miscellaneous Test

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
%Moisture	28.61	0.1	%	1		%Moisture		5/28/19 0:00	SAL

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-05

Sample ID: 19E1341-05

Start Date/Time: 5/22/2019 11:27:00AM

Sample Matrix: Sediment

Stop Date/Time: 5/22/2019 2:50:00PM

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

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Project Location: Marshfield, MA

Sample Description:

Work Order: 19E1341

Date Received: 5/23/2019

Field Sample #: 01564190522-06

Sample ID: 19E1341-06

Start Date/Time: 5/22/2019 11:27:00AM

Sample Matrix: Sediment

Stop Date/Time: 5/22/2019 2:50:00PM

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		%	1		SM D 422-63		5/31/19 0:00	GET

**Sample Extraction Data**

**Prep Method: % Solids-SM 2540G**

Lab Number [Field ID]	Batch	Date
19E1341-01 [01564190522-01]	B232251	06/02/19
19E1341-02 [01564190522-02]	B232251	06/02/19
19E1341-03 [01564190522-03]	B232251	06/02/19
19E1341-04 [01564190522-04]	B232251	06/02/19

**SW 846 9060A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232199	1.00	1.00	05/30/19
19E1341-02 [01564190522-02]	B232199	1.00	1.00	05/30/19
19E1341-03 [01564190522-03]	B232199	1.00	1.00	05/30/19
19E1341-04 [01564190522-04]	B232199	1.00	1.00	05/30/19

**Prep Method: SW-846 3050B-SW-846 6010D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232171	1.50	50.0	05/31/19
19E1341-02 [01564190522-02]	B232171	1.56	50.0	05/31/19
19E1341-03 [01564190522-03]	B232171	1.51	50.0	05/31/19
19E1341-04 [01564190522-04]	B232171	1.53	50.0	05/31/19

**Prep Method: SW-846 3050B-SW-846 6020B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232198	1.50	50.0	05/31/19
19E1341-02 [01564190522-02]	B232198	1.56	50.0	05/31/19
19E1341-03 [01564190522-03]	B232198	1.51	50.0	05/31/19
19E1341-04 [01564190522-04]	B232198	1.53	50.0	05/31/19

**Prep Method: SW-846 7471-SW-846 7471B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232308	0.623	50.0	06/03/19
19E1341-02 [01564190522-02]	B232308	0.575	50.0	06/03/19
19E1341-03 [01564190522-03]	B232308	0.605	50.0	06/03/19
19E1341-04 [01564190522-04]	B232308	0.626	50.0	06/03/19

**Prep Method: SW-846 3546-SW-846 8081B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232144	10.4	10.0	05/31/19
19E1341-02 [01564190522-02]	B232144	10.2	10.0	05/31/19
19E1341-03 [01564190522-03]	B232144	10.0	10.0	05/31/19
19E1341-04 [01564190522-04]	B232144	10.3	10.0	05/31/19



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### Sample Extraction Data

Prep Method: SW-846 3546-SW-846 8270D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
19E1341-01 [01564190522-01]	B232260	6.60	1.00	06/03/19
19E1341-02 [01564190522-02]	B232260	6.60	1.00	06/03/19
19E1341-03 [01564190522-03]	B232260	6.80	1.00	06/03/19
19E1341-04 [01564190522-04]	B232260	6.60	1.00	06/03/19
19E1341-04RE1 [01564190522-04]	B232260	6.60	1.00	06/03/19

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**QUALITY CONTROL**

**Semivolatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232260 - SW-846 3546</b>										
<b>Blank (B232260-BLK1)</b>										
Prepared: 06/03/19 Analyzed: 06/04/19										
Acenaphthene (SIM)	ND	0.050	mg/Kg wet							
Acenaphthylene (SIM)	ND	0.050	mg/Kg wet							
Anthracene (SIM)	ND	0.035	mg/Kg wet							
Benzo(a)anthracene (SIM)	ND	0.010	mg/Kg wet							
Benzo(a)pyrene (SIM)	ND	0.015	mg/Kg wet							
Benzo(b)fluoranthene (SIM)	ND	0.010	mg/Kg wet							
Benzo(g,h,i)perylene (SIM)	ND	0.085	mg/Kg wet							
Benzo(k)fluoranthene (SIM)	ND	0.035	mg/Kg wet							
Chrysene (SIM)	ND	0.035	mg/Kg wet							
Dibenz(a,h)anthracene (SIM)	ND	0.035	mg/Kg wet							
Fluoranthene (SIM)	ND	0.085	mg/Kg wet							
Fluorene (SIM)	ND	0.15	mg/Kg wet							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.035	mg/Kg wet							
2-Methylnaphthalene (SIM)	ND	0.15	mg/Kg wet							
Naphthalene (SIM)	ND	0.15	mg/Kg wet							
Phenanthrene (SIM)	ND	0.010	mg/Kg wet							
Pyrene (SIM)	ND	0.15	mg/Kg wet							
Surrogate: Nitrobenzene-d5 (SIM)	13.7		mg/Kg wet	16.7		82.3	30-130			
Surrogate: 2-Fluorobiphenyl (SIM)	8.39		mg/Kg wet	16.7		50.4	30-130			
Surrogate: p-Terphenyl-d14 (SIM)	9.10		mg/Kg wet	16.7		54.6	30-130			
<b>LCS (B232260-BS1)</b>										
Prepared: 06/03/19 Analyzed: 06/04/19										
Acenaphthene (SIM)	6.96	1.0	mg/Kg wet	8.33		83.6	40-140			
Acenaphthylene (SIM)	7.41	1.0	mg/Kg wet	8.33		88.9	40-140			
Anthracene (SIM)	7.77	0.70	mg/Kg wet	8.33		93.3	40-140			
Benzo(a)anthracene (SIM)	7.20	0.20	mg/Kg wet	8.33		86.4	40-140			
Benzo(a)pyrene (SIM)	8.22	0.30	mg/Kg wet	8.33		98.7	40-140			
Benzo(b)fluoranthene (SIM)	8.14	0.20	mg/Kg wet	8.33		97.7	40-140			
Benzo(g,h,i)perylene (SIM)	8.03	1.7	mg/Kg wet	8.33		96.4	40-140			
Benzo(k)fluoranthene (SIM)	8.19	0.70	mg/Kg wet	8.33		98.2	40-140			
Chrysene (SIM)	7.09	0.70	mg/Kg wet	8.33		85.0	40-140			
Dibenz(a,h)anthracene (SIM)	8.78	0.70	mg/Kg wet	8.33		105	40-140			
Fluoranthene (SIM)	7.08	1.7	mg/Kg wet	8.33		85.0	40-140			
Fluorene (SIM)	7.32	3.0	mg/Kg wet	8.33		87.8	40-140			
Indeno(1,2,3-cd)pyrene (SIM)	9.03	0.70	mg/Kg wet	8.33		108	40-140			
2-Methylnaphthalene (SIM)	6.81	3.0	mg/Kg wet	8.33		81.7	40-140			
Naphthalene (SIM)	6.31	3.0	mg/Kg wet	8.33		75.7	40-140			
Phenanthrene (SIM)	7.07	0.20	mg/Kg wet	8.33		84.8	40-140			
Pyrene (SIM)	6.89	3.0	mg/Kg wet	8.33		82.7	40-140			
Surrogate: Nitrobenzene-d5 (SIM)	13.1		mg/Kg wet	16.7		78.7	30-130			
Surrogate: 2-Fluorobiphenyl (SIM)	9.95		mg/Kg wet	16.7		59.7	30-130			
Surrogate: p-Terphenyl-d14 (SIM)	11.0		mg/Kg wet	16.7		65.8	30-130			

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**QUALITY CONTROL**

**Semivolatile Organic Compounds by GC/MS - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232260 - SW-846 3546</b>										
<b>LCS Dup (B232260-BSD1)</b>										
					Prepared: 06/03/19 Analyzed: 06/04/19					
Acenaphthene (SIM)	6.14	1.0	mg/Kg wet	8.33		73.7	40-140	12.6	20	
Acenaphthylene (SIM)	6.52	1.0	mg/Kg wet	8.33		78.2	40-140	12.7	20	
Anthracene (SIM)	6.70	0.70	mg/Kg wet	8.33		80.4	40-140	14.9	20	
Benzo(a)anthracene (SIM)	6.16	0.20	mg/Kg wet	8.33		73.9	40-140	15.6	20	
Benzo(a)pyrene (SIM)	7.04	0.30	mg/Kg wet	8.33		84.5	40-140	15.5	20	
Benzo(b)fluoranthene (SIM)	7.04	0.20	mg/Kg wet	8.33		84.4	40-140	14.5	20	
Benzo(g,h,i)perylene (SIM)	6.87	1.7	mg/Kg wet	8.33		82.4	40-140	15.7	20	
Benzo(k)fluoranthene (SIM)	7.17	0.70	mg/Kg wet	8.33		86.0	40-140	13.2	20	
Chrysene (SIM)	6.10	0.70	mg/Kg wet	8.33		73.2	40-140	15.0	20	
Dibenz(a,h)anthracene (SIM)	7.55	0.70	mg/Kg wet	8.33		90.6	40-140	15.1	20	
Fluoranthene (SIM)	6.04	1.7	mg/Kg wet	8.33		72.4	40-140	15.9	20	
Fluorene (SIM)	6.37	3.0	mg/Kg wet	8.33		76.4	40-140	13.9	20	
Indeno(1,2,3-cd)pyrene (SIM)	7.72	0.70	mg/Kg wet	8.33		92.7	40-140	15.6	20	‡
2-Methylnaphthalene (SIM)	6.15	3.0	mg/Kg wet	8.33		73.8	40-140	10.2	20	
Naphthalene (SIM)	5.78	3.0	mg/Kg wet	8.33		69.4	40-140	8.71	20	
Phenanthrene (SIM)	6.13	0.20	mg/Kg wet	8.33		73.6	40-140	14.2	20	
Pyrene (SIM)	5.97	3.0	mg/Kg wet	8.33		71.6	40-140	14.3	20	
Surrogate: Nitrobenzene-d5 (SIM)	11.7		mg/Kg wet	16.7		70.1	30-130			
Surrogate: 2-Fluorobiphenyl (SIM)	8.62		mg/Kg wet	16.7		51.7	30-130			
Surrogate: p-Terphenyl-d14 (SIM)	9.34		mg/Kg wet	16.7		56.1	30-130			

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**QUALITY CONTROL**

**Organochloride Pesticides by GC/ECD - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B232144 - SW-846 3546**

**Blank (B232144-BLK1)**

Prepared: 05/31/19 Analyzed: 06/01/19

Aldrin	ND	0.0050	mg/Kg wet							
Aldrin [2C]	ND	0.0050	mg/Kg wet							
alpha-BHC	ND	0.0050	mg/Kg wet							
alpha-BHC [2C]	ND	0.0050	mg/Kg wet							
beta-BHC	ND	0.0050	mg/Kg wet							
beta-BHC [2C]	ND	0.0050	mg/Kg wet							
delta-BHC	ND	0.0050	mg/Kg wet							
delta-BHC [2C]	ND	0.0050	mg/Kg wet							
gamma-BHC (Lindane)	ND	0.0020	mg/Kg wet							
gamma-BHC (Lindane) [2C]	ND	0.0020	mg/Kg wet							
Chlordane	ND	0.020	mg/Kg wet							
Chlordane [2C]	ND	0.020	mg/Kg wet							
4,4'-DDD	ND	0.0040	mg/Kg wet							
4,4'-DDD [2C]	ND	0.0040	mg/Kg wet							
4,4'-DDE	ND	0.0040	mg/Kg wet							
4,4'-DDE [2C]	ND	0.0040	mg/Kg wet							
4,4'-DDT	ND	0.0040	mg/Kg wet							
4,4'-DDT [2C]	ND	0.0040	mg/Kg wet							
Dieldrin	ND	0.0040	mg/Kg wet							
Dieldrin [2C]	ND	0.0040	mg/Kg wet							
Endosulfan I	ND	0.0050	mg/Kg wet							
Endosulfan I [2C]	ND	0.0050	mg/Kg wet							
Endosulfan II	ND	0.0080	mg/Kg wet							
Endosulfan II [2C]	ND	0.0080	mg/Kg wet							
Endosulfan Sulfate	ND	0.0080	mg/Kg wet							
Endosulfan Sulfate [2C]	ND	0.0080	mg/Kg wet							
Endrin	ND	0.0080	mg/Kg wet							
Endrin [2C]	ND	0.0080	mg/Kg wet							
Endrin Aldehyde	ND	0.0080	mg/Kg wet							
Endrin Aldehyde [2C]	ND	0.0080	mg/Kg wet							
Endrin Ketone	ND	0.0080	mg/Kg wet							
Endrin Ketone [2C]	ND	0.0080	mg/Kg wet							
Heptachlor	ND	0.0050	mg/Kg wet							
Heptachlor [2C]	ND	0.0050	mg/Kg wet							
Heptachlor Epoxide	ND	0.0050	mg/Kg wet							
Heptachlor Epoxide [2C]	ND	0.0050	mg/Kg wet							
Hexachlorobenzene	ND	0.0060	mg/Kg wet							
Hexachlorobenzene [2C]	ND	0.0060	mg/Kg wet							
Methoxychlor	ND	0.050	mg/Kg wet							
Methoxychlor [2C]	ND	0.050	mg/Kg wet							
Toxaphene	ND	0.10	mg/Kg wet							
Toxaphene [2C]	ND	0.10	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.200		mg/Kg wet	0.200		100	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.224		mg/Kg wet	0.200		112	30-150			
Surrogate: Tetrachloro-m-xylene	0.182		mg/Kg wet	0.200		91.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.193		mg/Kg wet	0.200		96.6	30-150			

QUALITY CONTROL

Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B232144 - SW-846 3546

LCS (B232144-BS1)

Prepared: 05/31/19 Analyzed: 06/01/19

Aldrin	0.11	0.0050	mg/Kg wet	0.100		107	40-140			
Aldrin [2C]	0.10	0.0050	mg/Kg wet	0.100		101	40-140			
alpha-BHC	0.096	0.0050	mg/Kg wet	0.100		96.4	40-140			
alpha-BHC [2C]	0.097	0.0050	mg/Kg wet	0.100		97.0	40-140			
beta-BHC	0.10	0.0050	mg/Kg wet	0.100		100	40-140			
beta-BHC [2C]	0.11	0.0050	mg/Kg wet	0.100		113	40-140			
delta-BHC	0.10	0.0050	mg/Kg wet	0.100		102	40-140			
delta-BHC [2C]	0.099	0.0050	mg/Kg wet	0.100		99.0	40-140			
gamma-BHC (Lindane)	0.10	0.0020	mg/Kg wet	0.100		102	40-140			
gamma-BHC (Lindane) [2C]	0.10	0.0020	mg/Kg wet	0.100		101	40-140			
4,4'-DDD	0.11	0.0040	mg/Kg wet	0.100		112	40-140			
4,4'-DDD [2C]	0.11	0.0040	mg/Kg wet	0.100		111	40-140			
4,4'-DDE	0.12	0.0040	mg/Kg wet	0.100		116	40-140			
4,4'-DDE [2C]	0.11	0.0040	mg/Kg wet	0.100		110	40-140			
4,4'-DDT	0.11	0.0040	mg/Kg wet	0.100		108	40-140			
4,4'-DDT [2C]	0.10	0.0040	mg/Kg wet	0.100		103	40-140			
Dieldrin	0.11	0.0040	mg/Kg wet	0.100		108	40-140			
Dieldrin [2C]	0.11	0.0040	mg/Kg wet	0.100		107	40-140			
Endosulfan I	0.095	0.0050	mg/Kg wet	0.100		95.1	40-140			
Endosulfan I [2C]	0.10	0.0050	mg/Kg wet	0.100		102	40-140			
Endosulfan II	0.10	0.0080	mg/Kg wet	0.100		103	40-140			
Endosulfan II [2C]	0.11	0.0080	mg/Kg wet	0.100		108	40-140			
Endosulfan Sulfate	0.10	0.0080	mg/Kg wet	0.100		105	40-140			
Endosulfan Sulfate [2C]	0.11	0.0080	mg/Kg wet	0.100		110	40-140			
Endrin	0.11	0.0080	mg/Kg wet	0.100		105	40-140			
Endrin [2C]	0.11	0.0080	mg/Kg wet	0.100		108	40-140			
Endrin Ketone	0.11	0.0080	mg/Kg wet	0.100		108	40-140			
Endrin Ketone [2C]	0.11	0.0080	mg/Kg wet	0.100		113	40-140			
Heptachlor	0.099	0.0050	mg/Kg wet	0.100		98.8	40-140			
Heptachlor [2C]	0.10	0.0050	mg/Kg wet	0.100		103	40-140			
Heptachlor Epoxide	0.10	0.0050	mg/Kg wet	0.100		103	40-140			
Heptachlor Epoxide [2C]	0.11	0.0050	mg/Kg wet	0.100		106	40-140			
Hexachlorobenzene	0.13	0.0060	mg/Kg wet	0.100		133	40-140			V-20
Hexachlorobenzene [2C]	0.12	0.0060	mg/Kg wet	0.100		119	40-140			
Methoxychlor	0.099	0.050	mg/Kg wet	0.100		98.9	40-140			
Methoxychlor [2C]	0.11	0.050	mg/Kg wet	0.100		105	40-140			
Surrogate: Decachlorobiphenyl	0.195		mg/Kg wet	0.200		97.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.218		mg/Kg wet	0.200		109	30-150			
Surrogate: Tetrachloro-m-xylene	0.190		mg/Kg wet	0.200		95.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.199		mg/Kg wet	0.200		99.5	30-150			

LCS Dup (B232144-BS1)

Prepared: 05/31/19 Analyzed: 06/01/19

Aldrin	0.11	0.0050	mg/Kg wet	0.100		110	40-140	2.28	30	
Aldrin [2C]	0.10	0.0050	mg/Kg wet	0.100		105	40-140	3.52	30	
alpha-BHC	0.10	0.0050	mg/Kg wet	0.100		103	40-140	6.63	30	
alpha-BHC [2C]	0.10	0.0050	mg/Kg wet	0.100		104	40-140	6.48	30	
beta-BHC	0.11	0.0050	mg/Kg wet	0.100		105	40-140	4.48	30	
beta-BHC [2C]	0.11	0.0050	mg/Kg wet	0.100		114	40-140	0.205	30	
delta-BHC	0.11	0.0050	mg/Kg wet	0.100		107	40-140	4.83	30	
delta-BHC [2C]	0.11	0.0050	mg/Kg wet	0.100		105	40-140	5.95	30	
gamma-BHC (Lindane)	0.11	0.0020	mg/Kg wet	0.100		107	40-140	5.36	30	
gamma-BHC (Lindane) [2C]	0.11	0.0020	mg/Kg wet	0.100		106	40-140	5.22	30	

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QUALITY CONTROL

Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232144 - SW-846 3546</b>										
<b>LCS Dup (B232144-BSD1)</b>										
					Prepared: 05/31/19 Analyzed: 06/01/19					
4,4'-DDD	0.11	0.0040	mg/Kg wet	0.100		114	40-140	2.12	30	
4,4'-DDD [2C]	0.11	0.0040	mg/Kg wet	0.100		114	40-140	2.12	30	
4,4'-DDE	0.12	0.0040	mg/Kg wet	0.100		117	40-140	0.716	30	
4,4'-DDE [2C]	0.11	0.0040	mg/Kg wet	0.100		113	40-140	2.29	30	
4,4'-DDT	0.11	0.0040	mg/Kg wet	0.100		110	40-140	1.82	30	
4,4'-DDT [2C]	0.11	0.0040	mg/Kg wet	0.100		106	40-140	2.86	30	
Dieldrin	0.11	0.0040	mg/Kg wet	0.100		110	40-140	1.55	30	
Dieldrin [2C]	0.11	0.0040	mg/Kg wet	0.100		109	40-140	1.24	30	
Endosulfan I	0.097	0.0050	mg/Kg wet	0.100		97.5	40-140	2.52	30	
Endosulfan I [2C]	0.10	0.0050	mg/Kg wet	0.100		104	40-140	1.76	30	
Endosulfan II	0.10	0.0080	mg/Kg wet	0.100		105	40-140	1.72	30	
Endosulfan II [2C]	0.11	0.0080	mg/Kg wet	0.100		109	40-140	1.39	30	
Endosulfan Sulfate	0.11	0.0080	mg/Kg wet	0.100		107	40-140	2.29	30	
Endosulfan Sulfate [2C]	0.11	0.0080	mg/Kg wet	0.100		113	40-140	2.12	30	
Endrin	0.11	0.0080	mg/Kg wet	0.100		107	40-140	1.24	30	
Endrin [2C]	0.11	0.0080	mg/Kg wet	0.100		110	40-140	1.17	30	
Endrin Ketone	0.11	0.0080	mg/Kg wet	0.100		110	40-140	1.89	30	
Endrin Ketone [2C]	0.12	0.0080	mg/Kg wet	0.100		116	40-140	2.21	30	
Heptachlor	0.10	0.0050	mg/Kg wet	0.100		102	40-140	3.65	30	
Heptachlor [2C]	0.11	0.0050	mg/Kg wet	0.100		107	40-140	3.41	30	
Heptachlor Epoxide	0.11	0.0050	mg/Kg wet	0.100		105	40-140	1.90	30	V-20
Heptachlor Epoxide [2C]	0.11	0.0050	mg/Kg wet	0.100		108	40-140	2.25	30	
Hexachlorobenzene	0.13	0.0060	mg/Kg wet	0.100		134	40-140	0.288	30	
Hexachlorobenzene [2C]	0.12	0.0060	mg/Kg wet	0.100		121	40-140	1.57	30	
Methoxychlor	0.10	0.050	mg/Kg wet	0.100		101	40-140	2.06	30	
Methoxychlor [2C]	0.11	0.050	mg/Kg wet	0.100		107	40-140	2.10	30	
Surrogate: Decachlorobiphenyl	0.198		mg/Kg wet	0.200		99.0	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.221		mg/Kg wet	0.200		111	30-150			
Surrogate: Tetrachloro-m-xylene	0.193		mg/Kg wet	0.200		96.6	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.201		mg/Kg wet	0.200		100	30-150			

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**QUALITY CONTROL**

**Metals Analyses (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232171 - SW-846 3050B</b>										
<b>Blank (B232171-BLK1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Cadmium	ND	0.17	mg/Kg wet							
Chromium	ND	0.33	mg/Kg wet							
Copper	ND	0.33	mg/Kg wet							
Lead	ND	0.50	mg/Kg wet							
Nickel	ND	0.33	mg/Kg wet							
Zinc	ND	0.67	mg/Kg wet							
<b>LCS (B232171-BS1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Cadmium	155	0.49	mg/Kg wet	182		85.0	83.1-117.5			
Chromium	259	0.98	mg/Kg wet	272		95.2	81.5-118.5			
Copper	293	0.98	mg/Kg wet	301		97.2	83.2-116.4			
Lead	237	1.5	mg/Kg wet	241		98.5	81.8-118.2			
Nickel	118	0.98	mg/Kg wet	125		94.5	82.4-117.5			
Zinc	124	2.0	mg/Kg wet	127		97.8	80.8-118.9			
<b>LCS Dup (B232171-BSD1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Cadmium	153	0.47	mg/Kg wet	182		84.2	83.1-117.5	0.860	20	
Chromium	254	0.94	mg/Kg wet	272		93.3	81.5-118.5	2.00	30	
Copper	291	0.94	mg/Kg wet	301		96.6	83.2-116.4	0.655	30	
Lead	230	1.4	mg/Kg wet	241		95.6	81.8-118.2	2.92	30	
Nickel	116	0.94	mg/Kg wet	125		93.1	82.4-117.5	1.46	30	
Zinc	123	1.9	mg/Kg wet	127		96.7	80.8-118.9	1.22	30	
<b>MRL Check (B232171-MRL1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Lead	0.498	0.48	mg/Kg wet	0.477		105	80-120			
<b>Batch B232198 - SW-846 3050B</b>										
<b>Blank (B232198-BLK1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Arsenic	ND	0.17	mg/Kg wet							
<b>LCS (B232198-BS1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Arsenic	77.8	2.0	mg/Kg wet	77.2		101	82.4-117.4			
<b>LCS Dup (B232198-BSD1)</b>										
Prepared: 05/31/19 Analyzed: 06/03/19										
Arsenic	74.8	1.9	mg/Kg wet	77.2		96.9	82.4-117.4	4.01	30	
<b>Batch B232308 - SW-846 7471</b>										
<b>Blank (B232308-BLK1)</b>										
Prepared: 06/03/19 Analyzed: 06/04/19										
Mercury	ND	0.025	mg/Kg wet							



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**QUALITY CONTROL**

**Metals Analyses (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232308 - SW-846 7471</b>										
<b>LCS (B232308-BS1)</b>					Prepared: 06/03/19 Analyzed: 06/04/19					
Mercury	21.6	1.9	mg/Kg wet	27.3		79.1	64-136.5			
<b>LCS Dup (B232308-BSD1)</b>					Prepared: 06/03/19 Analyzed: 06/04/19					
Mercury	20.5	1.9	mg/Kg wet	27.3		75.0	64-136.5	5.32	20	

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**QUALITY CONTROL**

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B232199 - SW 846 9060A</b>										
<b>Blank (B232199-BLK1)</b>				Prepared: 05/30/19 Analyzed: 05/31/19						
Total Organic Carbon	ND	100	mg/Kg							
<b>LCS (B232199-BS1)</b>				Prepared: 05/30/19 Analyzed: 05/31/19						
Total Organic Carbon	579	100	mg/Kg	750		77.2	69.7-125			
<b>LCS Dup (B232199-BSD1)</b>				Prepared: 05/30/19 Analyzed: 05/31/19						
Total Organic Carbon	568	100	mg/Kg	750		75.8	69.7-125	1.87	19.5	
<b>Duplicate (B232199-DUP1)</b>				<b>Source: 19E1341-01</b> Prepared: 05/30/19 Analyzed: 05/31/19						
Total Organic Carbon	27300	100	mg/Kg		42100			42.8	53.1	
<b>Matrix Spike (B232199-MS1)</b>				<b>Source: 19E1341-01</b> Prepared: 05/30/19 Analyzed: 05/31/19						
Total Organic Carbon	63300	100	mg/Kg	750	42100	<b>2830</b>	* 85-115			MS-11

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## BREAKDOWN REPORT

---

**Lab Sample ID:** S036564-PEM1 **Analyzed:** 06/01/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 2.00  
Endrin [1] 2.83

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 2.43  
Endrin [2] 3.32

## BREAKDOWN REPORT

---

**Lab Sample ID:** S036564-PEM2 **Analyzed:** 06/01/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 2.01  
Endrin [1] 3.13

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 2.26  
Endrin [2] 3.71

## BREAKDOWN REPORT

---

**Lab Sample ID:** S036798-PEM1 **Analyzed:** 06/04/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 0.77  
Endrin [1] 2.49

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BREAKDOWN REPORT

Lab Sample ID: S036798-PEM1 Analyzed: 06/04/2019

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<b>Column Number:</b>	<b>2</b>
<b>Analyte</b>	<b>% Breakdown</b>
4,4'-DDT [2]	0.81
Endrin [2]	2.48

---

BREAKDOWN REPORT

Lab Sample ID: S036798-PEM2 Analyzed: 06/04/2019

---

<b>Column Number:</b>	<b>1</b>
<b>Analyte</b>	<b>% Breakdown</b>
4,4'-DDT [1]	1.07
Endrin [1]	2.35

---

<b>Column Number:</b>	<b>2</b>
<b>Analyte</b>	<b>% Breakdown</b>
4,4'-DDT [2]	1.07
Endrin [2]	2.39

---

BREAKDOWN REPORT

Lab Sample ID: S036798-PEM3 Analyzed: 06/05/2019

---

<b>Column Number:</b>	<b>1</b>
<b>Analyte</b>	<b>% Breakdown</b>
4,4'-DDT [1]	1.83
Endrin [1]	2.04

---

<b>Column Number:</b>	<b>2</b>
<b>Analyte</b>	<b>% Breakdown</b>
4,4'-DDT [2]	1.84
Endrin [2]	2.10

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BREAKDOWN REPORT

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

## BREAKDOWN REPORT

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**Lab Sample ID:** S036798-PEM4 **Analyzed:** 06/05/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 2.16  
Endrin [1] 2.03

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 2.17  
Endrin [2] 2.06

---

## BREAKDOWN REPORT

---

**Lab Sample ID:** S036798-PEM5 **Analyzed:** 06/06/2019

---

**Column Number:** 1  
**Analyte** **% Breakdown**  
4,4'-DDT [1] 2.48  
Endrin [1] 2.26

---

**Column Number:** 2  
**Analyte** **% Breakdown**  
4,4'-DDT [2] 2.50  
Endrin [2] 2.38

---

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

01564190522-04

*SW-846 8081B*

Lab Sample ID: 19E1341-04 Date(s) Analyzed: 06/05/2019 06/05/2019

Instrument ID (1): ECD6 Instrument ID (2): ECD6

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	7.383	0.000	0.000	0.12	
	2	7.393	0.000	0.000	0.13	8.0

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
*SW-846 8081B*

<b>LCS</b>
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Lab Sample ID:                     B232144-BS1                                          Date(s) Analyzed:           06/01/2019                     06/01/2019          

Instrument ID (1):                     ECD2                                          Instrument ID (2):                     ECD2                    

GC Column (1):                      ID:                      (mm)                      GC Column (2):                      ID:                      (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.721	0.000	0.000	0.11	
	2	6.604	0.000	0.000	0.11	0.0
4,4'-DDE	1	6.309	0.000	0.000	0.12	
	2	6.213	0.000	0.000	0.11	8.7
4,4'-DDT	1	6.921	0.000	0.000	0.11	
	2	6.824	0.000	0.000	0.10	9.5
Aldrin	1	5.690	0.000	0.000	0.11	
	2	5.535	0.000	0.000	0.10	9.5
alpha-BHC	1	5.069	0.000	0.000	0.096	
	2	4.958	0.000	0.000	0.097	1.0
beta-BHC	1	5.294	0.000	0.000	0.10	
	2	5.184	0.000	0.000	0.11	9.5
delta-BHC	1	5.392	0.000	0.000	0.10	
	2	5.334	0.000	0.000	0.099	1.0
Dieldrin	1	6.492	0.000	0.000	0.11	
	2	6.288	0.000	0.000	0.11	0.0
Endosulfan I	1	6.327	0.000	0.000	0.095	
	2	6.110	0.000	0.000	0.10	5.1
Endosulfan II	1	6.808	0.000	0.000	0.10	
	2	6.635	0.000	0.000	0.11	9.5
Endosulfan Sulfate	1	7.437	0.000	0.000	0.10	
	2	7.082	0.000	0.000	0.11	0.0
Endrin	1	6.649	0.000	0.000	0.11	
	2	6.484	0.000	0.000	0.11	0.0
Endrin Ketone	1	7.643	0.000	0.000	0.11	
	2	7.460	0.000	0.000	0.11	0.0
gamma-BHC (Lindane)	1	5.241	0.000	0.000	0.10	
	2	5.134	0.000	0.000	0.10	0.0
Heptachlor	1	5.512	0.000	0.000	0.099	
	2	5.362	0.000	0.000	0.10	1.0
Heptachlor Epoxide	1	6.071	0.000	0.000	0.10	



**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

LCS
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*SW-846 8081B*

Lab Sample ID:                   B232144-BS1                                        Date(s) Analyzed:           06/01/2019                     06/01/2019          

Instrument ID (1):                   ECD2                                        Instrument ID (2):                   ECD2                  

GC Column (1):                      ID:                      (mm)                      GC Column (2):                      ID:                      (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
	2	5.871	0.000	0.000	0.11	9.5
Hexachlorobenzene	1	4.976	0.000	0.000	0.13	
	2	4.888	0.000	0.000	0.12	8.0
Methoxychlor	1	7.305	0.000	0.000	0.099	
	2	7.355	0.000	0.000	0.11	10.5

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
*SW-846 8081B*

**LCS Dup**

Lab Sample ID:                     B232144-BSD1                                          Date(s) Analyzed:           06/01/2019                     06/01/2019          

Instrument ID (1):                     ECD2                                          Instrument ID (2):                     ECD2                    

GC Column (1):                      ID:                      (mm)                      GC Column (2):                      ID:                      (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.720	0.000	0.000	0.11	
	2	6.604	0.000	0.000	0.11	0.0
4,4'-DDE	1	6.308	0.000	0.000	0.12	
	2	6.212	0.000	0.000	0.11	8.7
4,4'-DDT	1	6.921	0.000	0.000	0.11	
	2	6.824	0.000	0.000	0.11	0.0
Aldrin	1	5.689	0.000	0.000	0.11	
	2	5.534	0.000	0.000	0.10	9.5
alpha-BHC	1	5.068	0.000	0.000	0.10	
	2	4.958	0.000	0.000	0.10	0.0
beta-BHC	1	5.293	0.000	0.000	0.11	
	2	5.184	0.000	0.000	0.11	0.0
delta-BHC	1	5.391	0.000	0.000	0.11	
	2	5.333	0.000	0.000	0.11	0.0
Dieldrin	1	6.490	0.000	0.000	0.11	
	2	6.288	0.000	0.000	0.11	0.0
Endosulfan I	1	6.326	0.000	0.000	0.097	
	2	6.109	0.000	0.000	0.10	2.0
Endosulfan II	1	6.807	0.000	0.000	0.10	
	2	6.635	0.000	0.000	0.11	0.0
Endosulfan Sulfate	1	7.437	0.000	0.000	0.11	
	2	7.082	0.000	0.000	0.11	0.0
Endrin	1	6.647	0.000	0.000	0.11	
	2	6.483	0.000	0.000	0.11	0.0
Endrin Ketone	1	7.642	0.000	0.000	0.11	
	2	7.460	0.000	0.000	0.12	8.7
gamma-BHC (Lindane)	1	5.240	0.000	0.000	0.11	
	2	5.134	0.000	0.000	0.11	0.0
Heptachlor	1	5.512	0.000	0.000	0.10	
	2	5.361	0.000	0.000	0.11	9.5
Heptachlor Epoxide	1	6.070	0.000	0.000	0.11	

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

**LCS Dup**

*SW-846 8081B*

Lab Sample ID:           B232144-BSD1                                Date(s) Analyzed:           06/01/2019                     06/01/2019          

Instrument ID (1):           ECD2                                                Instrument ID (2):           ECD2          

GC Column (1):                                      ID:                      (mm)                      GC Column (2):                                      ID:                      (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
	2	5.871	0.000	0.000	0.11	0.0
Hexachlorobenzene	1	4.975	0.000	0.000	0.13	
	2	4.887	0.000	0.000	0.12	8.0
Methoxychlor	1	7.303	0.000	0.000	0.10	
	2	7.355	0.000	0.000	0.11	9.5

---

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**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
DL-03	Elevated reporting limit due to matrix interference.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
MS-11	Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

**CERTIFICATIONS**

**Certified Analyses included in this Report**

Analyte	Certifications
<b>SW 846 9060A in Soil</b>	
Total Organic Carbon	NY,CT,ME,VA,NH
<b>SW-846 6010D in Soil</b>	
Cadmium	CT,NH,NY,ME,VA,NC
Chromium	CT,NH,NY,ME,VA,NC
Copper	CT,NH,NY,ME,VA,NC
Lead	CT,NH,NY,AIHA,ME,VA,NC
Nickel	CT,NH,NY,ME,VA,NC
Zinc	CT,NH,NY,ME,VA,NC
<b>SW-846 6020B in Soil</b>	
Arsenic	NY,VA,NH,NC,ME
<b>SW-846 7471B in Soil</b>	
Mercury	CT,NH,NY,NC,ME,VA
<b>SW-846 8081B in Soil</b>	
Aldrin	CT,NC,NH,NY,ME,VA
Aldrin [2C]	CT,NC,NH,NY,ME,VA
alpha-BHC	CT,NC,NH,NY,ME,VA
alpha-BHC [2C]	CT,NC,NH,NY,ME,VA
beta-BHC	CT,NC,NH,NY,ME,VA
beta-BHC [2C]	CT,NC,NH,NY,ME,VA
delta-BHC	CT,NC,NH,NY,ME,VA
delta-BHC [2C]	CT,NC,NH,NY,ME,VA
gamma-BHC (Lindane)	CT,NC,NH,NY,ME,VA
gamma-BHC (Lindane) [2C]	CT,NC,NH,NY,ME,VA
Chlordane	CT,NC,NH,NY,ME,VA
Chlordane [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDD	CT,NC,NH,NY,ME,VA
4,4'-DDD [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDE	CT,NC,NH,NY,ME,VA
4,4'-DDE [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDT	CT,NC,NH,NY,ME,VA
4,4'-DDT [2C]	CT,NC,NH,NY,ME,VA
Dieldrin	CT,NC,NH,NY,ME,VA
Dieldrin [2C]	CT,NC,NH,NY,ME,VA
Endosulfan I	CT,NC,NH,NY,ME,VA
Endosulfan I [2C]	CT,NC,NH,NY,ME,VA
Endosulfan II	CT,NC,NH,NY,ME,VA
Endosulfan II [2C]	CT,NC,NH,NY,ME,VA
Endosulfan Sulfate	CT,NC,NH,NY,ME,VA
Endosulfan Sulfate [2C]	CT,NC,NH,NY,ME,VA
Endrin	CT,NC,NH,NY,ME,VA
Endrin [2C]	CT,NC,NH,NY,ME,VA
Endrin Ketone	NC
Endrin Ketone [2C]	NC
Heptachlor	CT,NC,NH,NY,ME,VA
Heptachlor [2C]	CT,NC,NH,NY,ME,VA

**CERTIFICATIONS**

**Certified Analyses included in this Report**

Analyte	Certifications
<b><i>SW-846 8081B in Soil</i></b>	
Heptachlor Epoxide	CT,NC,NH,NY,ME,VA
Heptachlor Epoxide [2C]	CT,NC,NH,NY,ME,VA
Hexachlorobenzene	NC
Hexachlorobenzene [2C]	NC
Methoxychlor	CT,NC,NH,NY,ME,VA
Methoxychlor [2C]	CT,NC,NH,NY,ME,VA
<b><i>SW-846 8081B in Water</i></b>	
Aldrin	CT,NC,NH,NY,ME,VA
Aldrin [2C]	CT,NC,NH,NY,ME,VA
alpha-BHC	CT,NC,NH,NY,ME,VA
alpha-BHC [2C]	CT,NC,NH,NY,ME,VA
beta-BHC	CT,NC,NH,NY,ME,VA
beta-BHC [2C]	CT,NC,NH,NY,ME,VA
delta-BHC	CT,NC,NH,NY,ME,VA
delta-BHC [2C]	CT,NC,NH,NY,ME,VA
gamma-BHC (Lindane)	CT,NC,NH,NY,ME,VA
gamma-BHC (Lindane) [2C]	CT,NC,NH,NY,ME,VA
Chlordane	CT,NC,NH,NY,ME,VA
Chlordane [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDD	CT,NC,NH,NY,ME,VA
4,4'-DDD [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDE	CT,NC,NH,NY,ME,VA
4,4'-DDE [2C]	CT,NC,NH,NY,ME,VA
4,4'-DDT	CT,NC,NH,NY,ME,VA
4,4'-DDT [2C]	CT,NC,NH,NY,ME,VA
Dieldrin	CT,NC,NH,NY,ME,VA
Dieldrin [2C]	CT,NC,NH,NY,ME,VA
Endosulfan I	CT,NC,NH,NY,ME,VA
Endosulfan I [2C]	CT,NC,NH,NY,ME,VA
Endosulfan II	CT,NC,NH,NY,ME,VA
Endosulfan II [2C]	CT,NC,NH,NY,ME,VA
Endosulfan Sulfate	CT,NC,NH,NY,ME,VA
Endosulfan Sulfate [2C]	CT,NC,NH,NY,ME,VA
Endrin	CT,NC,NH,NY,ME,VA
Endrin [2C]	CT,NC,NH,NY,ME,VA
Endrin Ketone	NC
Endrin Ketone [2C]	NC
Heptachlor	CT,NC,NH,NY,ME,VA
Heptachlor [2C]	CT,NC,NH,NY,ME,VA
Heptachlor Epoxide	CT,NC,NH,NY,ME,VA
Heptachlor Epoxide [2C]	CT,NC,NH,NY,ME,VA
Hexachlorobenzene	NC
Hexachlorobenzene [2C]	NC
Methoxychlor	CT,NC,NH,NY,ME,VA
Methoxychlor [2C]	CT,NC,NH,NY,ME,VA

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The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2019
CT	Connecticut Department of Public Health	PH-0567	09/30/2019
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2019
NJ	New Jersey DEP	MA007 NELAP	06/30/2019
FL	Florida Department of Health	E871027 NELAP	06/30/2019
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2019
ME	State of Maine	2011028	06/9/2019
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2019
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2019





# Analytical Parameter Request

Project #: 20180319.A20	Date Sampled: 5/22/19	 <b>FUSS &amp; O'NEILL</b>
Project Name: Veterans MemPK Dam Removal	Date Submitted: 5/23/19	
Laboratory: Con-Test	Submitter: Fuss & O'Neill, Inc.	

Report To: Nils Wiberg nw.wiberg@fuss.com	Attention:
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Invoice to: Nils Wiberg Mailing Address: 317 Iron Horseway, Suite 204 City, State, Zip: Providence, RI 02908 Special Instructions: For questions call Nils at (401) 787-1709	Attention: Phone #:
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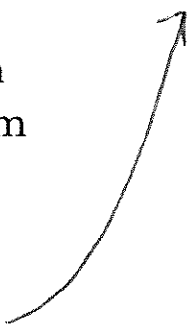
COC #	Sample ID	COC #	Sample ID	COC #	Sample ID
38368	01564190522-01				
38368	01564190522-02				
38368	01564190522-03				
38368	01564190522-04				

Comments: N/A	
<input type="checkbox"/>	Blank(s) included in sample
<input type="checkbox"/>	Duplicate(s) included in sample

## Requested Parameters

Metals  
 Arsenic  
 Cadmium  
 Chromium  
 Copper  
 Lead  
 Mercury  
 Nickel

Zinc



I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples \_\_\_\_\_



**con-test**<sup>®</sup>  
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

**Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False**

Client EO  
 Received By SL Date 5/23/14 Time 1610  
 How were the samples received? In Cooler T No Cooler \_\_\_\_\_ On Ice T No Ice \_\_\_\_\_  
 Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ Melted Ice \_\_\_\_\_  
 Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp - 5.3, 2.8  
 By Blank # \_\_\_\_\_ Actual Temp - \_\_\_\_\_  
 Was Custody Seal Intact? N/A Were Samples Tampered with? N/A  
 Was COC Relinquished? N/A TSC Does Chain Agree With Samples? N/A TSC  
 Are there broken/leaking/loose caps on any samples? F  
 Is COC in ink/ Legible? T Were samples received within holding time? T  
 Did COC include all pertinent Information? Client T Analysis T Sampler Name T  
 Project F ID's T Collection Dates/Times T  
 Are Sample labels filled out and legible? T  
 Are there Lab to Filters? F Who was notified? \_\_\_\_\_  
 Are there Rushes? F Who was notified? \_\_\_\_\_  
 Are there Short Holds? F Who was notified? \_\_\_\_\_  
 Is there enough Volume? T  
 Is there Headspace where applicable? N/A MS/MSD? F  
 Proper Media/Containers Used? T Is splitting samples required? F  
 Were trip blanks received? F On COC? F  
 Do all samples have the proper pH? N/A Acid \_\_\_\_\_ Base \_\_\_\_\_

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.	<u>4</u>	1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-	<u>4</u>	250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-	<u>3</u>	Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

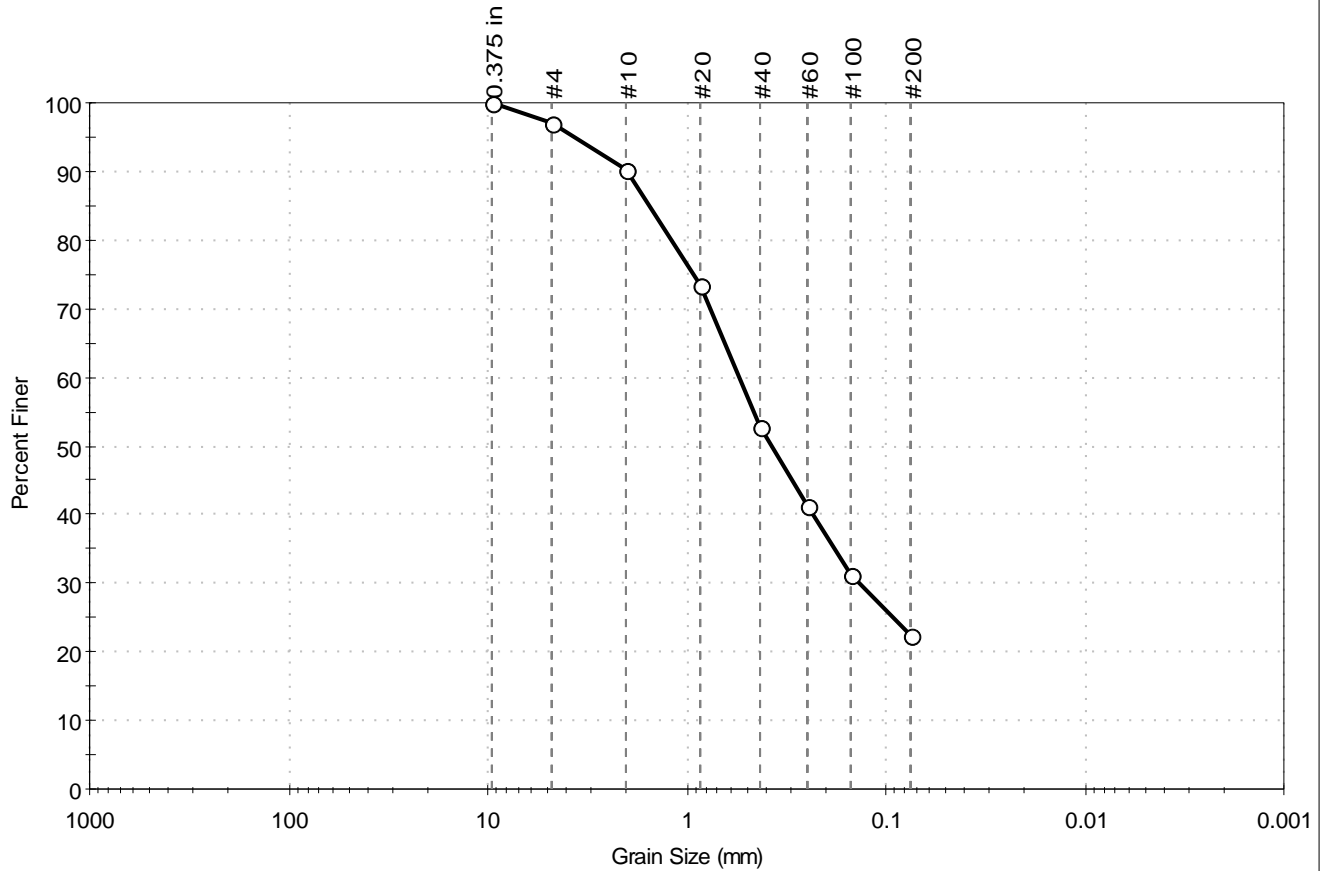
**Unused Media**

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

Client: Con-Test Analytical Lab	Project: 19E1341	Location: ---	Project No: GTX-310060
Boring ID: ---	Sample Type: jar	Tested By: ckg	Checked By: emm
Sample ID: 19E1341-01	Test Date: 05/31/19	Test Id: 506128	
Depth: ---	Test Comment: ---	Visual Description: Moist, very dark grayish brown silty sand	Sample Comment: ---

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	2.9	74.7	22.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	97		
#10	2.00	90		
#20	0.85	73		
#40	0.42	53		
#60	0.25	41		
#100	0.15	31		
#200	0.075	22		

Coefficients	
D <sub>85</sub> = 1.5341 mm	D <sub>30</sub> = 0.1353 mm
D <sub>60</sub> = 0.5403 mm	D <sub>15</sub> = N/A
D <sub>50</sub> = 0.3717 mm	D <sub>10</sub> = N/A
C <sub>u</sub> = N/A	C <sub>c</sub> = N/A

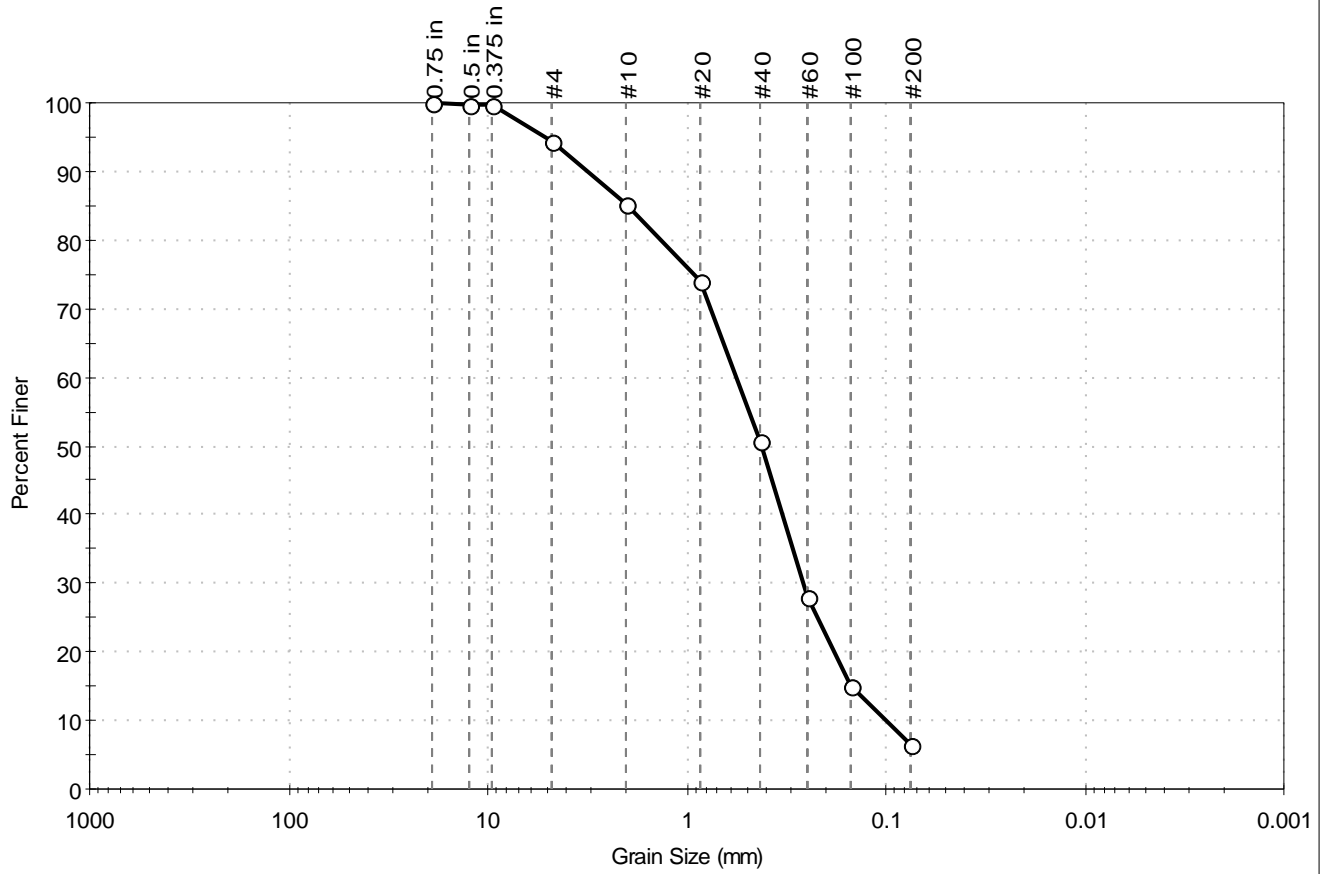
Classification	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Client: Con-Test Analytical Lab	Project No: GTX-310060	
Project: 19E1341	Tested By: ckg	
Location: ---	Sample Type: jar	Checked By: emm
Boring ID: ---	Test Date: 05/31/19	Test Id: 506129
Sample ID: 19E1341-02	Test Comment: ---	
Depth: ---	Visual Description: Moist, very dark gray sand with silt	
Sample Comment: ---		

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	5.7	87.9	6.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	100		
0.375 in	9.50	100		
#4	4.75	94		
#10	2.00	85		
#20	0.85	74		
#40	0.42	51		
#60	0.25	28		
#100	0.15	15		
#200	0.075	6.4		

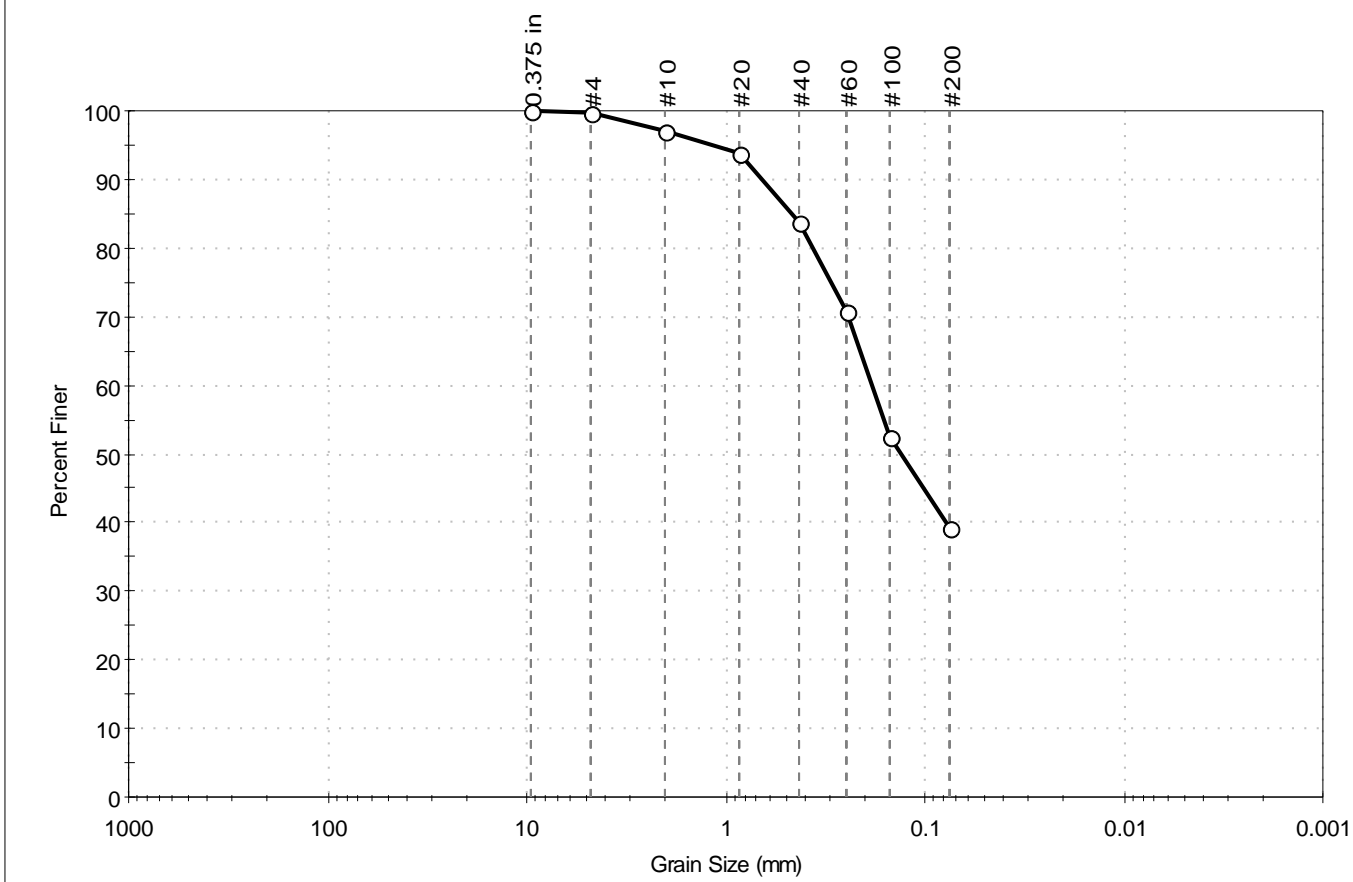
<u>Coefficients</u>	
D <sub>85</sub> = 1.9641 mm	D <sub>30</sub> = 0.2614 mm
D <sub>60</sub> = 0.5607 mm	D <sub>15</sub> = 0.1491 mm
D <sub>50</sub> = 0.4185 mm	D <sub>10</sub> = 0.1002 mm
C <sub>u</sub> = 5.596	C <sub>c</sub> = 1.216

<u>Classification</u>	
ASTM	N/A
AASHTO	Fine Sand (A-3 (1))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD

Client: Con-Test Analytical Lab	Project No: GTX-310060
Project: 19E1341	
Location: ---	Tested By: ckg
Boring ID: ---	Checked By: emm
Sample ID: 19E1341-03	Test Date: 05/31/19
Depth: ---	Test Id: 506130
Test Comment: ---	
Visual Description: Moist, very dark grayish brown silty sand	
Sample Comment: ---	

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.4	60.5	39.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	97		
#20	0.85	94		
#40	0.42	84		
#60	0.25	71		
#100	0.15	53		
#200	0.075	39		

Coefficients

D <sub>85</sub> = 0.4661 mm	D <sub>30</sub> = N/A
D <sub>60</sub> = 0.1844 mm	D <sub>15</sub> = N/A
D <sub>50</sub> = 0.1312 mm	D <sub>10</sub> = N/A
C <sub>u</sub> = N/A	C <sub>c</sub> = N/A

Classification

ASTM    N/A

AASHTO    Silty Soils (A-4 (0))

Sample/Test Description

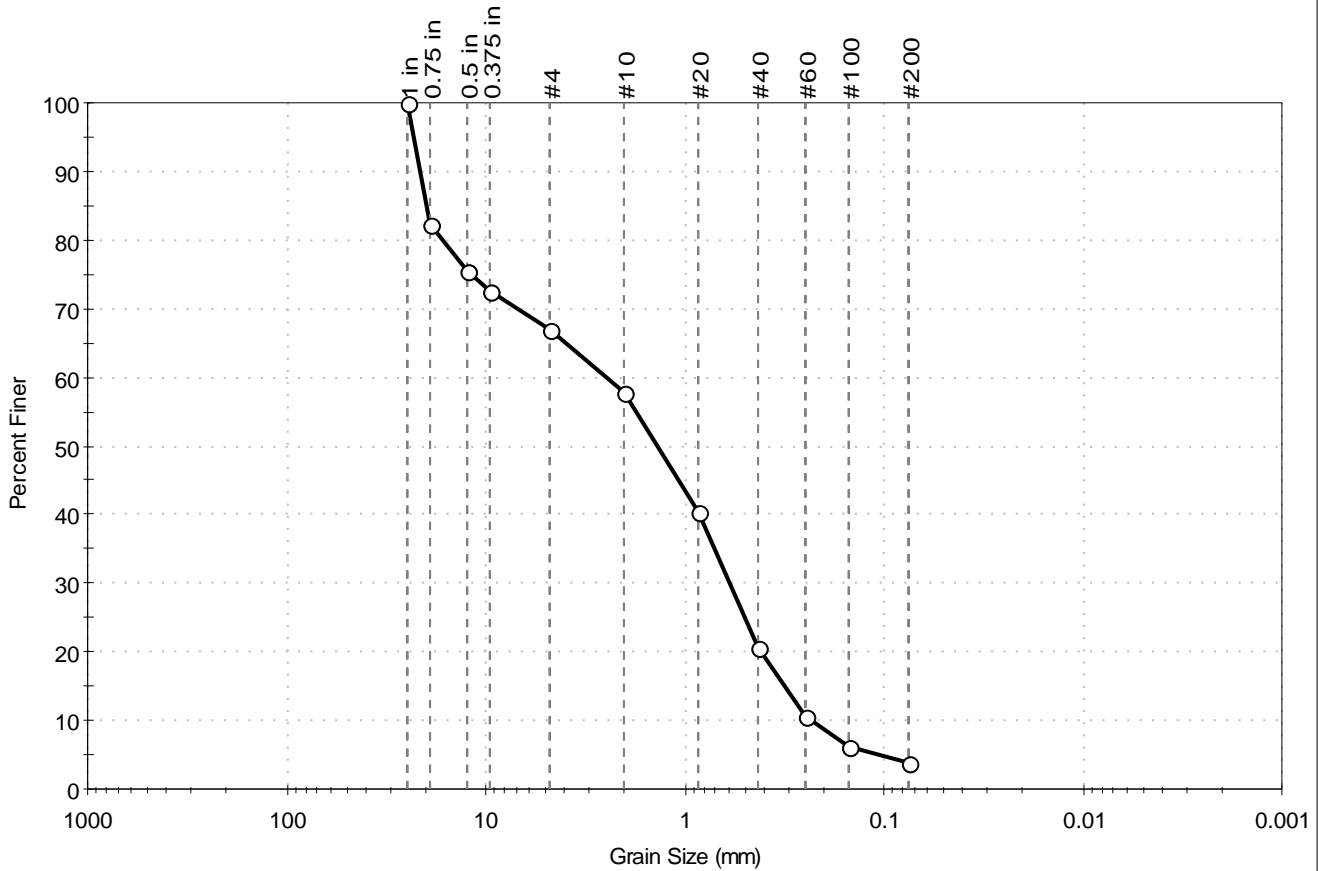
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



Client: Con-Test Analytical Lab	Project No: GTX-310060	
Project: 19E1341	Tested By: ckg	
Location: ---	Sample Type: jar	Checked By: emm
Boring ID: ---	Test Date: 05/31/19	Test Id: 506131
Sample ID: 19E1341-04	Visual Description: Moist, dark grayish brown sand with gravel	
Depth: ---	Sample Comment: ---	

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	33.1	63.2	3.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	82		
0.5 in	12.50	76		
0.375 in	9.50	73		
#4	4.75	67		
#10	2.00	58		
#20	0.85	40		
#40	0.42	21		
#60	0.25	10		
#100	0.15	6		
#200	0.075	3.7		

<u>Coefficients</u>	
D <sub>85</sub> = 19.8157 mm	D <sub>30</sub> = 0.5883 mm
D <sub>60</sub> = 2.4675 mm	D <sub>15</sub> = 0.3159 mm
D <sub>50</sub> = 1.3609 mm	D <sub>10</sub> = 0.2360 mm
C <sub>u</sub> = 10.456	C <sub>c</sub> = 0.594

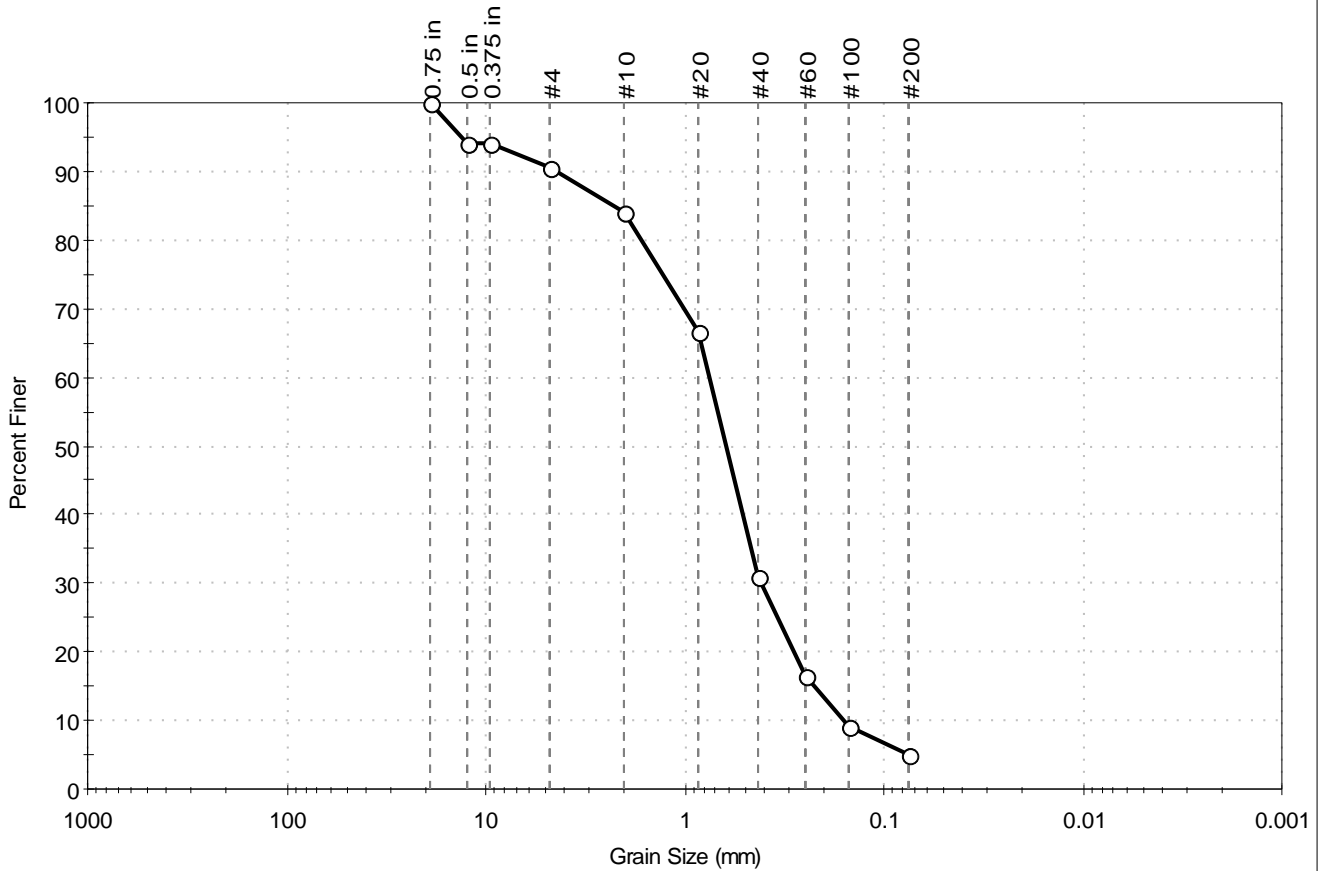
<u>Classification</u>	
<b>ASTM</b>	Poorly graded SAND with Gravel (SP)
<b>AASHTO</b>	Stone Fragments, Gravel and Sand (A-1-b (1))

<u>Sample/Test Description</u>	
Sand/Gravel Particle Shape : ANGULAR	
Sand/Gravel Hardness : HARD	



Client: Con-Test Analytical Lab	Project No: GTX-310060
Project: 19E1341	
Location: ---	
Boring ID: ---	Sample Type: jar
Sample ID: 19E1341-05	Test Date: 05/31/19
Depth: ---	Test Id: 506132
Test Comment: ---	Tested By: ckg
Visual Description: Moist, very dark gray sand with silt	Checked By: emm
Sample Comment: ---	

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	9.4	85.5	5.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	94		
0.375 in	9.50	94		
#4	4.75	91		
#10	2.00	84		
#20	0.85	67		
#40	0.42	31		
#60	0.25	16		
#100	0.15	9		
#200	0.075	5.1		

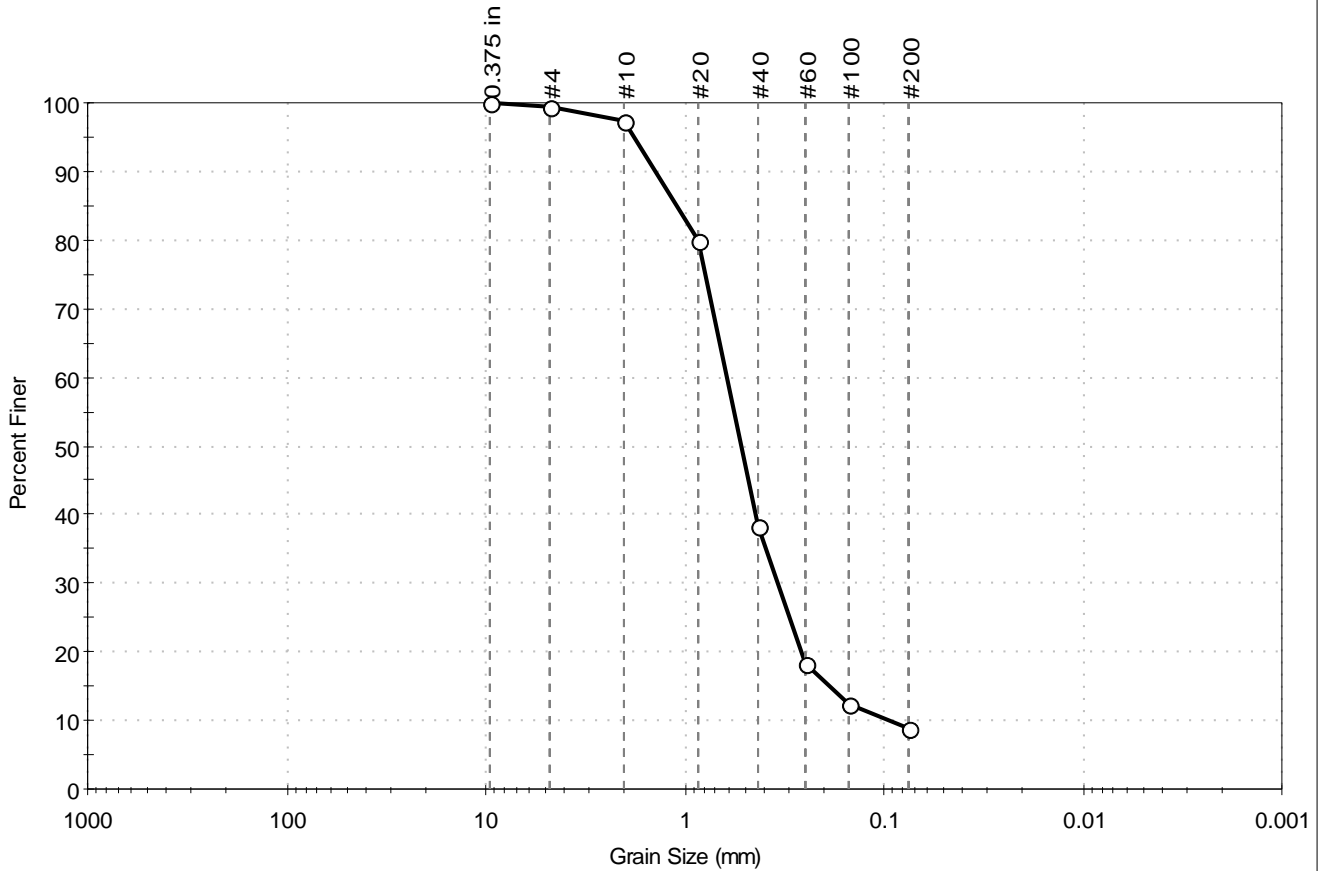
<u>Coefficients</u>	
D <sub>85</sub> = 2.2654 mm	D <sub>30</sub> = 0.4107 mm
D <sub>60</sub> = 0.7480 mm	D <sub>15</sub> = 0.2268 mm
D <sub>50</sub> = 0.6158 mm	D <sub>10</sub> = 0.1605 mm
C <sub>u</sub> = 4.660	C <sub>c</sub> = 1.405

<u>Classification</u>	
<u>ASTM</u>	N/A
<u>AASHTO</u>	Stone Fragments, Gravel and Sand (A-1-b (1))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD

Client: Con-Test Analytical Lab	Project No: GTX-310060	
Project: 19E1341	Tested By: ckg	
Location: ---	Sample Type: jar	Checked By: emm
Boring ID: ---	Test Date: 05/31/19	Test Id: 506133
Sample ID: 19E1341-06	Visual Description: Moist, very dark brown sand with silt	
Depth: ---	Sample Comment: ---	

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.5	90.8	8.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	97		
#20	0.85	80		
#40	0.42	38		
#60	0.25	18		
#100	0.15	12		
#200	0.075	8.7		

Coefficients	
D <sub>85</sub> = 1.0939 mm	D <sub>30</sub> = 0.3415 mm
D <sub>60</sub> = 0.6104 mm	D <sub>15</sub> = 0.1886 mm
D <sub>50</sub> = 0.5166 mm	D <sub>10</sub> = 0.0955 mm
C <sub>u</sub> = 6.392	C <sub>c</sub> = 2.001

Classification	
ASTM	N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---



File Path: J:\DWG\2018\0519\A20\Civil\Figures\CLD\_SedimentSampleMap\_20190514.dwg Layout: 11X17-L Plotted: Mon, May 20, 2019 - 3:20 PM User: nwbberg  
 Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 CTB File: FO.STB  
 LAYER STATE:



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.				

SCALE:  
 HORZ.: 1"=250'  
 VERT.:  
 DATUM:  
 HORZ.: NAD83  
 VERT.: NAVD88  
 0 125 250  
 GRAPHIC SCALE

**f** **FUSS & O'NEILL**  
 317 IRON HORSE WAY, SUITE 204  
 PROVIDENCE, RI 02908  
 401.861.3070  
 www.fando.com

MASSACHUSETTS DIVISION OF ECOLOGICAL RESTORATION / TOWN OF MARSHFIELD  
 SEDIMENT SAMPLE MAP  
 VETERANS MEMORIAL PARK DAM REMOVAL  
 MARSHFIELD MASSACHUSETTS

PROJ. No.: 20180319.A20  
 DATE: May 2019  
 Fig.1





**Date: June 29, 2019**

**To: Nils Wiberg, Fuss & O'Neill, Inc., Providence, RI**

**From: M. Fitzpatrick and C. Cogswell, CR Environmental, Inc., East. Falmouth, MA**

**RE: May 2019 - Bathymetric Staff Survey, Sediment Thickness, and Sediment Sampling  
Veteran's Memorial Park and Vicinity, Marshfield MA**

## **1.0 INTRODUCTION**

CR Environmental, Inc. collected sediment cores and conducted bathymetric and sediment thickness surveys in the Veterans Memorial Park's heart-shaped lagoon, the channel upstream of the fish ladder and spillway, and an upstream reach of the South River and Furnace Brook on the 21 and 22 May 2019. Sediment probing and staff measurements were conducted to determine the thickness of potential mobile sediment. Because of the shallow waters, bathymetry had to be determined using staff measurements rather than acoustically with an echo sounder.

## **2.0 VESSEL AND NAVIGATION**

Survey work within the lagoon and a portion of the South River and Furnace Brook were conducted using CR's 12-foot aluminum skiff outfitted with a weather resistant enclosure for electronics. Navigation for the survey(s) was accomplished using a Hemisphere VS330 Real-time Kinematic Global Positioning System (RTK GPS). The horizontal accuracy of the system is approximately 1.0 centimeter horizontally and 2 centimeters vertically (Root Mean Squared 1-sigma). Horizontal accuracy in differential or float mode is approximately 1 foot. RTK corrections were provided via NTRIP internet connection by KeyNetGPS, Inc. The RTK GPS was serially interfaced to an onboard computer running HYPACK 2015 hydrographic surveying software. During the bathymetric, sediment thickness, and coring operations conducted from the skiff, this system calculated X and Y positions for staff, sediment probe and core stations in the desired grid system (MA Mainland State Plane, NAD83, US Foot). HYPACK also provided a steering display that allowed the boat captain to navigate to the proposed sampling stations.

A Hemisphere S321 RTK sub-meter GPS and Juniper Systems Mesa Tablet were used to record sampling coordinates and data from upstream reaches of the South River and Furnace Brook that required sampling on foot.

### **3.0 ACQUISITION AND PROCESSING METHODS**

#### 3.1 Bathymetry and Sediment Mapping within the Lagoon and Channel Above the Spillway

On 21 May 2019 water depth measurements taken with a staff and sediment probing with a steel rod was conducted at 83 locations on a 10 x 10 foot grid. Sediment thickness was mapped by advancing a steel probe rod to refusal. Water depth, refusal depth below the water surface, refusal characteristics, station position (Easting/Northing) and time were recorded and provided in Excel format.

The staff and sediment probing data were exported from the data acquisition computer or MESA tablet as an XYZ file. Water depths were converted to NAVD88 bottom elevations based on a measurement to the water surface from a NAVD88 benchmark at the fish ladder provided by Fuss & O'Neill. Golden Software (Surfer) was used to create a surface grid of the pond bottom or sediment thickness from the point data, and contour maps were prepared for the heart-shaped lagoon and area above the spillway. The bathymetric data map is provided in NAVD88 elevation (Figure 1) and the sediment thickness map in feet (Figure 2).

In all cases, probing depths were limited by hard refusal at relatively shallow depths, generally less than 6 feet of penetration was encountered. In the heart-shaped lagoon, the sediment consisted of primarily organic silts and leaf litter. In the area just upstream of the spillway, soft/mobile sediments were composed of sands and silts, with significantly less leaf litter. Below the soft/mobile sediments, gravel and tightly packed sand limited the probing depths. Closer to the man-made shoreline in the heart-shaped lagoon, rock and gravel limited the probing depths.

#### 3.2 South River and Furnace Brook Bathymetry and Sediment Mapping Along Transects

On 21 May 2019, cross-river transects were occupied as far upstream as was navigable in the South River with the skiff. Each side of a transect was marked with a stake marked with orange and black stripped flagging tape as close to the water line as possible, allowing the transects to be reoccupied if necessary. The distance from the top of the stake to the water line was measured,

then the water depth and sediment thickness was measured along the cross-river transect at between five and seven stations to determine the channel profile and estimate the amount of mobile sediment along each transect. The distance along transect and associated water depth and probe depth was provided to Fuss & O'Neill in Excel format.

On May 22, 2019, the cross-river transects in the South River and Furnace Brook that were not occupied via skiff were attempted by foot. Three of the planned transects could not be occupied due to dense vegetative growth. The remaining five transects that were navigated to by foot were surveyed using the same methods as described above except a Hemisphere S321 RTK GPS with a Juniper Systems Mesa Tablet were used. Due to the dense canopy the GPS had a difficult time acquiring RTK fixes and was used in float mode (+/- 1 foot horizontal). HYPACK does not record elevation in float mode. The Carlson software used when transects were sampled on foot did record elevations but these data are estimated to have an accuracy of +/- 0.3 feet.

Probing along the upstream transects generally revealed soft silty sands over compact sand and gravel which resulted in refusal. Probing downstream of the Willow Street bridge in the South River showed little to no mobile sediment due to the rapid flow and washed out nature (cobble and boulders) of this constricted area of the river.

River transect locations are provided on Figure 3.

### 3.3 Sediment Sampling

On 22 May 2019 sediment cores were collected from:

- The Veterans Memorial Park's heart-shaped lagoon,
- The channel upstream of the fish ladder and spillway,
- An upstream reach of the South River and Furnace Brook, and
- Downstream of the Willow Street bridge in the South River (Figure 3).

Samples were collected with a piston core with clean CAB plastic liner and a soil auger when necessary. Core logs are attached. The soil auger was decontaminated between samples. The three cores from within the heart-shaped lagoon (cores S-1a, S-1b and S-1c), were collected until refusal, characterized and the full length of each core was combined and homogenized in a stainless steel bowl to form a single composite sample.

The two cores collected just upstream of the spillway (cores S-2 and S-3) were processed individually, rather than composited. S-2 was collected with a piston core until refusal then sediment from 1.0 foot below refusal was collected with an auger. The sediment from the S-2 auger and S-2 piston core was combined to make the final analytical sample.

Upstream sample S-5 from the South River and S-6 in Furnace Brook were collected in a similar manner as S-2; soft sediment was collected until refusal with piston core, then the more compact and gravelly sediment from approximately 1.0 foot deeper was collected using a soil auger. However, the processing for these upstream samples followed a different compositing method. The top portions of S-5 and S-6 (collected with a piston corer) were combined to make one composite of softer more mobile sediment, while the coarser portions collected with the auger were combined to make a separate composite.

One surface sediment sample was taken downstream in the South River around low tide to a depth of six inches with an auger on the northeast side of the Willow Street bridge. The sample was placed directly into a stainless bowl for homogenization. The sediment sample was collected near the bridge abutment rather than in the middle of the river where negligible sediment was present due to the rapid flow and washed out nature of this constricted area of the river.

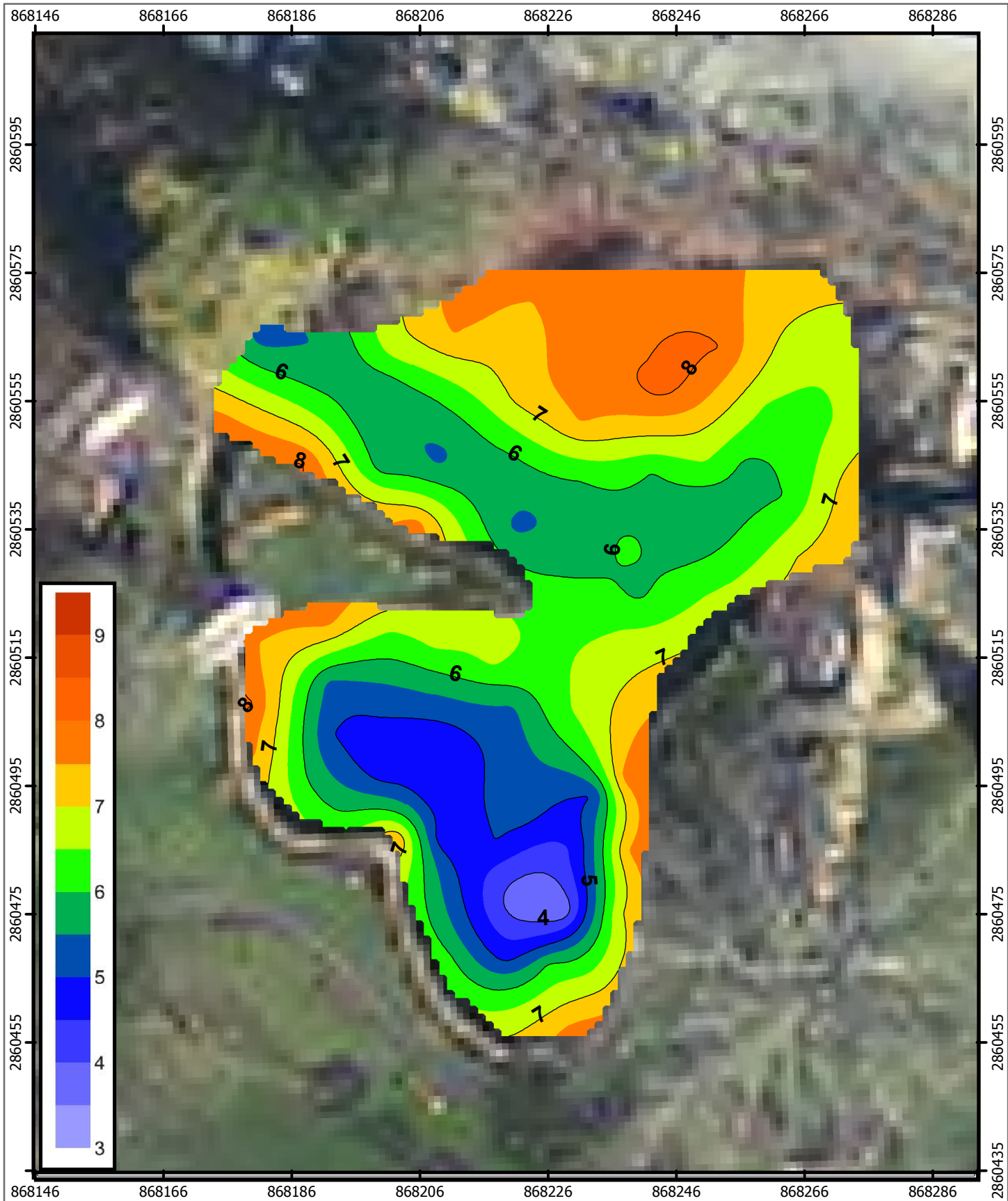
Core locations were recorded using a survey grade RTK GPS interfaced to HYPACK software or at stations in the South River and Furnace Brook that required sampling on foot a Hemisphere S321 RTK sub-meter GPS and Juniper Systems Mesa Tablet with Carlson software was used to record sampling station coordinates. These data were provided to Fuss & O'Neill in MS Excel format and the coring stations are shown on Figure 3. Following processing with Fuss & O'Neill personnel the containerized sediment samples were transferred to Fuss & O'Neil staff for laboratory analysis.

#### **4.0 ADDITIONAL MEASUREMENTS**

Additionally CR measured the elevations of culverts and distance to the water surface where waters fed into the South River from Rt 139 (Plain Street) and Old Plain Street. The elevations are estimated to be accurate to +/- 0.3 feet. To obtain more accurate water surface elevations a professional land surveyor should survey the top of the culvert and use the measurements



provided by CR to get water surface elevations for the transects that are in close proximity to the culverts.



VETERAN'S PARK BATHYMETRY  
 0.5 CONTOUR INTERVAL (NAVD88 ELEVATIONS)  
 Marshfield, Massachusetts

NOTES:  
 1) Survey conducted 21-May-2019  
 2) Grid MA State Plane NAD 83 Ft.  
 3) NAVD88 Elevations lines use 1.0 foot contour intervals  
 Spectrum map uses 0.5-foot contour intervals  
 4) Not for Navigation

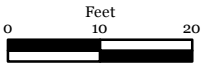
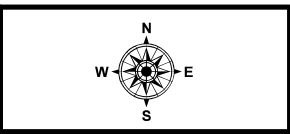
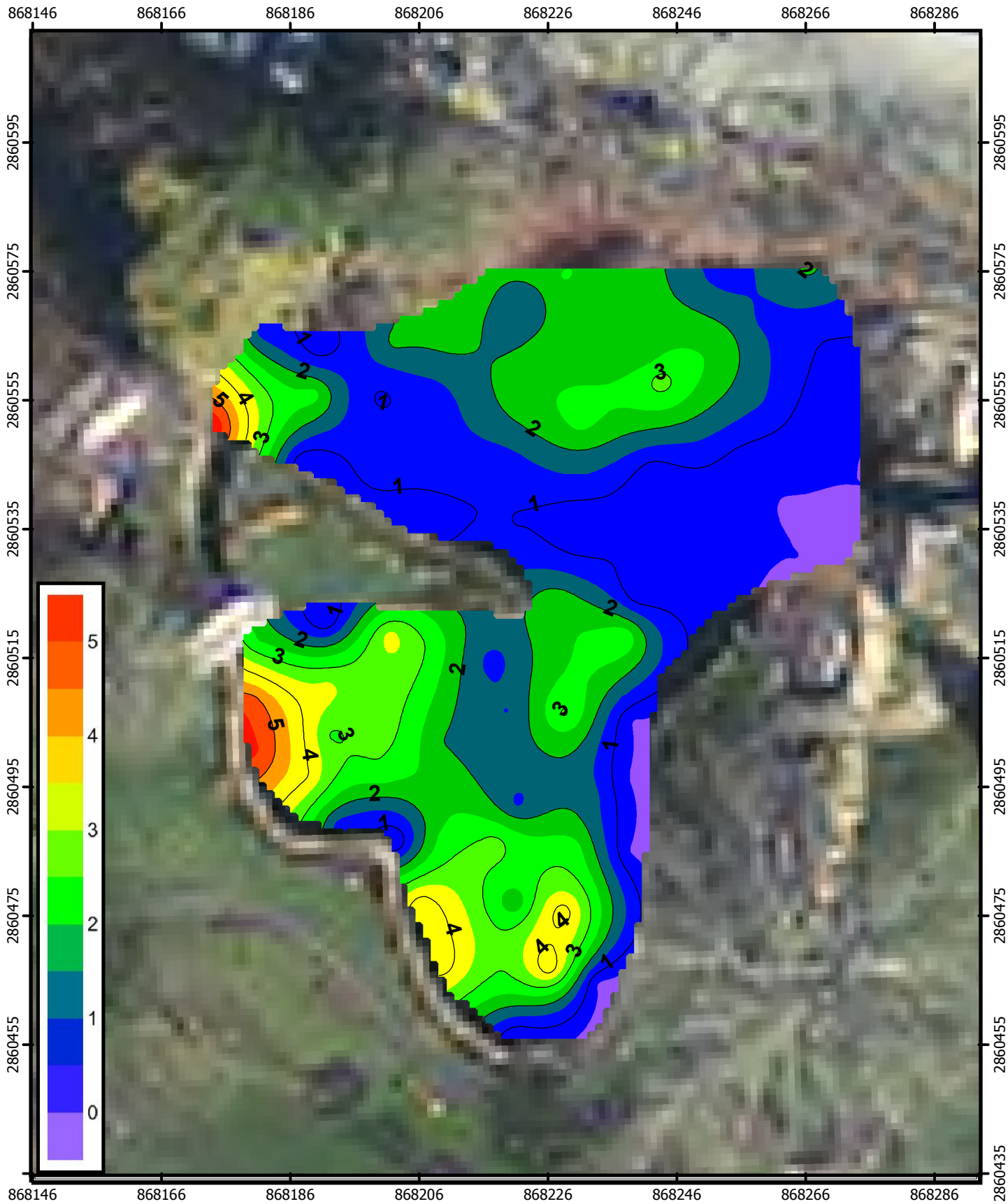

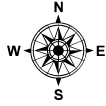

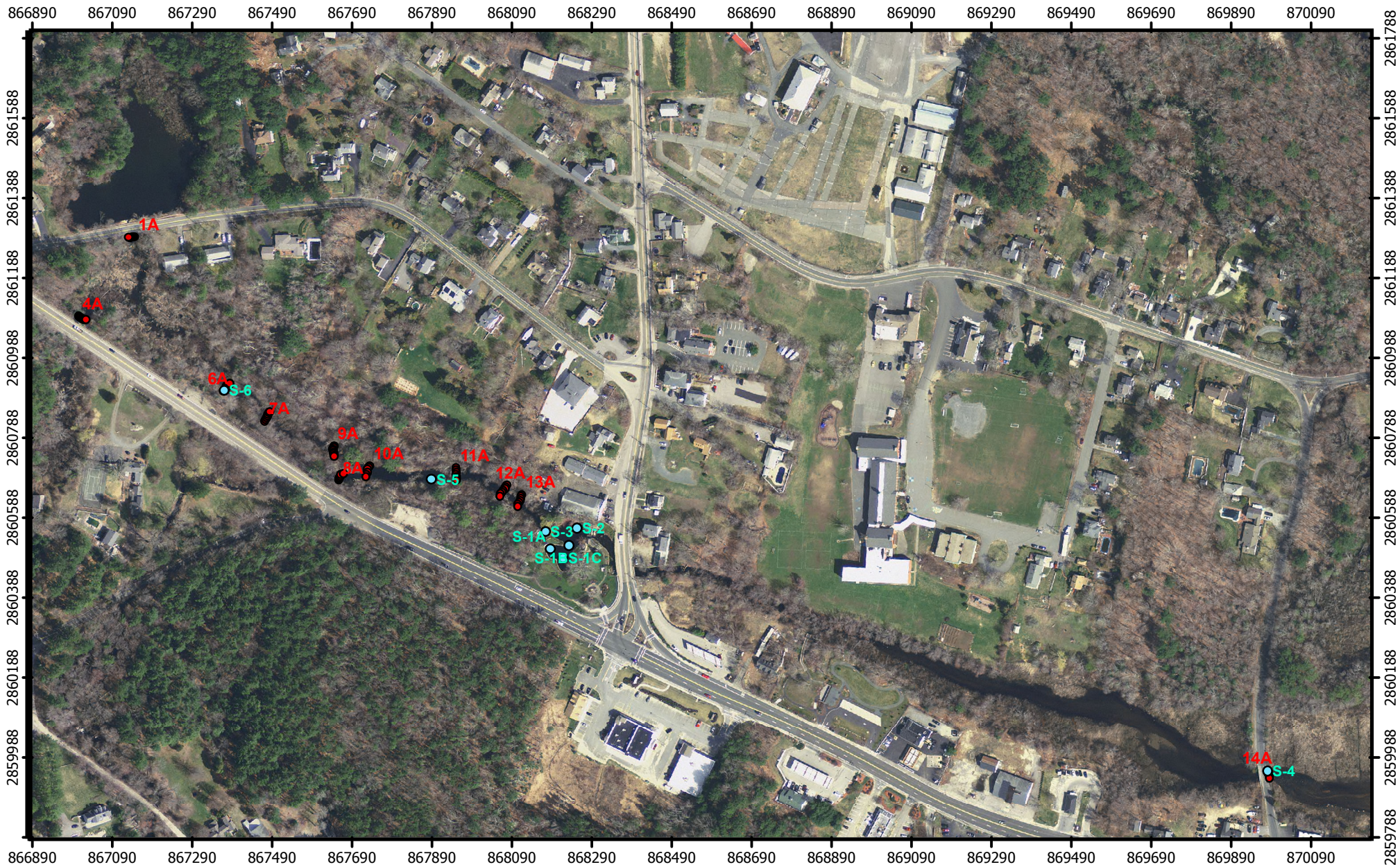



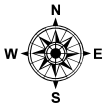
Figure 1



	<p>VETERAN'S PARK SEDIMENT THICKNESS 0.5 CONTOUR INTERVAL (NAVD88 ELEVATIONS) Marshfield, Massachusetts</p>	
	<p>NOTES: 1) Survey conducted 21-May-2019 2) Grid MA State Plane NAD 83 Ft. 3) Sediment Thickness use 1.0 foot contour intervals Spectrum map uses 0.5-foot contour intervals</p> <div style="text-align: right;">  </div>	<p>Figure 2</p>





	<p><b>VETERAN'S PARK TRANSECT AND CORING LOCATIONS</b>          Transects in Red          Core Locations in Blue</p>	
	<p>NOTES:          1) Survey conducted 21-May-2019          2) Grid MA State Plane NAD 83 Ft.</p>	<p>Figure 3</p>







Station ID: S-1A

Northing: 2860508.99

All measurements are ±0.1 feet

Core Sample ID: \_\_\_\_\_

Easting: 868187.15

Penetration: 4.45

Date Collected: 7/10/06

GPS Accuracy: ± 0.5' (RTK)

Recovery: 4.2

Time: 22-May-2019

Water Depth: 0.7

Processed Date/Initials: MRF 5/22/19

Collection Mechanism: Piston Core/ Soil Auger

Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
	1.1	MH	Highly organic liquidy silt w/ leaf litter	10 YR 2/2 very dark brown	very soft	silt	None	
	1.5	SW	well sorted sand (f-zc)	10 YR 6/3 pale brown	firm	coarse sand		
	1.8	OL	silty clay	10 YR 5/2 grayish brown	med	silt		
	2.4	MH	organic silt w/ leaf litter	10 YR 2/2 very dark brown	soft	silt		
	2.5	SW	well sorted sand (f-zc)	10 YR 6/3 pale brown	firm	coarse sand		
	3.8	MH	organic silt almost like peat (dry)	10 YR 2/2 very dark brown	med/firm	silt		
	4.2	SW	fine to coarse sand	10 YR 8/2 white	firm	coarse sand	↓	

01564190522-01

Comments: collect VOAs between 1.5' + 1.7'

composited w/ S-1B + S-1C



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2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-1B

Northing: 2860518.65

All measurements are ±0.1 feet

Core Sample ID: \_\_\_\_\_

Easting: 868233.25

Penetration: 2.5

Date Collected: 22-May-2019

GPS Accuracy: ± 0.5' (RTK)

Recovery: 2.3

Time: 0934

Water Depth: 1.8

Processed Date/Initials: 5/23/19 MRF

Collection Mechanism: Piston Core Soil Auger

Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USCS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-01	1.9	MH	Very organic liquidy silt w/ leaf litter	10YR 2/2 Very dark brown	soft	minor fine sand	None	
	2.3	SW	well sorted sand fine → med w/ pebbles	10YR 6/3 Pale brown	med	pebbles	None	

Comments: photo taken w/ table of C

composited w/ S-1A + S-1C



2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-1C Northing: 2860486.86 All measurements are ±0.1 feet  
 Core Sample ID: \_\_\_\_\_ Easting: 868219.61 Penetration: 2.8  
 Date Collected: 22-May-2019 GPS Accuracy: ± 0.5' (RTK) Recovery: 2.6  
 Time: 10:51 Water Depth: 3.8 Processed Date/Initials: 5/22/19 MRF  
 Collection Mechanism: Piston Core/Soil Auger Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-01	2.3	MH	very organic silt w/ leaf litter	10YR 2/2 very dark brown	loose/soft becoming firm @ 1.9'	minor f. sand	None	1 thin lense of gray clay @ 1.4 1 thin lense of Brown f→c sand @ 1.5 sticks from 1.7' → 1.9'
	2.6	SW	well sorted f→c sand	10YR 7/2 light gray	med firm	c. sand	↓	

Comments:  
 looks like beach sand in bottom 0.3'  
 composited w/ S-1A + S-1B





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2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-2

Northing: 2860561.91

All measurements are ±0.1 feet

Core Sample ID: \_\_\_\_\_

Easting: 868254.31

Penetration: 2.9

Date Collected: 22-May-2019

GPS Accuracy: ± 0.5' (RTK)

Recovery: 2.8

Time: 09:11

Water Depth: 0.3

Processed Date/Initials: MRF 5/22/19

Collection Mechanism: Piston Core/ Soil Auger

Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-02	1.4	MH	Highly organic liquidy silt w/ leaf & litter	10YR 2/2 very dark brown	soft	silt	None	
	2.8	GM	Silty/ gravelly fine to medium sand w/ pebbles + cobbles	10YR 5/3 Brown	med firm	cobble	None	

Comments:

Bottom 1.0' collected w/ an auger



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2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-3

Northing: 2860552.97

All measurements are ±0.1 feet

Core Sample ID: \_\_\_\_\_

Easting: 868175.85

Penetration: 3.3

Date Collected: 22-May-2019

GPS Accuracy: ± 0.5' (RTK)

Recovery: 3.1

Time: 08:35

Water Depth: 0.5

Processed Date/Initials: MRF 5/22/19

Collection Mechanism: Piston Core/Soil Auger

Water Surface Elevation (NAVD 88): N/A

015 641905 22 - 03

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
		MH	highly organic silt high liquid content	10YR 2/2 very dark brown	soft	Fine sand	None	
	1.2 1.3	Sm s	Silty sand	10YR 5/3 brown	med soft	Fine sand		thin band
		MH	organic silt	10YR 2/2 very dark brown	med	silt		
	2.1 2.2	SW	fine sand	10YR very 7/3 pale brown	firm	fine sand		
		MH	organic silt	10YR 2/2 very dark brown	med firm	silt		
	2.9 3.1	SW	Fine sand	10YR very 7/3 pale brown	firm	F. sand		thin sand lense @ 2.9

Comments:



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2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-5 Northing: 2860683.21 All measurements are ±0.1 feet  
 Core Sample ID: \_\_\_\_\_ Easting: 867889.84 Penetration: 4.1  
 Date Collected: 22-May-2019 GPS Accuracy: ±0.5' Recovery: 3.8  
 Time: 11:27 Water Depth: 1.7' Processed Date/Initials: MRF ~~22~~ 5/22/2019  
 Collection Mechanism: Piston Core/ Soil Auger Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-06	0.8	MH	Very organic silt w/ leaf litter + stems	10 YR 2/2 very dark brown	loose soft	Silt	None	
	2.3	SP	Fine sand	10 YR 6/3 pale brown	med firm	C sand		3 lenses of coarse sand @ 1.0', 1.4', 1.7' slight color change @ lense @ 1.7' to 10 YR 6/4 (light yellowish brown)
	2.8	SP	Fine sand	10 YR 4/1 dark gray	firm	f. sand		2 thin bands of organic material @ 2.3-2.4
	3.8	SW	f → med sand well sorted	10 YR 4/1 dark gray	med	med sand		

Comments: Composite Cores S-5 and S-6. So the 2 tops make 1 sample and the 2 bottoms make a separate sample



2019 Veterans Memorial Park Lagoon Improvements & Dam Removal

Location: Marshfield Ma.

Client: Fuss & O'neil

Vessel: CR Skiff

Chief Scientist: M. Fitzpatrick

Station ID: S-6 Northing: 2860906.29 All measurements are  $\pm 0.1$  feet  
 Core Sample ID: \_\_\_\_\_ Easting: 867370.90 Penetration: 2.5  
 Date Collected: 22-May-2019 GPS Accuracy:  $\pm 0.5'$  (DGPS) RTK Recovery: 2.3  
 Time: 1450 Water Depth: 0.2 Processed Date/Initials: MRF 5/22/19  
 Collection Mechanism: Piston Core/ Soil Auger Water Surface Elevation (NAVD 88): N/A

Composite ID	Core Depth (Feet)	Lithology - Include USGS code	Sediment Type	Color (Descriptive & Munsell code)	Consistency	Maximum particle size	Odor	Comments
01564190522-6	1.0	MH	Very organic silt w/ leaf litter + stems	10YR 2/2 very dark Brown	Soft	Silt	None	
	1.3	X	X wood	X	X	X	X	discarded from sample
01564190522-5	2.3	GM	Silty Sandy Gravel mostly sand well sorted f $\rightarrow$ L	10YR 3/1 very dark gray	med	gravel 2"		gravel to 2"

Comments: Composite cores S-5 and S-6 so that the 2 tops make 1 sample and the 2 bottoms make a separate sample

① S/B  $\pm 0.5'$  (RTK)

**EXHIBIT E**  
**BUY AMERICA REQUIREMENTS**





EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF MANAGEMENT AND BUDGET  
WASHINGTON, D.C. 20503

April 18, 2022

M-22-11

MEMORANDUM FOR HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: Shalanda D. Young  
Director

SUBJECT: Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act (“IIJA”), Pub. L. No. 117-58, which includes the Build America, Buy America Act (“the Act”). Pub. L. No. 117-58, §§ 70901-52. The Act strengthens Made in America Laws<sup>1</sup> and will bolster America’s industrial base, protect national security, and support high-paying jobs. The Act requires that no later than May 14, 2022—180 days after the enactment of the IIJA—the head of each covered Federal agency<sup>2</sup> shall ensure that “none of the funds made available for a Federal financial assistance program for infrastructure, including each deficient program, may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States.”<sup>3</sup>

The Act affirms, consistent with Executive Order 14005, *Ensuring the Future Is Made in All of America by All of America’s Workers* (“the Executive Order”), this Administration’s priority to “use terms and conditions of Federal financial assistance awards to maximize the use of goods, products, and materials produced in, and services offered in, the United States.”<sup>4</sup>

The Act provides statutory authorities for the Made in America Office (“MIAO”) in the Office of Management and Budget (“OMB”) to maximize and enforce compliance with Made in

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<sup>1</sup> “Made in America Laws” means all statutes, regulations, rules, and Executive Orders relating to Federal financial assistance awards or Federal procurement, including those that refer to “Buy America” or “Buy American,” that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States. Made in America Laws include laws requiring domestic preference for maritime transport, including the Merchant Marine Act of 1920 (Pub. L. No. 66-261), also known as the Jones Act. Exec. Order No. 14,005, 86 Fed. Reg. 7475, § 2(b) (Jan. 28, 2021), available at <https://www.federalregister.gov/documents/2021/01/28/2021-02038/ensuring-the-future-is-made-in-all-of-america-by-all-of-americas-workers>. Made in America Laws also include laws that give preference to Indian-owned and -controlled businesses, such as the Buy Indian Act (25 U.S.C. 47), that produce items in the United States.

<sup>2</sup> For the purposes of this guidance, the terms “Federal agency” and “agency” mean any authority of the United States that is an “agency” (as defined in section 3502 of title 44, United States Code), other than an independent regulatory agency (as defined in that section). IIJA, § 70912(3).

<sup>3</sup> IIJA, § 70914(a).

<sup>4</sup> Exec. Order No. 14,005 (see footnote 1).

America Laws.<sup>5</sup> MIAO aims to increase reliance on domestic supply chains and reduce the need for waivers through a strategic process aimed at: achieving consistency across agencies; gathering data to support decision-making to make U.S. supply chains more resilient; bringing increased transparency to waivers in order to send clear demand signals to domestic producers; and concentrating efforts on changes that will have the greatest impact.<sup>6</sup>

This memorandum provides implementation guidance to Federal agencies on the application of: (1) a “Buy America” preference<sup>7</sup> to Federal financial assistance programs for infrastructure; and (2) a transparent process to waive such a preference, when necessary. A Federal financial assistance program for infrastructure is any program under which an award may be issued for an infrastructure project, regardless of whether infrastructure is the primary purpose of the award. The term “project” means any activity related to the construction, alteration, maintenance, or repair of infrastructure in the United States.<sup>8</sup>

Agencies should determine how this guidance is best applied to their infrastructure programs and processes, and consult with OMB, as needed, on establishing criteria, processes, and procedures for applying a Buy America preference and issuing waivers. OMB may update or provide additional guidance, as appropriate, to further assist agencies in the implementation of a Buy America preference.

## **I. Application of a Buy America Preference**

By May 14, 2022, agencies must ensure that all applicable programs comply with section 70914 of the Act, including by the incorporation of a Buy America preference in the terms and conditions of each award with an infrastructure project.<sup>9</sup> The Act requires the following Buy America preference:

- (1) All iron and steel used in the project are produced in the United States. This means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
- (2) All manufactured products used in the project are produced in the United States. This means the manufactured product was manufactured in the United States, and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation.

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<sup>5</sup> IJA, § 70923(a) & (b)(1).

<sup>6</sup> OMB Memorandum M-21-26, Increasing Opportunities for Domestic Sourcing and Reducing the Need for Waivers from Made in America Laws available at: <https://www.whitehouse.gov/wp-content/uploads/2020/11/M-21-06.pdf>

<sup>7</sup> For the purposes of this guidance, a “Buy America” preference is a domestic content procurement preference as defined in IJA, § 70912(2).

<sup>8</sup> IJA, § 70912 (5) & (7).

<sup>9</sup> See Appendix I: Example of Award Term - Required Use of American Iron, Steel, Manufactured Products, and Construction Materials.



- (3) All construction materials are manufactured in the United States. This means that all manufacturing processes for the construction material occurred in the United States.<sup>10, 11</sup>

## II. Applicability to Federal Financial Assistance Programs

This guidance applies to all Federal financial assistance as defined in section 200.1 of title 2, Code of Federal Regulations<sup>12</sup>—whether or not funded through IJA—where funds are appropriated or otherwise made available and used for a project for infrastructure. Federal financial assistance means assistance that non-Federal entities receive or administer in the form of grants, cooperative agreements, non-cash contributions or donations of property, direct assistance, loans, loan guarantees, and other types of financial assistance. The term “non-Federal entity” includes States, local governments, territories, Indian tribes, Institutions of Higher Education (IHE), and nonprofit organizations.<sup>13</sup>

For purposes of this guidance, for-profit organizations are not considered non-Federal entities. However, this guidance does not alter independent statutory authorities that agencies may have to include domestic content requirements in awards of Federal financial assistance issued to for-profit organizations.

Federal agencies are encouraged to consult with OMB if they are uncertain about the applicability of this guidance to any particular infrastructure program.

Before applying a Buy America preference to a covered program that will affect Tribal communities, Federal agencies should follow the consultation policies established through Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, and consistent with policies set forth in the Presidential Memorandum of January 26, 2021, on Tribal Consultation and Strengthening Nation-Nation Relationships. Federal agencies should commence consultation promptly.

This guidance does not apply to “expenditures for assistance authorized under section 402, 403, 404, 406, 408, or 502 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170a, 5170b, 5170c, 5172, 5174, or 5192) relating to a major disaster or emergency declared by the President under section 401 or 501, respectively, of such Act (42 U.S.C. 5170, 5191) or pre and post disaster or emergency response expenditures.”<sup>14</sup> “[P]re and post disaster or emergency response expenditures” consist of expenditures for financial assistance that are (1) authorized by statutes other than the Stafford Act, 42 U.S.C. §§ 5121 et seq., and (2) made in anticipation of or response to an event or events that qualify as an “emergency” or “major disaster” within the meaning of the Stafford Act, *id.* § 5122(1), (2). Awards made to support the construction or improvement of infrastructure to mitigate the damage that may be caused by a non-imminent future emergency or disaster, such as awards

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<sup>10</sup> IJA, § 70912 (2) & (6)(B)(ii).

<sup>11</sup> See Section VIII. of this guidance for more information on construction materials.

<sup>12</sup> IJA § 70912(4)(A)

<sup>13</sup> See 2 C.F.R. § 200.1.

<sup>14</sup> IJA § 70912(4)(B)

made under FEMA’s Flood Mitigation Assistance program,<sup>15</sup> do not qualify as “pre and post disaster or emergency response expenditures.”

Subawards should conform to the terms and conditions of the Federal award from which they flow.<sup>16</sup>

The IIA’s definition of “infrastructure” encompasses public infrastructure projects. Thus, the term “infrastructure” includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property.<sup>17</sup> Agencies should treat structures, facilities, and equipment that generate, transport, and distribute energy - including electric vehicle (EV) charging - as infrastructure.

When determining if a program has infrastructure expenditures, Federal agencies should interpret the term “infrastructure” broadly and consider the definition provided above as illustrative and not exhaustive. When determining if a particular construction project of a type not listed in the definition above constitutes “infrastructure,” agencies should consider whether the project will serve a public function, including whether the project is publicly owned and operated, privately operated on behalf of the public, or is a place of public accommodation, as opposed to a project that is privately owned and not open to the public. Projects with the former qualities have greater indicia of infrastructure, while projects with the latter quality have fewer. Projects consisting solely of the purchase, construction, or improvement of a private home for personal use, for example, would not constitute an infrastructure project. Federal agencies are strongly encouraged to consult with OMB when making such determinations.

Agencies should consult with MIAO regarding their readiness to apply the requirements of the Act to covered programs. Agencies with questions regarding the application of a Buy America preference to agency-specific programs, including questions about the possible use of waivers during adjustment periods as agencies work to implement the Act, are advised to reach out to MIAO for technical assistance and advice.

### **III. Consistency with International Agreements**

Pursuant to section 70914(e) of the Act, this guidance must be applied in a manner consistent with the obligations of the United States under international agreements.

### **IV. Avoid Unnecessary Disruption**

The Act makes clear that its preferences apply to a Federal financial assistance program for infrastructure only to the extent that a domestic content procurement preference as described

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<sup>15</sup> See 42 U.S.C. § 4104c.

<sup>16</sup> 2 CFR 200.101 (b) (2)

<sup>17</sup> IIA, § 70912(5).

in section 70914 of the Act does not already apply to iron, steel, manufactured products, and construction materials.<sup>18</sup> Agencies should consider whether existing domestic content requirements meet the standards in the Act, as described in this memorandum. Agencies must make necessary changes to come into compliance with the Act's requirements, while preserving policies and provisions that already meet or exceed the standards required by the Act. For example, a program in which the standards for iron and steel already meet the standards in the Act may nevertheless be required to adopt new standards for manufactured products and construction materials. Maintaining current policies where appropriate avoids unnecessary disruption to programs, or elements of programs, that already meet or exceed Build America, Buy America requirements.

## **V. Effective Date for Awards**

Agencies must ensure that, starting on May 14, 2022, all Federal financial assistance programs for infrastructure comply with the requirements of section 70914 of the Act. Therefore, new awards made on or after May 14, 2022, must take appropriate steps to ensure financial assistance awards comply with these requirements, which may include appropriate terms and conditions<sup>19</sup> incorporating a Buy America preference. Renewal awards and amendments obligating additional funds to existing awards that are executed on or after May 14, 2022, must also include a Buy America preference. This means that agencies must include a Buy America preference in awards issued on or after May 14, 2022, even if Notices of Funding Opportunities for those awards did not include a Buy America preference. In these cases, agencies may consider whether public interest waivers may be needed to avoid undue increases in the time and cost of a project. Similarly, public interest waivers may be needed for awards and amendments made on or after May 14, 2022, where budgets for purchase of covered materials have already been agreed upon (including if materials have been ordered and construction has begun). Consistent with the guidance provided below, agencies should issue waivers judiciously and clearly communicate to recipients the limitations and conditions of any such waivers.

## **VI. Articles, Materials, and Supplies for Infrastructure**

A Buy America preference, as defined in section I of this guidance, only applies to the iron and steel, manufactured products, and construction materials used for the infrastructure project under an award. If an agency has determined that no funds from a particular award under a covered program will be used for infrastructure, a Buy America preference does not apply to that award. Similarly, for a covered program, a Buy America preference does not apply to non-infrastructure spending under an award that also includes a covered project. A Buy America preference applies to *an entire infrastructure project*, even if it is funded by both Federal and non-Federal funds under one or more awards.

A Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply

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<sup>18</sup> IIA, § 70917(a) &(b).

<sup>19</sup> See Appendix I: Example of Award Term - Required Use of American Iron, Steel, Manufactured Products, and Construction Materials for exemplary language.

to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project, but are not an integral part of or permanently affixed to the structure.

For the purposes of this guidance, an article, material, or supply should only be classified into *one* of the following categories: (1) iron or steel; (2) a manufactured product; or (3) a construction material. For ease of administration, an article, material, or supply should not be considered to fall into multiple categories. Agencies should apply the iron and steel test to items that are predominantly iron or steel, unless another standard applies under law or regulation.

Any waivers from these requirements must be in writing and meet the requirements of section 70914(b).

## **VII. Issuing Buy America Waivers**

Pursuant to Section 70914(c) of the Act, the head of a Federal agency may waive the application of a Buy America preference under an infrastructure program in any case in which the head of the Federal agency finds that—

- (1) applying the domestic content procurement preference would be inconsistent with the public interest (a “public interest waiver”);
- (2) types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality (a “nonavailability waiver”); or
- (3) the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent (an “unreasonable cost waiver”).

Federal agencies are responsible for processing and approving all waivers, including waivers requested by recipients and on behalf of subrecipients. To the greatest extent practicable, waivers should be targeted to specific products and projects.<sup>20</sup>

Before issuing a waiver, the head of the Federal agency must make publicly available on the agency’s website a detailed written explanation for the proposed determination to issue the waiver and provide at least 15 days for public comment on the proposed waiver.<sup>21</sup> General applicability waivers are subject to a minimum 30-day public comment period.<sup>22</sup> By April 29, 2022, agencies should provide the website address where they will be posting proposed waivers for public comment to [MBX.OMB.MadeInAmerica@omb.eop.gov](mailto:MBX.OMB.MadeInAmerica@omb.eop.gov). Pursuant to sections 70914(c) and 70937 of the Act, the waiver must be cross-posted to a centralized waiver transparency website managed by GSA, [BuyAmerican.gov](http://BuyAmerican.gov),<sup>23</sup> no later than November 15, 2022.

<sup>20</sup> See Section VII of this guidance for information on waiver principles and criteria.

<sup>21</sup> Executive Order, § 4(b)(i)(2); IJJA, § 70914(c); IJJA, § 70937 (note that “Buy American” as used in this section also refers to Buy America preferences, per IJJA, § 70932(1)).

<sup>22</sup> IJJA § 70914(d)(2)(A)(ii). See Section VII of this guidance for information on general applicability waivers.

<sup>23</sup> [BuyAmerican.gov](http://BuyAmerican.gov) redirects to [MadeInAmerica.gov](http://MadeInAmerica.gov).

To minimize duplication and promote efficiency, MIAO and GSA will coordinate with agencies on the expansion of the existing website's functionality to display waivers for Federal financial assistance and provide further instructions to agencies as necessary.

Federal agencies are responsible for performing due diligence and approving or rejecting waivers consistent with the Act, this guidance, and any other applicable Buy America laws. Federal agencies should notify MIAO in advance of posting an award- or project-level proposed waiver for public comment. However, Federal agencies must consult with MIAO for proposed waivers with broader applicability (such as a general applicability waiver) before posting them for public comment. The purpose of the consultation is to identify any opportunities to structure the waiver in order to maximize the use of goods, products, and materials produced in the United States to the greatest extent possible consistent with law. Federal agencies should send proposed waivers for review to [MBX.OMB.MIAwaivers@omb.eop.gov](mailto:MBX.OMB.MIAwaivers@omb.eop.gov).

Federal agencies must submit to MIAO a proposed waiver for review after the public comment period has concluded. MIAO will review the proposed waiver to determine if it is consistent with applicable law and policy,<sup>24</sup> and will notify the Federal agency of its determination.

All waiver requests must include a detailed justification for the use of goods, products, or materials mined, produced, or manufactured outside the United States<sup>25</sup> and a certification that there was a good faith effort to solicit bids for domestic products supported by terms included in requests for proposals, contracts, and nonproprietary communications with potential suppliers.<sup>26</sup> In addition, at a minimum and to the greatest extent practicable, each proposed waiver submitted to MIAO should include the following information, as applicable:

- Waiver type (nonavailability, unreasonable cost, or public interest)
- Recipient name and Unique Entity Identifier (UEI)
- Federal awarding agency organizational information (e.g., Common Government-wide Accounting Classification (CGAC) Agency Code)
- Financial assistance listing name and number
- Federal financial assistance program name
- Federal Award Identification Number (FAIN) (if available)
- Federal financial assistance funding amount
- Total cost of infrastructure expenditures, including all Federal and non-Federal funds (to the extent known)
- Infrastructure project description and location (to the extent known)
- List of iron or steel item(s), manufactured products, and construction material(s) proposed to be excepted from Buy America requirements, including name, cost, country(ies) of origin (if known), and relevant PSC and NAICS code for each.
- A certification that the Federal official or assistance recipient made a good faith effort to solicit bids for domestic products supported by terms included in requests for proposals, contracts, and nonproprietary communications with the prime contractor.

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<sup>24</sup> Executive Order, § 4(c).

<sup>25</sup> IIJA, § 70937(c)(2)(A).

<sup>26</sup> IIJA, § 70937(c)(2)(D).

- A statement of waiver justification, including a description of efforts made (e.g., market research, industry outreach), by the Federal awarding agency and, in the case of a project or award specific waiver, by the recipient, in an attempt to avoid the need for a waiver. Such a justification may cite, if applicable, the absence of any Buy America-compliant bids received in response to a solicitation.
- Anticipated impact if no waiver is issued.
- Any relevant comments received through the public comment period.

The purpose of the information is to ensure that the agency has adequate information to perform due diligence, that MIAO has sufficient information to determine whether the proposed waiver is consistent with law and policy, and that sufficient information is available for public review. Information provided for public review should help interested manufacturers gauge the demand for products for which agencies are considering waiving a Buy America preference.

To avoid a need for duplicative waiver requests from entities that receive funding for one infrastructure project through multiple Federal agencies, the Federal agency contributing the greatest amount of Federal funds for the project should be considered the “Cognizant Agency for Made in America” and should take responsibility for coordinating with the other Federal awarding agencies. Such coordination will provide uniform waiver criteria and adjudication processes, minimize duplicative efforts among Federal agencies, and reduce burdens on recipients. The Cognizant Agency for Made in America shall be responsible for consulting with the other Federal awarding agencies, publicizing the proposed joint waiver, and submitting the proposed joint waiver for review to MIAO.

*a. Exceptions for Unforeseen and Exigent Circumstances*

In limited situations where there is an urgent need in an unforeseen and exigent circumstance, agencies have the authority to waive the application of Buy America preferences without submitting the waiver for public comment and MIAO determination.<sup>27</sup> As an exception to the public transparency requirements of the Act, agencies should exercise that authority only when necessary. Further, to ensure MIAO can fulfill its role as a central and transparent source of Made in America waivers, an agency that issues a waiver without first seeking public comment and MIAO approval must, within 30 days of the waiver’s issuance, submit a report to MIAO explaining its reliance upon the “unforeseen and exigent circumstance” exception.<sup>28</sup> MIAO will provide further instructions to agencies on how to submit those reports. Although public posting and MIAO review may be waived in exigent circumstances, agencies remain responsible for performing due diligence appropriate to the circumstances, consistent with the principles and criteria in paragraphs VII(b) and (c) below.

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<sup>27</sup> IIIA, § 70937(b)(2).

<sup>28</sup> This reporting process was established pursuant to Executive Order 14,005, § 4(d) and OMB Guidance on Improving the Transparency of Made in America Waivers available at: <https://www.whitehouse.gov/wp-content/uploads/2021/10/Guidance-Memo-Improving-the-Transparency-of-Made-in-America-Waivers.pdf>.

b. *Waiver Principles and Criteria*

To ensure they are scrupulously monitoring, enforcing, and complying with applicable Buy America Laws and minimizing the use of waivers,<sup>29</sup> agencies must apply standard criteria to determine whether to grant a waiver in a given circumstance. Agencies with existing criteria must review it for consistency with this guidance and update it as appropriate. All other agencies must establish criteria.

Agencies may reject or grant waivers in whole or in part. To the greatest extent practicable, waivers should be issued at the project level and be product-specific. Overly broad waivers undermine market signals designed to boost domestic supply chains, particularly for key articles, materials and supplies in critical supply chains (i.e., critical supply chains identified in Executive Order 14017, *America's Supply Chains*). When necessary, agencies may consider issuing a waiver that has applicability beyond a single project; however, agencies should always issue, construe, and apply waivers to ensure the maximum utilization of goods, products, and materials produced in the United States, consistent with applicable law. Federal agencies may consult with MIAO when establishing or modifying criteria for granting waivers. They may also work within the Made in America Council, a practice that will help to foster consistency across agencies to the greatest extent practical and appropriate, given agency and program missions.

Federal agencies should use the following principles before issuing a waiver of any type:

- **Time-limited:** In certain limited circumstances, a Federal agency may determine that a waiver should be constrained principally by a length of time, rather than by the specific projects to which it applies. Waivers of this type may be appropriate, for example, when an item that is “nonavailable” is widely used in projects funded by a particular program’s awards. When issuing such a waiver, the agency should identify a short, definite time frame (e.g., no more than one to two years) designed to ensure that, as domestic supply becomes available, domestic producers will have prompt access to the market created by the program.
- **Targeted:** Waivers that are not limited to particular projects should apply only to the item(s), product(s), or material(s) or category(ies) of item(s), product(s), or material(s) necessary. Waivers that are overly broad will tend to undermine domestic preference policies. Broader waivers will receive greater scrutiny from MIAO.
- **Conditional:** Federal agencies are encouraged to issue waivers with specific conditions that support the policies of the Act and the Executive Order.

These principles and criteria should be viewed as minimum requirements for the use of waivers by Federal agencies.<sup>30</sup>

### Nonavailability Waivers

Before granting a nonavailability waiver, agencies should consider whether the recipient has performed thorough market research, which may be accomplished with assistance from the agency, and adequately considered, where appropriate, qualifying alternate items, products, or

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<sup>29</sup> IJA § 70933(2).

<sup>30</sup> See Section IV. of this guidance for agencies that have existing regulations or guidance.



materials. Waivers should describe the market research activities and methods to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources. Agencies are encouraged to engage with the Made in America Council to develop resource lists for common items, goods, or materials.

### Unreasonable Cost Waivers

An unreasonable cost waiver is available if the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent. Before granting an unreasonable-cost waiver, to the extent permitted by law, agencies should ensure the recipient has provided adequate documentation that no domestic alternatives are available within this cost parameter. Agencies may assist recipients in gathering documentation.

For requests citing unreasonable cost as the statutory basis of the waiver, the waiver justification must include, as applicable, a comparison of the cost of the domestic product to the cost of the foreign product or a comparison of the overall cost of the project with domestic products to the overall cost of the project with foreign-origin products, pursuant to the requirements of the applicable Made in America law.<sup>31</sup> Publicly available cost comparison data may be provided in lieu of proprietary pricing information.<sup>32</sup> Unreasonable-cost waivers should be no broader than necessary.

### Public Interest Waivers

A waiver in the public interest may be appropriate where an agency determines that other important policy goals cannot be achieved consistent with the Buy America requirements established by the Act and the proposed waiver would not meet the requirements for a nonavailability or unreasonable cost waiver. Such waivers shall be used judiciously and construed to ensure the maximum utilization of goods, products, and materials produced in the United States.<sup>33</sup> To the extent permitted by law, determination of public interest waivers shall be made by the head of the agency with the authority over the Federal financial assistance award.<sup>34</sup>

Public interest waivers may have a variety of bases. As with other waivers, they should be project-specific whenever possible, as what is in the public interest may vary depending upon the circumstances of the project, recipient, and specific items, products, or materials in question.

Federal agencies may wish to consider issuing a limited number of general applicability public interest waivers in the interest of efficiency and to ease burdens for recipients. The agency remains responsible for determining whether such a waiver is appropriate to apply to any

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<sup>31</sup> IIJA, § 70937(c)(2)(B).

<sup>32</sup> IIJA, § 70937(c)(2)(B).

<sup>33</sup> IIJA, § 70935(a).

<sup>34</sup> IIJA, § 70935(b).

given project; the Made in America Office will not review each application of such a waiver. The following are examples of types of public interest waivers an agency may consider issuing.<sup>35</sup>

- **De Minimis:** Ease of administration is important to reduce burden for recipients and agencies. Federal agencies may consider whether a general applicability public interest waiver should apply to infrastructure project purchases below a de minimis threshold. An agency may consider whether a public interest waiver should apply when necessary to ensure that recipients and Federal agencies make efficient use of limited resources, especially if the cost of processing the individualized waiver(s) would risk exceeding the value of the items waived. Agencies may consider adopting an agency-wide public interest waiver that sets a de minimis threshold, for example, of 5 percent of project costs up to a maximum of \$1,000,000.
- **Small Grants:** Agencies may wish to consider whether it is in the public interest to waive application of a Buy America preference to awards below the Simplified Acquisition Threshold. This type of waiver may be particularly relevant in the initial years after enactment of IJA, and may be phased out over time as agencies develop efficient waiver review capabilities.
- **Minor Components:** Agencies may wish to consider whether it is in the public interest to allow minor deviations for miscellaneous minor components within iron and steel products. A minor components waiver in the public interest may allow non-domestically produced miscellaneous minor components comprising no more than 5 percent of the total material cost of an otherwise domestically produced iron and steel product to be used. It would not be in the public interest to use a minor components waiver to exempt a whole product from the iron and steel requirements, or to allow the primary iron or steel components of the product to be produced other than domestically.
- **Adjustment Period:** Agencies should consider whether brief, time limited waivers to allow recipients and agencies to transition to new rules and processes may be in the public interest.
- **International Trade Obligations:** If a recipient is a State that has assumed procurement obligations pursuant to the Government Procurement Agreement or any other trade agreement, a waiver of a Made in America condition to ensure compliance with such obligations may be in the public interest.
- **Other Considerations:** A waiver may be in the public interest in one circumstance, but not in another, and considerations will depend upon the nature and amount of resources available to the recipient, the value of the items, goods, or materials in question, the potential domestic job impacts, and other policy considerations, including sustainability, equity, accessibility, performance standards, and the domestic content (if any) of and conditions under which the non-qualifying good was produced.

All proposed waivers citing the public interest as the statutory basis must include a detailed written statement, which shall address all appropriate factors, such as potential

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<sup>35</sup> The list is not exhaustive and no agency is required to issue the types of waivers noted as examples. As with other general applicability waivers, generally applicable public interest waivers must be reviewed at least every five years and more often as appropriate.

obligations under international agreements, justifying why the requested waiver is in the public interest.<sup>36</sup>

Before granting a waiver in the public interest, to the extent permitted by law, agencies shall assess whether a significant portion of any cost advantage of a foreign-sourced product is the result of the use of dumped steel, iron, or manufactured products or the use of injuriously subsidized steel, iron, or manufactured products.<sup>37</sup> Agencies may consult with the International Trade Administration (ITA) in making this assessment if the granting agency deems such consultation to be helpful. The agency shall integrate any findings from the assessment into its waiver determination as appropriate.<sup>38</sup> MIAO will work with ITA and agencies to develop standard processes to expedite this required assessment, such as by ensuring agencies know how to easily access lists of dumped or injuriously subsidized products.

*c. General Applicability Waivers*

The term “general applicability waiver” refers to a waiver that applies generally across multiple awards. A general applicability waiver can be “product-specific” (e.g., applies only to a product or category of products) or “non-product specific” (e.g., applies to all “manufactured products”).

General applicability waivers should be issued only when necessary to advance an agency’s missions and goals, consistent with IJJA, the Executive Order, and this guidance. For example, an agency might issue a general waiver for a product for which there are well-established domestic sourcing challenges. General applicability waivers will require appropriate justification from the Federal agency.

Federal agencies with one or more existing general applicability waivers, including public interest waivers, must review such waivers within five years of the date on which the waiver was issued. Agencies issuing new general applicability waivers must review such waivers at least every five years from the date of issuance. Agencies are encouraged to review general applicability waivers more frequently, when appropriate. In conducting a review of any general applicability waiver, the head of a Federal agency shall—

- (A) publish in the *Federal Register* a notice that—
  - (i) describes the justification for a general applicability waiver; and
  - (ii) requests public comments for a period of not less than 30 days on the continued need for a general applicability waiver; and
  
- (B) publish in the *Federal Register* a determination on whether to continue or discontinue the general applicability waiver, considering the comments received in response to the notice published under paragraph (A).<sup>39</sup>

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<sup>36</sup> IJJA, § 70937(c)(2)(C).

<sup>37</sup> Executive Order, § 5.

<sup>38</sup> Executive Order, § 5.

<sup>39</sup> IJJA, § 70914(d)(1) & (2).

For a period of five years beginning on the date of enactment of the Act, paragraphs (A) and (B) above shall not apply to any product-specific general applicability waiver that was issued more than 180 days before November 15, 2021.<sup>40</sup>

By no later than November 15, 2022, agencies with existing, non-product specific general applicability waivers that were issued more than five years before November 15, 2021 should promptly commence review of each such waiver by publishing a *Federal Register* notice as required in section 70914(d)(2)(A) of the IIJA. Should the review justify retaining the waiver, agencies should consider narrowing the waiver in a manner that would support supply chain resilience and boost incentives to manufacture key products domestically, as appropriate.

To ensure prompt commencement of projects funded by IIJA, MIAO plans to work with agencies to expedite consideration of general applicability waivers for products or categories of products for which domestic sourcing challenges have been well documented. Agencies should align such waivers with complementary policies, such as work to boost supply chain resiliency and domestic employment. General applicability waivers should include appropriate expiration dates designed to ensure that, once available, Buy America qualifying products receive appropriate consideration.

### **VIII. Preliminary Guidance for Construction Materials**

For construction materials, the Act requires that, not later than 180 days after November 15, 2021, OMB must issue standards that define the term “all manufacturing processes” in the case of construction materials. These standards must require that each manufacturing process required for the manufacture of the construction material and the inputs of the construction material occurs in the United States. They must also reflect efforts to maximize the direct and indirect jobs benefited or created in the production of the construction material.<sup>41</sup>

Although the deadline to issue such guidance has not yet passed, OMB is providing preliminary and non-binding guidance to assist agencies in determining which materials are construction materials so that agencies can begin applying Buy America requirements to those materials. This preliminary guidance addresses the requirements as set forth in section 70915(b) of the IIJA while providing sufficient time for OMB to receive additional stakeholder input.

The IIJA finds that “construction materials” includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives<sup>42</sup>—that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- glass (including optic glass);

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<sup>40</sup> IIJA, § 70914(d)(3).

<sup>41</sup> IIJA, § 70915(b).

<sup>42</sup> IIJA, § 70917(c)(1).

- lumber; or
- drywall.<sup>43</sup>

To provide clarity to item, product, and material manufacturers and processors, we note that items that consist of two or more of the listed materials that have been combined together through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process, should be treated as manufactured products, rather than as construction materials. For example, a plastic framed sliding window should be treated as a manufactured product while plate glass should be treated as a construction material.

Pending OMB's issuance of final standards on construction materials, and absent any existing applicable standard in law or regulation that meets or exceeds these preliminary standards, agencies should consider "all manufacturing processes" for construction materials to include at least the final manufacturing process and the immediately preceding manufacturing stage for the construction material. OMB is seeking additional stakeholder input before issuing further guidance identifying initial manufacturing processes for construction materials that should be considered as part of "all manufacturing processes."

Agencies should consult with MIAO, as needed, to ensure that any waiver issued for construction materials is explicitly targeted and time-limited, in order to send a clear market signal that additional standards for "all manufacturing processes" in the case of construction materials will be forthcoming.

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<sup>43</sup> See IJA, § 70911(5).

## **Appendix I: Example of Award Term - Required Use of American Iron, Steel, Manufactured Products, and Construction Materials**

Where applicable, the Federal agency must include appropriate terms and conditions in all awards, in accordance with applicable legal requirements and its established procedures, in order to effectuate the requirements of the Act and this guidance. The following is sample language.

To achieve the greatest possible consistency across agencies and programs, agencies should send their proposed terms and conditions to MIAO for review prior to incorporating them into applicable awards. Agencies should begin including appropriate language in NOFOs published *before* May 14, 2022 to provide applicants fair notice of the Buy America conditions that will apply to funds obligated on or after that date.

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Recipients of an award of Federal financial assistance from a program for infrastructure are hereby notified that none of the funds provided under this award may be used for a project for infrastructure unless:

- (1) all iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;
- (2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and
- (3) all construction materials<sup>44</sup> are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project, but are not an integral part of the structure or permanently affixed to the infrastructure project.

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<sup>44</sup> Excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

### *Waivers*

When necessary, recipients may apply for, and the agency may grant, a waiver from these requirements. The agency should notify the recipient for information on the process for requesting a waiver from these requirements.

- (a) When the Federal agency has made a determination that one of the following exceptions applies, the awarding official may waive the application of the domestic content procurement preference in any case in which the agency determines that:
  - (1) applying the domestic content procurement preference would be inconsistent with the public interest;
  - (2) the types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality; or
  - (3) the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent.

A request to waive the application of the domestic content procurement preference must be in writing. The agency will provide instructions on the format, contents, and supporting materials required for any waiver request. Waiver requests are subject to public comment periods of no less than 15 days and must be reviewed by the Made in America Office.

There may be instances where an award qualifies, in whole or in part, for an existing waiver described at [link to awarding agency web site with information on currently applicable general applicability waivers].

### *Definitions*<sup>45</sup>

“Construction materials” includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives<sup>46</sup>—that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- glass (including optic glass);
- lumber; or
- drywall.

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<sup>45</sup> Federal agencies may choose to provide definitions on a public-facing website and reference that website in the terms and conditions, rather than including all definitions in the terms and conditions itself. If an agency chooses to do provide definitions on a public-facing website, it is not considered a deviation from the terms and conditions provided and does not need to be reviewed by OMB.

<sup>46</sup> IIIA, § 70917(c)(1).



“Domestic content procurement preference” means all iron and steel used in the project are produced in the United States; the manufactured products used in the project are produced in the United States; or the construction materials used in the project are produced in the United States.

“Infrastructure” includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property. Infrastructure includes facilities that generate, transport, and distribute energy.

“Project” means the construction, alteration, maintenance, or repair of infrastructure in the United States.

**EXHIBIT F**  
**NATIONAL FISH AND WILDLIFE FOUNDATION GRANT AGREEMENT**



## **SECTION 1 NFWF AGREEMENT ADMINISTRATION**

### **1.1. Amendments.**

During the life of the Project, the NFWF Subrecipient is required to immediately inform in writing the NFWF Grants Administrator of any changes in contact information, Key Personnel, scope of work, indirect cost rate, as well as any difficulties in completing the performance goals articulated in the Project description. NFWF Subrecipients must request an amendment from NFWF upon determination of a deviation from the original Grant Agreement as soon as such deviation is detected. NFWF reserves the right to approve, deny and/or negotiate any such request. Alternatively, NFWF may initiate an amendment if NFWF determines an amendment is necessary at any time. Amendment requests are to be submitted via NFWF's grants management system.

#### **1.1.1. Budget Amendment Request.**

If the NFWF Subrecipient determines that: 1) the amount of the budget is going to change in any one direct cost category by an amount that exceeds 10% of the Award, or 2) there is a need to increase indirect costs, the NFWF Subrecipient must seek prior written approval via an amendment request in NFWF's grants management system.

#### **1.1.2. Extension of Performance Period.**

If additional time is needed to complete the approved Project, the NFWF Subrecipient should contact the NFWF Grants Administrator at least 45 calendar days prior to the project period expiration date to initiate the no-cost extension request process in NFWF's grants management system. In addition, if there are overdue reports required, the NFWF Subrecipient must ensure that they are submitted along with or prior to submitting the no-cost extension request.

### **1.2. Matching Contributions.**

Matching Contributions consist of cash, contributed goods and services, volunteer hours, and/or property raised and spent for the Project. Matching Contributions for the purposes of this Project must meet the following criteria: (1) Are verifiable from the NFWF Subrecipient's records; (2) Are not included as contributions for any other federal award; (3) Are necessary and reasonable for the accomplishment of project or program objectives; (4) Are allowable under OMB Cost Principles; (5) Are not paid by the U.S. Government under another federal award except where the federal statute authorizing a program specifically provides that federal funds made available for such program can be applied to matching or cost sharing requirements of other federal programs when authorized by federal statute; (6) Are provided for in the approved budget when required by the federal awarding agency; (7) Are committed directly to the project and must be used within the period of performance as identified in this Agreement; (8) Otherwise conform to the law; and, (9) Are in compliance with the requirements of Section 3.3 of this Agreement concerning Compliance with Laws.

### **1.2.1. Documentation and Reporting of Matching Contributions.**

The NFWF Subrecipient must retain supporting documentation, including detailed time records for contributed services, original receipts, appraisals of real property, and comparable rentals for other contributed property, at its place of business in the event of an audit of the NFWF Subrecipient as required by applicable federal regulations. The NFWF Subrecipient must report match progress in Payment Requests and Financial Reports.

### **1.2.2. Assessing Fair Market Value.**

Fair market value of donated goods, services and property, including volunteer hours, shall be computed as outlined in §200.306 of 2 CFR Subtitle A, Chapter II, Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, (hereinafter “OMB Uniform Guidance”), regardless of whether this Agreement is federally funded.

## **1.3. Payment of Funds.**

To be eligible to receive funds, NFWF Subrecipient must submit to NFWF (1) an original executed copy of this Agreement for the Project; (2) any due financial and programmatic reports; and (3) a complete and accurate Payment Request via NFWF’s grants management system. At any time, NFWF reserves the right to require submission of source documentation, including but not limited to timesheets, cash receipts, contracts or subaward agreements, for any costs where the NFWF Subrecipient is seeking reimbursement by NFWF. NFWF reserves the right to retain up to ten percent (10%) of funds until submission and acceptance of final reports.

### **1.3.1. Reimbursements.**

NFWF Subrecipient may request funds on a reimbursable basis. Reimbursement requests must include expenditures to date and an explanation of any variance from the approved budget.

### **1.3.2. Advances.**

NFWF Subrecipient may request advance payment of funds prior to expenditure provided that the NFWF Subrecipient: (1) demonstrates an immediate need for advance payment; (2) documents expenditure of advanced funds; 3) maintains written procedures that minimize the time elapsing between the transfer of funds and disbursement; and (4) has established appropriate financial management systems that meet the needs and standards for fund control and accountability. Approval of any advance payment of funds is made at the sole discretion of NFWF, based on an assessment of the NFWF Subrecipient’s needs.

### **1.3.3. Interest.**

Any interest earned in any one year on funds advanced to the NFWF Subrecipient that exceeds \$500 must be reported to NFWF, and the disposition of those funds negotiated with NFWF. Interest amounts up to \$500 per year may be retained by the NFWF Subrecipient for administrative expense.

## **1.4. Reports.**

### **1.4.1. Interim Programmatic Reports.**

The NFWF Subrecipient will submit interim programmatic reports to NFWF based on the reporting schedule in Line 21 of the Cover Sheet to this Agreement, as may be amended at NFWF's sole discretion. The interim programmatic report shall consist of written statements of Project accomplishments and updated metric values since Project initiation, or since the last reporting period, and shall be submitted via NFWF's grants management system. NFWF may require specific formatting and/or additional information as appropriate.

### **1.4.2. Interim Financial Reports.**

The NFWF Subrecipient will submit interim financial reports to NFWF based on the reporting schedule in Line 21 of the Cover Sheet to this Agreement, as may be amended at NFWF's sole discretion. The interim financial report shall consist of financial information detailing cumulative expenditures made under this Project since Project initiation and shall be uploaded via NFWF's grants management system. NFWF may require specific formatting and/or additional information as appropriate.

### **1.4.3. Annual Financial Report.**

The NFWF Subrecipient will submit annual financial reports to NFWF based on the reporting schedule in Line 21 of the Cover Sheet to this Agreement, as may be amended at NFWF's sole discretion. The NFWF Subrecipient must enter a justification when there is a difference between the amount disbursed by NFWF and the amount expended by the grantee. Failure to submit an annual financial report in a timely manner will delay payment of submitted payment requests.

### **1.4.4. Final Reports.**

Based on the reporting schedule in Line 21 of the Cover Sheet to this Agreement, the NFWF Subrecipient will submit (1) a Final Financial Report accounting for all Project funds received, Project expenditures, and budget variances (if any) compared to the approved budget; (2) a Final Programmatic Report summarizing and documenting the accomplishments and metric values achieved during the Period of Performance; (3) copies of any publications, press releases and other appropriate products resulting from the Project; and (4) photographs as described in Section 1.4.3.1 below. The final reports and digital photo files should be uploaded via NFWF's grants management system. Any requests for extensions of final report submission dates must be made in writing to the NFWF Grants Administrator and approved by NFWF in advance. NFWF may require specific formatting and/or additional information as appropriate.

#### **1.4.4.1. Photographs.**

NFWF requests, as appropriate for the Project, a representative number of high-resolution (minimum 300 dpi) photographs depicting the Project (before-and-after images, images of species impacted, and/or images of staff/volunteers working on the Project). Photographs should be uploaded with the Final Programmatic Report via NFWF's grants management system as individual .jpg files. The Final Programmatic Report narrative should list each photograph, the date the photograph was taken, the location of the photographed image, caption, photo

credit, and any other pertinent information (e.g., species, activity conducted) describing what the photograph is depicting. By uploading photographs to NFWF's grants management system the NFWF Subrecipient certifies that the photographs are unencumbered and that NFWF and Project Funders have a fully paid up non-exclusive, royalty-free, irrevocable, perpetual, worldwide license for posting of Final Reports and for any other purposes that NFWF or the Project Funder determines appropriate.

#### **1.4.5. Significant Developments.**

The NFWF Subrecipient shall report on events that may occur between the scheduled performance reporting dates that have a significant impact on the Project. Such reporting shall be made as soon as the following conditions become known:

**1.4.5.1.** Problems, delays, or adverse conditions which will materially impair the ability to meet the Project objective, including but not limited to the objective itself, its schedule and/or the budget. This disclosure must include a statement of the action taken, or contemplated, and any assistance needed to resolve the matter; and/or,

**1.4.5.2.** Favorable developments which enable meeting time schedules and objectives sooner or at less cost than anticipated or produce more or different beneficial results than originally planned.

#### **1.5. Reports and Payment Requests.**

All reports, financial, programmatic, or otherwise, or payment requests under a federal award must be submitted by a representative of the NFWF Subrecipient who has the NFWF Subrecipient's full authority to render such reports and requests for payment and to provide required certifications as set forth in 2 CFR 200.415, as applicable.

#### **1.6. Record Retention and Access.**

##### **1.6.1. Retention Requirements for Records.**

NFWF Subrecipient shall maintain all records connected with this Agreement for a period of at least three (3) years following the latest end date of the funding source(s) referenced above in line 19. FUNDING SOURCE INFORMATION/FEDERAL AND NON-FEDERAL or the close-out of all pending matters or audits related to this Agreement, whichever is later. As funding source end dates may be extended over time, the NFWF Subrecipient will be notified of the most up-to-date record retention requirements upon closure of this Award. If any litigation, claim, or audit is started (irrespective of the NFWF Subrecipient's involvement in such matter) before the expiration of the 3-year period, the records shall be retained until all litigation, claims or audit findings or pending matters involving the records have been resolved and final action taken. NFWF shall notify NFWF Subrecipient if any such litigation, claim or audit takes place or if funding source end date(s) is extended so as to extend the retention period. Records for real property and equipment acquired with federal funds must be retained for at least three (3) years following disposition of such real property. For awards solely funded with funding sources with "N/A" listed as the end date, NFWF Subrecipient shall maintain all records connected with this Agreement

for a period of at least three (3) years following the date of final payment or the Period of Performance end date, whichever is later.

**1.6.2. Access to Records.**

NFWF or any of its authorized representatives shall have access to such records and financial statements upon request, as shall Inspectors General, the Comptroller General of the United States or any of their authorized representatives if the Funding Source or any funding entity (*i.e.*, a secondary funding source) is a federal agency and/or any portion of the Project provided herein is paid with federal funds. The rights of access in this section are not limited to the required retention period but last as long as the records are retained.



## **SECTION 2 NFWF AGREEMENT CLAUSES**

### **2.1. Restrictions on Use of Funds.**

The NFWF Subrecipient agrees that any funds provided by NFWF and all Matching Contributions will be expended only for the purposes and programs described in this Agreement. No funds provided by NFWF pursuant to this Agreement or Matching Contributions may be used to support litigation expenses, lobbying activities, or any other activities not authorized under this Agreement or otherwise unallowable under the Federal Cost Principles set forth in the OMB Uniform Guidance.

### **2.2. Assignment.**

The NFWF Subrecipient may not assign this Agreement, in whole or in part, to any other individual or other legal entity without the prior written approval of NFWF.

### **2.3. Subawards and Contracts.**

When making subawards or contracting, NFWF Subrecipient shall:(1) abide by all applicable granting and contracting procedures, including but not limited to those requirements of the OMB Uniform Guidance (2 C.F.R. Part 200); (2) ensure that all applicable federal, state and local requirements are properly flowed down to the subawardee or contractor, including but not limited to the applicable provisions of the OMB Uniform Guidance (2 C.F.R. Part 200); and (3) ensure that such subaward or contracting complies with the requirements in Section 3.3 of this Agreement concerning Compliance with Laws. NFWF Subrecipient shall also include in any subaward or contract a similar provision to this, requiring the use of proper grant and contracting procedures and subsequent flow down of federal, state, and local requirements to lower-tiered subawardees and contractors.

### **2.4. Unexpended Funds.**

Any funds provided by NFWF and held by the NFWF Subrecipient and not expended at the end of the Period of Performance will be returned to NFWF within ninety (90) days after the end of the Period of Performance.

### **2.5. Publicity, Acknowledgment of Support, and Disclaimers.**

#### **2.5.1. Publicity.**

The NFWF Subrecipient gives NFWF the right and authority to publicize NFWF's financial support for this Agreement and the Project in press releases, publications, and other public communications.

#### **2.5.2. Acknowledgment of Support.**

The NFWF Subrecipient agrees to: (1) give appropriate credit to NFWF and any Funding Sources identified in this Agreement for their financial support in any and all press releases, publications, annual reports, signage, video credits, dedications, and other public communications regarding this Agreement or any of the project deliverables associated with this Agreement, subject to any terms and conditions as may be stated in Section 5 and Section 6 of this Agreement; and (2) include the disclaimer provided at Section 2.5.4.



### **2.5.3. Logo Use.**

The NFWF Subrecipient must obtain prior NFWF approval for the use relating to this Award of the NFWF logo or the logo or marks of any Funding Source.

### **2.5.4. Disclaimers.**

Payments made to the NFWF Subrecipient under this Agreement do not by direct reference or by implication convey NFWF's endorsement nor the endorsement by any other entity that provides funds to the NFWF Subrecipient through this Agreement, including the U.S. Government, as applicable, for the Project. All information submitted for publication or other public releases of information regarding this Agreement shall carry the following disclaimer, which NFWF may revise at any time at its sole discretion:

**For Projects funded in whole or part with federal funds:** "The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the U.S. Government or the National Fish and Wildlife Foundation and its funding sources. Mention of trade names or commercial products does not constitute their endorsement by the U.S. Government, or the National Fish and Wildlife Foundation or its funding sources."

**For Projects not funded with federal funds:** "The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions of the National Fish and Wildlife Foundation or its funding sources. Mention of trade names or commercial products does not constitute their endorsement by the National Fish and Wildlife Foundation or its funding sources."

## **2.6. Posting of Final Reports.**

The NFWF Subrecipient hereby acknowledges and consents for NFWF and any Funding Source identified in this Agreement to post its final programmatic reports and deliverables on their respective websites. In the event that the NFWF Subrecipient intends to claim that its final report contains material that does not have to be posted on such websites because it is protected from disclosure by statutory or regulatory provisions, the NFWF Subrecipient shall so notify NFWF and any Funding Source identified in this Agreement and clearly mark all such potentially protected materials as "PROTECTED," providing an accurate and complete citation to the statutory or regulatory source for such protection.

## **2.7. Website Links.**

The NFWF Subrecipient agrees to permit NFWF to post a link on any or all NFWF websites to any websites created by the NFWF Subrecipient in connection with the Project.

## **2.8. Evaluation.**

Throughout a program or business plan, NFWF engages in monitoring and evaluation to assess progress toward conservation goals and inform future decision-making. These efforts use both data collected by grantees as part of their NFWF grant as well as post-award project data collected by third-party entities commissioned to conduct a program evaluation. The NFWF Subrecipient agrees to cooperate with NFWF by providing timely responses to all reasonable requests for information to assist in evaluating the accomplishments of the Project period of five (5) years after the project end date.

## **2.9. Intellectual Property.**

Reports, materials, books, databases, monitoring data, maps and spatial data, audio/video, and other forms of intellectual property created using this grant may be copyrighted or otherwise legally protected by the NFWF Subrecipient or by the author. The NFWF Subrecipient agrees to provide to NFWF and any Funding Source identified in this Agreement a non-exclusive, royalty-free, irrevocable, perpetual, worldwide license to use, publish, copy and alter the NFWF Subrecipient's intellectual property created using this award for non-commercial purposes in any media – whether now known or later devised – including posting such intellectual property on NFWF's or Funding Source websites and featuring in publications. NFWF retains the right to use project metrics and spatial data submitted by the NFWF Subrecipient to estimate societal benefits that result and to report these results to funding partners on a case-by-case basis as determined by NFWF. These may include but are not limited to: habitat and species response, species connectivity, water quality, water quantity, risk of detrimental events (e.g., wildfire, floods), carbon accounting (e.g., sequestration, avoided emissions), environmental justice, and diversity, equity, and inclusion.

## **2.10. System for Award Management (SAM) Registration.**

The NFWF Subrecipient must maintain an active SAM registration at [www.SAM.gov](http://www.SAM.gov) until the final financial report is submitted or final payment is received, whichever is later. If the NFWF Subrecipient's SAM registration expires during the required period, NFWF will suspend payment to the NFWF Subrecipient until the SAM registration is updated.

## **2.11. Arbitration.**

All claims, disputes, and other matters in question arising out of, or relating to this Agreement, its interpretation or breach, shall be decided through arbitration by a person or persons mutually acceptable to both NFWF and the NFWF Subrecipient. Notice of the demand for arbitration shall be made within a reasonable time, not to exceed three years, after the claim, dispute, or other matter in question has arisen. The award rendered by the arbitrator or arbitrators shall be final. The terms of this provision will survive termination of this Agreement.

## **2.12. Indemnity.**

The NFWF Subrecipient shall indemnify and hold harmless NFWF, any Funding Source identified in this Grant Agreement, their respective officers, directors, agents, and employees in respect of any and all claims, injuries, losses, diminution in value, damages, liabilities, whether or not currently due, and expenses including without limitation, settlement costs and any legal or other expenses for investigating or defending any actions or threatened actions or liabilities arising from or in connection with the Project. The terms of this provision will survive termination of this Agreement.

## **2.13. Insurance.**

The NFWF Subrecipient agrees to obtain and maintain all appropriate and/or required insurance coverages against liability for injury to persons or property from any and all activities undertaken by the NFWF Subrecipient and associated with this Agreement in any way. NFWF reserves the right to require additional insurance limits and policies based on specific activities under this Agreement, that NFWF be named insured on all applicable insurance policies, and that the NFWF Subrecipient provide a certificate of insurance and/or copies of applicable insurance policies as requested by NFWF. The terms of this provision will survive termination of this Agreement.

## **2.14. Choice of Law/Jurisdiction.**

This Agreement shall be subject to and interpreted by the laws of the District of Columbia, without regard to choice of law principles. By entering into this Agreement, the NFWF Subrecipient agrees to submit to the exclusive jurisdiction of the courts of the District of Columbia. The terms of this provision will survive termination of this Agreement.

## **2.15. Stop Work.**

NFWF may, at any time, by written order to the NFWF Subrecipient, require the NFWF Subrecipient to stop all, or any part, of the work called for by this Agreement for a period of 90 days after the order is delivered to the NFWF Subrecipient. The order shall be specifically identified as a stop-work order issued under this section. Upon receipt of the order, the NFWF Subrecipient shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to this Agreement covered by the order during the period of work stoppage. Within a period of 90 calendar days after a stop-work order is delivered to the NFWF Subrecipient, or within any extension of that period to which the parties shall have agreed, NFWF shall either cancel the stop-work order or terminate the Agreement under section 2.16.

## **2.16. Termination.**

**2.16.1.** Upon the occurrence of any of the following enumerated circumstances, NFWF may terminate this Agreement, or any portion thereunder, upon receipt by the NFWF Subrecipient of NFWF's written notice of termination, or as otherwise specified in the notice of termination:

**2.16.1.1.** the NFWF Subrecipient is adjudged or becomes bankrupt or insolvent, is unable to pay its debts as they become due, or makes an assignment for the benefit of its creditors; or,

**2.16.1.2.** the NFWF Subrecipient voluntarily or involuntarily undertakes to dissolve or wind up its affairs; or,

**2.16.1.3.** suspension or debarment by the Government of the NFWF Subrecipient; or,

**2.16.1.4.** any breach of the requirements set forth in Section 3.3 of this Agreement concerning Compliance with Laws; or,

**2.16.1.5.** NFWF learns that NFWF Subrecipient has an organizational conflict of interest, or any other conflict of interest, as determined in the sole discretion of NFWF, that NFWF believes, in its sole discretion, cannot be mitigated; or,

**2.16.1.6.** after written notice and a reasonable opportunity, the NFWF Subrecipient is unable to cure a perceived non-compliance with any material term (other than those enumerated at 2.16.1.1 – 2.16.1.5) of this Agreement. The cure period shall be considered the timeframe specified by the Funding Source(s), if any, minus one (1) to five (5) days or as agreed upon by the Parties in writing, or if no time is specified by the Funding Source(s), ten (10) days or as otherwise agreed upon by the Parties. Within this time period the NFWF Subrecipient shall, as

determined by NFWF, (a) satisfactorily demonstrate its compliance with the term(s) originally believed to be in non-compliance; or (b) NFWF, at its sole discretion, may determine that NFWF Subrecipient has satisfactorily demonstrated that reasonable progress has been made so as not to endanger performance under this Agreement; or,

**2.16.1.7.** if the Funding Source issues an early termination under the funding agreement(s) covering all or part of the Project at issue hereunder.

**2.16.2.** Either Party may terminate this Agreement by written notice to the other Party for any reason by providing thirty (30) days' prior written notice to the other Party.

**2.16.3.** In the event of termination of this Agreement prior to Project completion, the NFWF Subrecipient shall immediately (unless otherwise directed by NFWF in its notice if NFWF initiated the termination) undertake all reasonable steps to wind down the Project cooperatively with NFWF, including but not limited to the following:

**2.16.3.1.** Stop any portion of the Project's work that is incomplete (unless work to be completed and a different date for termination of work are specified in NFWF's notice).

**2.16.3.2.** Place no further work orders or enter into any further subawards or contracts for materials, services, or facilities, except as necessary to complete work as specified in NFWF's notice.

**2.16.3.3.** Terminate all pending Project work orders, subawards, and contracts for work that has not yet commenced.

**2.16.3.4.** With the prior written consent of NFWF, promptly take all other reasonable and feasible steps to minimize and/or mitigate any damages that may be caused by the failure to complete the Project, including but not limited to reasonable settlements of any outstanding claims arising out of termination of Project work orders, subawards, and contracts. NFWF will reimburse the NFWF Subrecipient for non-cancelable allowable costs incurred by the NFWF Subrecipient prior to termination that cannot be mitigated. However, the foregoing is subject to the complete reimbursement of such costs by the Funding Source; accordingly, any amounts ultimately not paid, or which are recouped by the Funding Source, are subject to recoupment by NFWF.

**2.16.3.5.** Deliver or make available to NFWF all data, drawings, specifications, reports, estimates, summaries, and such other information and material as may have been accumulated by the NFWF Subrecipient under this Agreement, whether completed or in progress.

**2.16.3.6.** Return to NFWF any unobligated portion of the Award.

## **2.17. Entire Agreement.**

These terms and conditions, including the Attachments hereto, constitute the entire agreement between the Parties relating to the Project described herein and supersede all previous communications, representations, or agreements, either oral or written, with respect to the subject matter hereof. No representations or statements of any kind made by any representative of a Party, which are not stated herein, shall be binding on said Party.

## **2.18. Severability.**

Each provision of this Agreement is distinct and severable from the others. If one or more provisions is or becomes invalid, unlawful, or unenforceable in whole or in part, the validity, lawfulness and enforceability of the remaining provisions (and of the same provision to the extent enforceable) will not be impaired, and the Parties agree to substitute a provision as similar to the offending provision as possible without its being invalid, unlawful or unenforceable.

## **2.19. Interpretation and Construction.**

**2.19.1.** This Agreement shall be interpreted as a unified contractual document with the Sections and the Attachments having equal effect, except in the event of any inconsistency between them. In the event of a conflict between any portion of this Agreement and another portion of this Grant Agreement, first the Sections will apply in the following order of precedence: 5, 4, 3, 1, 2 and 6, and then any supplemental attachments.

**2.19.2.** The title designations of the provisions to this Agreement are for convenience only and shall not affect the interpretation or construction of this Agreement.

**2.19.3.** Every right or remedy conferred by this Agreement upon or reserved to the Parties shall be cumulative and shall be in addition to every right or remedy now or hereafter existing at law or in equity, and the pursuit of any right or remedy shall not be construed a selection.

**2.19.4.** The failure of NFWF to exercise any right or privilege granted hereunder or to insist upon the performance and/or compliance of any provision of this Agreement, a referenced contractual, statutory or regulatory term, or an Attachment hereto, shall not be construed as waiving any such right, privilege, or performance/compliance issue, and the same shall continue in full force and effect.

**2.19.5.** Notwithstanding any express statements regarding the continuation of an obligation beyond the expiration or termination of this Agreement, the rights and obligations of this Agreement, which by their nature extend beyond its expiration or termination, shall remain in full force and effect and shall bind the Parties and their legal representatives, successors, heirs, and assigns.



## **SECTION 3 REPRESENTATIONS, CERTIFICATIONS, OBLIGATIONS AND OTHER STATEMENTS – GENERAL**

### **3.1. Binding Obligation.**

By execution of this Agreement, NFWF Subrecipient represents and certifies that this Agreement has been duly executed by a representative of the NFWF Subrecipient with full authority to execute this Agreement and binds the NFWF Subrecipient to the terms hereof. After execution by the representative of the NFWF Subrecipient named on the signature page hereto, this Agreement represents the legal, valid, and binding obligation of the NFWF Subrecipient, enforceable against the NFWF Subrecipient in accordance with its terms.

### **3.2. Additional Support.**

In making this Award, NFWF assumes no obligation to provide further funding or support to the NFWF Subrecipient beyond the terms stated in this Agreement.

### **3.3. Compliance with Laws.**

#### **3.3.1. In General.**

By execution of this Agreement and through its continued performance hereunder, the NFWF Subrecipient represents, certifies and agrees that it is and shall continue to conduct all such activities in compliance with all applicable federal, state, and local laws, regulations, and ordinances and to secure all appropriate necessary public or private permits and consents. The terms of this provision will survive termination of this Agreement and must be flowed down to any and all contractors, subcontractors or subrecipients entered into by NFWF Subrecipient in the performance of this Agreement.

#### **3.3.2. Compliance with Anti-Corruption Laws.**

The NFWF Subrecipient represents, certifies and agrees to ensure that no payments have been or will be made or received by the NFWF Subrecipient in connection with this Agreement in violation of the U.S. Foreign Corrupt Practices Act of 1977, as amended (15 U.S.C. §dd-1 *et seq.*), or any other applicable anti-corruption laws or regulations (e.g., UK Bribery Act 2010) in the countries in which the NFWF Subrecipient performs under this Agreement.

#### **3.3.3. Compliance with Anti-Terrorism Laws.**

The NFWF Subrecipient represents, certifies and agrees not to provide material support or resources directly or indirectly to, or knowingly permit any funds provided by NFWF pursuant to this Agreement or Matching Contributions to be transferred to, any individual, corporation or other entity that the NFWF Subrecipient knows, or has reason to know, commits, attempts to commit, advocates, facilitates, or participates in any terrorist activity, or has committed, attempted to commit, advocated, facilitated or participated in any terrorist activity, including, but not limited to, the individuals and entities (1) on the master list of Specially Designated Nationals and Blocked Persons maintained by the U.S. Department of Treasury's Office of Foreign Assets Control, which list is available at [www.treas.gov/offices/enforcement/ofac](http://www.treas.gov/offices/enforcement/ofac); (2) on the consolidated list of individuals and entities maintained by the "1267 Committee" of the United Nations Security Council at [http://www.un.org/sc/committees/1267/aq\\_sanctions\\_list.shtml](http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml); (3) on the consolidated

list maintained by the U.S. Department of Commerce at [http://export.gov/ecr/eg\\_main\\_023148.asp](http://export.gov/ecr/eg_main_023148.asp), or (4) on such other list as NFWF may identify from time to time.

#### **3.3.4. Compliance with Additional Laws and Restrictions.**

The NFWF Subrecipient represents, certifies and agrees to ensure that its activities under this Agreement comply with all applicable U.S. laws, regulations and executive orders regarding money laundering, terrorist financing, U.S. sanctions laws, U.S. export controls, restrictive trade practices, boycotts, and all other economic sanctions or trade restrictions promulgated from time to time by means of statute, executive order, regulation or as administered by the U.S. Department of State, the Office of Foreign Assets Control, U.S. Department of the Treasury, or the Bureau of Industry and Security, U.S. Department of Commerce.

#### **3.4. Subrecipient Debarment and Suspensions.**

By and through NFWF Subrecipient's execution of this Agreement, NFWF Subrecipient warrants and represents its initial and continued compliance that it is not listed on the General Services Administration's, government-wide System for Award Management Exclusions (SAM Exclusions), in accordance with the OMB guidelines at 2 C.F.R Part 180 that implement E.O.s 12549 (3 C.F.R., 1986 Comp., p. 189) and 12689 (3 C.F.R., 1989 Comp., p. 235), "Debarment and Suspension." The NFWF Subrecipient further provides that it shall not enter into any subaward, contract or other agreement using funds provided by NFWF with any party listed on the SAM Exclusions in accordance with Executive Orders 12549 and 12689. The SAM Exclusions can be found at <https://www.sam.gov/portal/public/SAM/>.

#### **3.5. Conflicts of Interest.**

By execution of this Agreement, NFWF Subrecipient acknowledges that it is prohibited from using any Project funds received under this Agreement in a manner which may give rise to an apparent or actual conflict of interest, including organizational conflicts of interest, on the part of the NFWF Subrecipient. Such a conflict of interest would arise when the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization which employs or is about to employ any of the parties indicated herein, has a financial or other interest in or a tangible personal benefit from a firm considered for a contract. The officers, employees, and agents of NFWF Subrecipient may neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or parties to subcontracts. An organizational conflict of interest is defined as a relationship that because of relationships with a parent company, affiliate, or subsidiary organization, the non-federal entity is unable or appears to be unable to be impartial in conducting a procurement action involving a related organization. The NFWF Subrecipient represents and certifies that it has adopted a conflict of interest policy that, at a minimum, complies with the requirements of the OMB Uniform Guidance, and will comply with such policy in the use of any Project funds received under this Agreement. NFWF Subrecipient may set standards for situations in which the financial interest is not substantial or the gift is an unsolicited item of nominal value. The standards of conduct must provide for disciplinary actions to be applied for violations of such standards by officers, employees, or agents of NFWF Subrecipient. If NFWF Subrecipient becomes aware of any actual or potential conflict of interest or organizational conflict of interest, during the course of performance of this Agreement, NFWF Subrecipient will immediately notify NFWF in writing of such actual or potential conflict of interest, whether organizational or otherwise.

## **SECTION 4 REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS RELATING TO FEDERAL FUNDS – GENERAL**

**4.1.** If the Funding Source or any funding entity (*i.e.*, a secondary funding source) is a federal agency and/or any portion of the Project provided herein is paid with federal funds, the NFWF Subrecipient must read and understand certain applicable federal regulations, including but not limited to, the following in Sections 4 and 5 of this Agreement as set forth herein.

The NFWF Subrecipient will need to understand and comply with the OMB Uniform Guidance (including related Supplements as may be applicable to a specific federal funding source(s), and Appendices as may be applicable), in addition to other applicable federal regulations. This includes, but is not limited to, the provisions of the Federal Funding Accountability and Transparency Act (FFATA), which includes requirements on executive compensation, and also requirements implementing the Act for the non-federal entity at 2 CFR part 25 Financial Assistance Use of Universal Identifier and System for Award Management and 2 CFR part 170 Reporting Subaward and Executive Compensation Information. The most recent version of the Electronic Code of Federal Regulations can be found at <https://www.ecfr.gov/>.

### **4.2. 2 CFR § 200 Subpart F Audits.**

It is the responsibility of the NFWF Subrecipient to arrange for audits as required by 2 CFR Part 200, Subpart F – Audit Requirements. The NFWF Subrecipient shall notify NFWF in writing about 2 CFR Subpart F audit findings related to projects funded by NFWF pass-through funds. The NFWF Subrecipient understands that NFWF may require the NFWF Subrecipient to take corrective action measures in response to a deficiency identified during an audit.

### **4.3. Real and Personal Property.**

In accordance with 2 C.F.R. § 200.316 (Property trust relationship), real property, equipment, and intangible property acquired or improved with federal funds must be held in trust by the NFWF Subrecipient as trustee for the beneficiaries of the project or program under which the property was acquired or improved. This trust relationship exists throughout the duration of the property's estimated useful life during which time the Federal Government retains an undivided, equitable reversionary interest in the property (Federal Interest). During the duration of the Federal Interest, the NFWF Subrecipient must comply with all use, reporting, and disposition requirements and restrictions as set forth in 2 C.F.R. §§ 200.310 (Insurance coverage) through 200.316 (Property trust relationship) and 200.329 (Reporting on real property), as applicable.

### **4.4. Mandatory Disclosure.**

NFWF Subrecipient must disclose, in a timely manner, in writing to NFWF all violations of federal criminal law involving fraud, bribery, or gratuity violations potentially affecting the federal award. Failure to make required disclosures can result in any of the remedies described in this Agreement, including termination, and any remedies provided under law, including suspension or debarment by cognizant federal authorities.

### **4.5. Trafficking in Persons.**

Pursuant to section 106(a) of the Trafficking Victims Protection Act of 2000, as amended (22 U.S.C. 7104(g)) (codified at 2 C.F.R. Part 175), NFWF Subrecipient shall comply with the below provisions. Further, NFWF Subrecipient shall flow down these provisions in all subawards and contracts,

including a requirement that Subrecipients similarly flow down these provisions in all lower-tiered subawards and subcontracts. The provision is cited herein:

- I. Trafficking in persons.
  - a. *Provisions applicable to a recipient that is a private entity.*
    1. You as the recipient, your employees, subrecipients under this award, and subrecipients' employees may not—
      - i. Engage in severe forms of trafficking in persons during the period of time that the award is in effect;
      - ii. Procure a commercial sex act during the period of time that the award is in effect; or
      - iii. Use forced labor in the performance of the award or subawards under the award.
    2. We as the federal awarding agency's pass-through entity may unilaterally terminate this award, without penalty, if you or a subrecipient that is a private entity —
      - i. Is determined to have violated a prohibition in paragraph a.1 of this award term; or
      - ii. Has an employee who is determined by the agency official authorized to terminate the award to have violated a prohibition in paragraph a.1 of this award term through conduct that is either—
        - A. Associated with performance under this award; or
        - B. Imputed to you or the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Government-wide Debarment and Suspension (Nonprocurement),".
  - b. *Provision applicable to a recipient other than a private entity.* We as the federal awarding agency's pass-through entity may unilaterally terminate this award, without penalty, if a subrecipient that is a private entity-
    1. Is determined to have violated an applicable prohibition in paragraph a.1 of this award term; or
    2. Has an employee who is determined by the agency official authorized to terminate the award to have violated an applicable prohibition in paragraph a.1 of this award term through conduct that is either—
      - i. Associated with performance under this award; or
      - ii. Imputed to the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Government-wide Debarment and Suspension (Nonprocurement),".
  - c. *Provisions applicable to any recipient.*
    1. You must inform us immediately of any information you receive from any source alleging a violation of a prohibition in paragraph a.1 of this award term.
    2. Our right to terminate unilaterally that is described in paragraph a.2 or b of this section:
      - i. Implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. 7104(g)), and

- ii. Is in addition to all other remedies for noncompliance that are available to us under this award.
- 3. You must include the requirements of paragraph a.1 of this award term in any subaward you make to a private entity.
- d. *Definitions.* For purposes of this award term:
  - 1. "Employee" means either:
    - i. An individual employed by you or a subrecipient who is engaged in the performance of the project or program under this award; or
    - ii. Another person engaged in the performance of the project or program under this award and not compensated by you including, but not limited to, a volunteer or individual whose services are contributed by a third party as an in-kind contribution toward cost sharing or matching requirements.
  - 2. "Forced labor" means labor obtained by any of the following methods: the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.
  - 3. "Private entity":
    - i. Means any entity other than a State, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 CFR 175.25.
    - ii. Includes:
      - A. A nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 CFR 175.25(b).
      - B. A for-profit organization.
  - 4. "Severe forms of trafficking in persons," "commercial sex act," and "coercion" have the meanings given at section 103 of the TVPA, as amended (22 U.S.C. 7102).

#### **4.6. 41 United States Code (U.S.C.) 4712, Enhancement of Recipient and Subrecipient Employee Whistleblower Protection:**

(a) This award, related subawards, and related contracts over the simplified acquisition threshold and all employees working on this award, related subawards, and related contracts over the simplified acquisition threshold are subject to the whistleblower rights and remedies established at 41 U.S.C. 4712.

(b) Recipients, their subrecipients, and their contractors awarded contracts over the simplified acquisition threshold related to this award, shall inform their employees in writing, in the predominant language of the workforce, of the employee whistleblower rights and protections under 41 U.S.C. 4712.

(c) The recipient shall insert this clause, including this paragraph (c), in all subawards and contracts over the simplified acquisition threshold related to this award.

#### **4.7. 41 USC §6306, Prohibition on Members of Congress Making Contracts with Federal Government.**

No member of or delegate to Congress or Resident Commissioner shall be admitted to any share or part of this award, or to any benefit that may arise therefrom; this provision shall not be construed to extend to an award made to a corporation for the public's general benefit. NFWF Subrecipient

shall flow down this provision in all subawards and contracts, including a requirement that subrecipients similarly flow down this provision in all lower-tiered subawards and subcontracts.

#### **4.8. Executive Order 13513, Federal Leadership on Reducing Text Messaging while Driving.**

(Sub)Recipients are encouraged to adopt and enforce policies that ban text messaging while driving, including conducting initiatives of the type described in section 3(a) of the order. NFWF Subrecipient shall flow down this provision in all subawards and contracts, including a requirement that subrecipients similarly flow down this provision in all lower-tiered subawards and subcontracts.

#### **4.9. 43 CFR §18 New Restrictions on Lobbying.**

By execution of this Agreement, the NFWF Subrecipient agrees to comply with 43 CFR 18, New Restrictions on Lobbying, and certifies to the following statements:

(a) No federal appropriated funds have been paid or will be paid, by or on behalf of the NFWF Subrecipient, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

(b) If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying" in accordance with its instructions.

(c) The NFWF Subrecipient shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all Subrecipients shall certify accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification, as represented by execution of this Agreement, is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure. All liability arising from an erroneous representation shall be borne solely by the entity filing that representation and shall not be shared by any entity to which the erroneous representation is forwarded. Submitting an erroneous certification or disclosure constitutes a failure to file the required certification or disclosure, respectively. If a person fails to file a required certification or disclosure, the United States may pursue all available remedies, including those authorized by section 1352, title 31 of the U.S. Code.

#### **4.10. Prohibition on Issuing Financial Assistance Awards to Entities that Require Certain Internal Confidentiality Agreements.**

The NFWF Subrecipient must not require their employees, subrecipients, or contractors seeking to report fraud, waste, or abuse to sign internal confidentiality agreements or statements prohibiting or otherwise restricting such employees, subrecipients, or contractors from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a federal department or agency authorized to receive such information. The NFWF Subrecipient must notify their employees, subrecipients, or contractors that existing internal confidentiality agreements covered by this condition are no longer in effect.

#### **4.11. Drug-Free Workplace.**

The NFWF Subrecipient must make an ongoing, good faith effort to maintain a drug-free workplace pursuant to the specific requirements set forth in 41 USC Chapter 81 Drug-Free Workplace.

#### **4.12. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment. (Effective 8/13/2020)**

As required by 2 CFR 200.216, the NFWF Subrecipient is prohibited from obligating or expending funds awarded under this Agreement to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services from Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, and Dahua Technology Company, or any other company, including affiliates and subsidiaries, owned or controlled by the People's Republic of China, which are a substantial or essential component of any system, or as critical technology as part of any system. By and through the NFWF Subrecipient's execution of this Agreement, the NFWF Subrecipient warrants and represents that the NFWF Subrecipient will not obligate or expend funds awarded under this Agreement for "covered telecommunications equipment or services" (as this term is defined and this restriction is imposed under 2 CFR 200.216).

#### **4.13. Domestic Preference for Procurements.**

- a) Under this Agreement and in accordance with 2 C.F.R. § 200.322, the NFWF Subrecipient shall to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products).
- b) For purposes of this agreement, the following definitions apply:
  - i. "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States; and
  - ii. "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.



## **SECTION 5 REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS RELATING TO FEDERAL FUNDS – FUNDING SOURCE SPECIFIC**

NFWF Subrecipient acknowledges that when all or part of this Agreement is funded by a federal award that certain representations, certifications, and other statements relating to the use of such funds or performance of the Project may be necessary. These representations, certifications and other statements are set forth below. Unless otherwise stated in this Agreement, the execution and submission of this Agreement serves as affirmative acknowledgement of an agreement with the below representations, certifications, and other statements. Further, should circumstances of the NFWF Subrecipient change during the performance of this Agreement that would render one of these representations, certifications and/or other statements inaccurate, invalid or incorrect, the NFWF Subrecipient shall promptly notify NFWF of such change in circumstance. Finally, NFWF reserves the right to update and require subsequent acknowledgement of an agreement with new or revised representations, certifications, and other statements at no additional cost under this Agreement.

### **FC.R561 Grant Terms**

#### **Department of Commerce (DOC) Compliance Requirements.**

The NFWF Subrecipient must comply with the terms and conditions of a DOC financial assistance award, including applicable provisions of the OMB Uniform Guidance (2 C.F.R. Part 200), and all associated Terms and Conditions set forth in the Department of Commerce Financial Assistance Standard Terms and Conditions Dated November 12, 2020, available at [https://www.commerce.gov/sites/default/files/2020-11/DOC%20Standard%20Terms%20and%20Conditions%20-%202012%20November%202020%20PDF\\_0.pdf](https://www.commerce.gov/sites/default/files/2020-11/DOC%20Standard%20Terms%20and%20Conditions%20-%202012%20November%202020%20PDF_0.pdf). See 2 C.F.R. § 200.101(b)(1) (Applicability), which describes the applicability of 2 C.F.R. Part 200 to various types of Federal awards and §§200.331-333 (Subrecipient monitoring and management). Additionally, the NFWF Subrecipient must flow these requirements down to all subrecipients and contractors, including lower tier subrecipients.

#### **Data Sharing Directive.**

The Data and Publication Sharing Directive for NOAA Grants, Cooperative Agreements, and Contracts ensures that environmental data funded extramurally by NOAA are made publicly accessible in a timely fashion (typically within two years of collection), and that final manuscripts of peer-reviewed research papers are deposited with the NOAA Central Library (upon acceptance by the journal, or no later than at time of publication). Therefore, non-Federal entities, or recipients, must make data produced under financial assistance publicly accessible in accordance with the Data Management Plan included with the Proposal, unless the grant program grants a modification or an exemption. The text of the Directive is available at <https://nosc.noaa.gov/EDMC/PD.DSP.php>.

- a) Data Sharing: Environmental data collected or created under this Grant, Cooperative Agreement, or Contract must be made publicly visible and accessible in a timely manner, free of charge or at minimal cost that is no more than the cost of distribution to the user, except where limited by law, regulation, policy, or national security requirements. Data are to be made available in a form that would permit further analysis or reuse: data must be encoded in a machine-readable format, preferably using existing open format standards; data must be sufficiently documented, preferably using open metadata standards, to enable users to independently read and understand the data. The location (internet address) of the

data should be included in the final report. Pursuant to NOAA Information Quality Guidelines, data should undergo quality control (QC) and a description of the QC process and results should be referenced in the metadata. Failure to perform quality control does not constitute an excuse not to share data. Data without QC are considered “experimental products” and their dissemination must be accompanied by explicit limitations on their quality or by an indicated degree of uncertainty.

- b) **Timeliness:** Data accessibility must occur no later than publication of a peer-reviewed article based on the data, or two years after the data are collected and verified, or two years after the original end date of the grant (not including any extensions or follow-on funding), whichever is soonest, unless a delay has been authorized by the NOAA funding program.
- c) **Disclaimer:** Data produced under this award and made available to the public must be accompanied by the following statement: "These data and related items of information have not been formally disseminated by NOAA, and do not represent any agency determination, view, or policy."
- d) **Failure to Share Data:** Failing or delaying to make environmental data accessible in accordance with the submitted Data Management Plan, unless authorized by the NOAA Program, may lead to enforcement actions, and will be considered by NOAA when making future award decisions. Funding recipients are responsible for ensuring these conditions are also met by sub-recipients and subcontractors.
- e) **Funding acknowledgement:** Federal funding sources shall be identified in all scholarly publications. An Acknowledgements section shall be included in the body of the publication stating the relevant Grant Programs and Award Numbers. In addition, funding sources shall be reported during the publication submission process using the FundRef mechanism (<http://www.crossref.org/fundref/>) if supported by the Publisher.
- f) **Manuscript submission:** The final pre-publication manuscripts of scholarly publications produced with NOAA funding shall be submitted to the NOAA Institutional Repository at <http://library.noaa.gov/repository> after acceptance, and no later than upon publication, of the paper by a journal. NOAA will produce a publicly-visible catalog entry directing users to the published version of the article. After an embargo period of one year after publication, NOAA shall make the manuscript itself publicly visible, free of charge, while continuing to direct users to the published version of record.
- g) **Data Citation:** Publications based on data, and new products derived from source data, must cite the data used according to the conventions of the Publisher, using unambiguous labels such as Digital Object Identifiers (DOIs). All data and derived products that are used to support the conclusions of a peer-reviewed publication must be made available in a form that permits verification and reproducibility of the results.

### **Scientific Integrity.**

- a) ***Maintaining Integrity.*** The NFWF Subrecipient shall maintain the scientific integrity of research performed pursuant to this grant or financial assistance award including the prevention, detection, and remediation of any allegations regarding the violation of scientific integrity or scientific and research misconduct, and the conduct of inquiries, investigations, and adjudications of allegations of violations of scientific integrity or scientific and research misconduct. All the requirements of this provision flow down to subrecipients.

- b) *Peer Review.* The peer review of the results of scientific activities under a NOAA grant, financial assistance award, or cooperative agreement shall be accomplished to ensure consistency with NOAA standards on quality, relevance, scientific integrity, reproducibility, transparency, and performance. NOAA will ensure that peer review of "influential scientific information" or "highly influential scientific assessments" is conducted in accordance with the Office of Management and Budget (OMB) Final Information Quality Bulletin for Peer Review and NOAA policies on peer review, such as the Information Quality Guidelines.
- c) In performing or presenting the results of scientific activities under the NOAA grant, financial assistance award, or cooperative agreement and in responding to allegations regarding the violation of scientific integrity or scientific and research misconduct, the NFWF Subrecipient and all subrecipients shall comply with the provisions herein and NOAA Administrative Order (NAO) 202-735D, Scientific Integrity, and its Procedural Handbook, including any amendments thereto. That Order can be found at <https://nrc.noaa.gov/ScientificIntegrityCommons.aspx>.
- d) *Primary Responsibility.* The NFWF Subrecipient shall have the primary responsibility to prevent, detect, and investigate allegations of a violation of scientific integrity or scientific and research misconduct. Unless otherwise instructed by the grants officer, the recipient shall promptly conduct an initial inquiry into any allegation of such misconduct and may rely on its internal policies and procedures, as appropriate, to do so.
- e) By executing this grant, financial assistance award, or cooperative agreement the NFWF Subrecipient provides its assurance that it has established an administrative process for performing an inquiry, investigating, and reporting allegations of a violation of scientific integrity or scientific and research misconduct; and that it will comply with its own administrative process for performing an inquiry, investigation, and reporting of such misconduct.
- f) The NFWF Subrecipient shall insert this provision in all subawards at all tiers under this grant, financial assistance award, or cooperative agreement.

### **Required Use of American Iron, Steel, Manufactured Products, and Construction Materials.**

If applicable, and pursuant to the Infrastructure Investment and Jobs Act ("IIJA"), Pub.L. No. 117-58, which includes the Build American, Buy American (BABA) Act, Pub. L. No. 117-58, §§ 70901-52 and OMB M-22-11, recipients of an award of Federal financial assistance from the Department of Commerce (DOC) are hereby notified that none of the funds provided under this award may be used for a project for infrastructure unless: (1) all iron and steel used in the project are produced in the United States—this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States; (2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and (3) all construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools,

equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project. This requirement also applies to subrecipients.

Waivers: When necessary, recipients may apply for, and DOC may grant, a waiver from these requirements. DOC will notify the recipient for information on the process for requesting a waiver from these requirements. When DOC has made a determination that one of the following exceptions applies, the awarding official may waive the application of the domestic content procurement preference in any case in which DOC determines that: a. applying the domestic content procurement preference would be inconsistent with the public interest; b. the types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality; or c. the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent. A request to waive the application of the domestic content procurement preference must be in writing. DOC will provide instructions on the format, contents, and supporting materials required for any waiver request. Waiver requests are subject to public comment periods of no less than 15 days and must be reviewed by the Made in America Office. There may be instances where an award qualifies, in whole or in part, for an existing waiver described at [whitehouse.gov/omb/management/made-in-america](https://whitehouse.gov/omb/management/made-in-america).

Definitions: "Construction materials" includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives—that is or consists primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinyl chloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall. "Domestic content procurement preference" means all iron and steel used in the project are produced in the United States; the manufactured products used in the project are produced in the United States; or the construction materials used in the project are produced in the United States. "Infrastructure" includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property. Infrastructure includes facilities that generate, transport, and distribute energy. "Project" means the construction, alteration, maintenance, or repair of infrastructure in the United States. -- 1 Excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives. 2 IIJA, § 70917(c)(1).

#### Implementation of Domestic Sourcing Requirements

Prior to initiation of any construction that may arise in this award, the NFWF Subrecipient is required to inform NFWF whether it is using iron, steel, manufactured products, or construction materials as described in "Required Use of American Iron, Steel, Manufactured Products, and

Construction Materials" above. In addition, the NFWF Subrecipient is required to inform the NFWF whether those materials are produced or manufactured in the United States, or alternatively, it is requesting one or more waivers, as described in the award condition.

**Field Work.**

The NFWF Subrecipient is required to follow recognized best practices for minimizing impacts to the human and natural environment when applicable and will provide for safety in their projects as needed, including addressing the safety of personnel, associates, visitors, and volunteers in their projects. In addition, any use of unoccupied aircraft systems in projects under this award must be in compliance with all applicable Federal Aviation Administration regulations, and any other applicable federal, state, or local regulations.

**Invasive Species Control.**

Pursuant to Executive Order # 13112, recipients of NOAA funding cannot implement any actions that are likely to cause or promote the introduction or spread of invasive species, and should provide for restoration of native species and habitat conditions in ecosystems that have been invaded. The NFWF Subrecipient is expected to take positive steps to prevent the introduction of invasive species, provide for control of invasive species, and minimize the economic, ecological, and human health impacts that invasive species cause. Where possible and/or practicable, the NFWF Subrecipient should also respond rapidly to and control populations of invasive species in an environmentally sound manner, promote public education on invasive species, and conduct post-construction monitoring to ensure that impacts on native species did not occur (as applicable). NOAA can provide additional guidance on the detection, control and prevention of invasive species impacts upon request.

**Equipment Reporting.**

Equipment or supplies (aggregate supplies, not per unit) at a cost of \$5,000 or greater per unit value, including its fair market value, must be inventoried at least once every two years and at award closeout (2 CFR 200.313). NFWF Subrecipients may use the outdated SF-428 form series to report on tangible property or submit their own customized report including a description of federally owned equipment, identification information, acquisition cost, and acquisition date. More guidance on property definitions and forms is posted online at [coast.noaa.gov/funding/forms.html](http://coast.noaa.gov/funding/forms.html).

## **SECTION 6 OTHER REPRESENTATIONS, CERTIFICATIONS, STATEMENTS AND CLAUSES**

NFWF Subrecipient acknowledges that all or part of this Agreement may be funded by a non-federal source that requires certain representations, certifications, and other statements relating to the use of such funds or performance of the Project. These representations, certifications and other statements are set forth below. Unless otherwise stated in this Agreement, the execution and submission of this Agreement serves as affirmative acknowledgement of an agreement with the below representations, certifications, and other statements. Further, should circumstances of the NFWF Subrecipient change during the performance of this Agreement that would render one of these representations, certifications and/or other statements inaccurate, invalid or incorrect, the NFWF Subrecipient shall promptly notify NFWF of such change in circumstance. Finally, NFWF reserves the right to update and require subsequent acknowledgement of an agreement with new or revised representations, certifications, and other statements at no additional cost under this Agreement.

None.